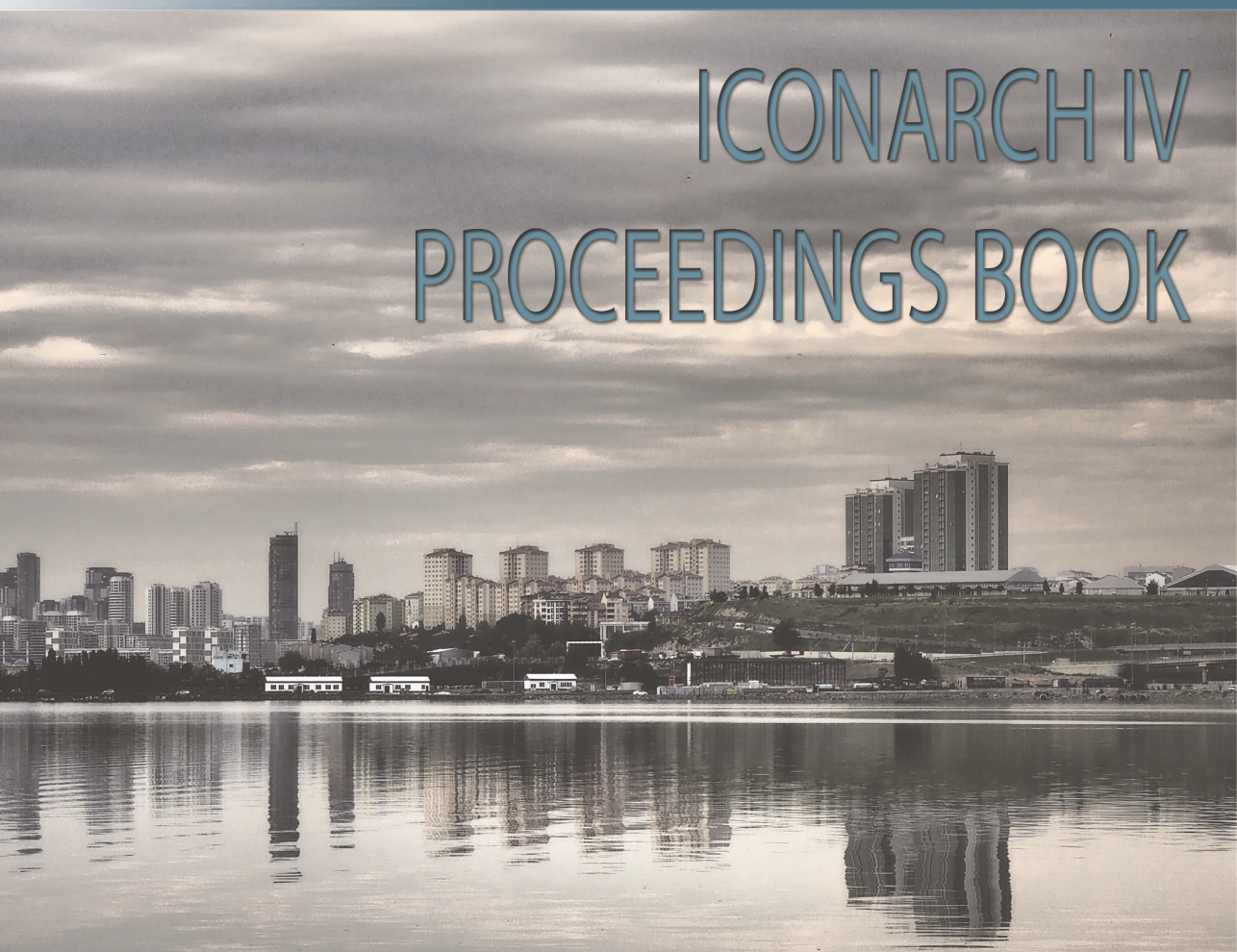
space and process

INTERNATIONAL CONGRESS OF ARCHITECTURE AND PLANNING

KONYA TECHNICAL UNIVERSITY 1970

ICONARCH IV
PROCEEDINGS BOOK



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ICONARCH IV

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SPACE AND PROCESS IN ARCHITECTURE AND PLANNING

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SPACE AND PROCESS IN ARCHITECTURE AND PLANNING

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Organizers: Konya Technical University, Faculty of Architecture and Design, Konya, Department of Architecture and Department of City and Regional Planning

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FOREWORD

Dear Colleagues,

As Konya Technical University, we are proud to organize the fourth of ICONARCH congress series. The 4th International Congress on Architecture and Planning has provided a qualified scientific discussion environment on almost all issues concerning Architecture and Planning with a very intensive and comprehensive program.

ICONARCH congresses are organized every two years by Konya Technical University Faculty of Architecture and Design. We would like to organize this fourth congress by hosting our protocol members and guests in Konya, the cradle of civilization, the Seljuk Capital and the city of Mevlana. However, the pandemic conditions did not allow this. Despite everything, we held a very useful and successful congress.

The concept of "space", which has been handled at different scales within the education and practices of Architecture and Planning, has taken on a more complex structure with the meaning loaded on it in recent years. Analyzing and understanding this complex structure necessitates process-based perspectives. It also requires an understanding based on cooperation with different disciplines. ICONARCH IV aimed to bring together the profession of architecture and planning and disciplines that have strong relations with these professional fields. In a period where spatial approaches are heavily on the agenda, our congress was held with the theme of "Space and Process" at the center of new searches and discussions. In the congress, under the main theme of "Space and Process", within the scope of the themes determined under 9 different subtitles, the way the space was handled at different scales and the attributed meaning has been discussed.

Each society and production style creates its own space that meets its own needs, reflecting its lifestyle and culture. Architecture and planning disciplines recognize that space and society have the potential to mutually transform each other. In the history of humanity, we are living a period in which change is extremely rapid in every field. Technological developments, climate changes, ecological crises, growing socio-economic unrest, global migration, political conflicts, social, cultural and spatial transformations should be evaluated sensitively in the process of change of space. In this transformation process of the world, ICONARCH-IV is an important platform for those who want to explore the new global society and space dynamics. In this context, ICONARCH-IV has emphasized the metamorphosis and innovations through which space and spatial processes pass in the face of rapidly changing demographic, social,

economic, ecological and technological structures. Space is considered as the transformer, reflection and result of these changes.

An intensive exchange of information and interaction has taken place at the congress, where scientific studies addressing the versatile structure of spatial processes in various dimensions has been presented. On behalf of my school, I would like to thank the valuable scientists, invited speakers and keynote speakers who participated in our congress from Turkey and abroad, especially to Prof. Keith Halfacre, Prof. Robert Cervero, Prof. Simin Davoudi, Prof. Ayda Eraydın and Prof. Eva Stachura.

On this occasion, I would like to thank the Members of the Scientific Committee who played different roles in the organization of the congress and my friends in the congress organization committee. I would also like to thank Konya Technical University Rectorate, Architecture and City Planning Departments, which contributed to the organization of the congress, and TUBITAK, which provided financial support to the congress.

ICONARCH IV is a scientific event that guide researchers and practitioners working in the field of architecture and planning, stating that I wish to be together again in ICONARCH V, which will be held in 2022, and I present my respects.

Prof. Dr. Rahmi ERDEM
Congress Chair
Dean of the Faculty of Architecture and Design
Konya Technical University

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KEYNOTE SPEAKER

13 October 2020 Tuesday, 10.20 – 11.00

Prof. Dr. Simin DAVOUDI

Resilience and Neoliberal Governmentality of Unknowns

RESILIENCE AND NEOLIBERAL GOVERNMENTALITY OF UNKNOWNS

Simin DAVOUDI*

Abstract

We live in challenging times with a heightened level of uncertainty and constant reminders of the unpredictability of what might be lurking around the corner, be it catastrophic climate events, terrorist attacks, financial crisis or global pandemic. Among the prescribed remedies for dealing with such a state of flux, the one that has gained significant currency is 'resilience'. Yet, it is not quite clear what resilience means beyond the simple assumption that it is good to be resilient. Despite a lack of clarity, its use in policy and practice has increased substantially in the last decade. Resilience is everywhere and is in danger of becoming an empty buzzword because of its overuse and ambiguity. In this talk, I draw on my previous work (listed below) to: shed some light on this slippery concept, unpack its fundamentally distinct meanings; outline some of the political and normative implications of translating it from its ecological origin to social domains; and, critique the ways in which resilience has been co-opted into neoliberal strategies.

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KEYNOTE SPEAKER

13 October 2020 Tuesday, 11.00 – 11.30

Prof. Dr. Ayda ERAYDIN

From Regional Development to Growth of Economic Clusters and Nodes: Policies and Strategies

FROM REGIONAL DEVELOPMENT TO GROWTH OF ECONOMIC CLUSTERS AND NODES: POLICIES AND STRATEGIES

Ayda ERAYDIN*

I. INTRODUCTION

In this paper, I want to address the shift from issues of development to growth and from regions to clusters and nodes, in other words, the changes in identifying and policymaking concerning economic spaces. To discuss the shift, I will define periods which are not only marked by their economic dynamics but also by differences in defining the regions/territories/nodes which have been the engines of growth. These periods are defined as below:

The era of the Nation States and Keynesian Welfare Regime, the 1930s-1970s, where regions as spaces of economic development; Era of Globalisation, Competitiveness 1980s-2000 characterised by the dominance of globalisation and new spaces of growth; and Post-neoliberal era: 2000-2020, when cities have become the frontier zones in growth processes. I specify the period after 2020 onwards as a new era. For each period I will try to review both the emerging dynamics and change and the spaces of development/growth in that period, besides major problems in understanding and policymaking concerning economic spaces. For the future, I will raise some of the expected issues on briefly discuss what will be the new spaces of growth in the coming years referring to the different trajectories of development.

II. THEORIES AND POLICIES ERA OF NATION STATES AND KEYNESIAN WELFARE REGIME: 1930s-1970s

The 1930 crisis and the following Second World War caused to born of Keynesian welfare state policies that offered a planned developmentalist perspective in which state was the main actor of development. The state acted to ensure persistence of Fordist mode of production and accumulation, to minimize the risks leading to the economic crisis, and to enhance the nation-building process through reducing the regional disparities. In this period, the development of a region essentially depends on investing in infrastructure and manufacturing industry by the state. Emphasis is on capital transfer from outside, exogenous

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investments, which will prevent regional inequalities, emphasising that the local resources of several regions are not adequate to initiate the high momentum of growth.

The strong nation-state is defined as the main actor of regional development, which has to develop policy instruments to minimize regional development disparities. Direct investment in productive activities, infrastructure development and regulative measures to control the outflow of capital, goods, information, and labour were the used policy tools to minimize regional inequalities. Source of regional growth was defined as externally driven (redistributive decision of the state, external decisions of transnational companies) and factors of regional development were outlined as large scale investments, economies of scale, agglomeration economics, externalities and capital accumulation-investment dynamics, vertically integrated economy, and traded interdependencies (Eraydın, 2004). Governments played a major role in the provision of infrastructure, planning, industry promotion and marketing systems and private entrepreneurs are expected to function accordingly. There was a focus on comparative advantage, by promoting cheap land, utility charges and local tax breaks for new businesses relocating or expanding in a region (Stimson, et. al., 2006).

4.2. Regional Development: Regions as economic spaces

Although regional policies go back to early periods after the emergence of nation-states regional disparities became one of the issues of development. Beginning from the 1930s the Keynesian economics supported the interest in regional differences and provided new tools for defining disparities. Afterwards, in the 1950s and 1960s, the Development Economics formed the main basis of regional analysis, planning and policies. The regional policies that were based on the development ideology of the post-war period were focused on industrialisation efforts of countries via large-scale enterprises. Creation of *Growth Poles* or initiating a polarised development process by government intervention and external resources was the main policy. In the distribution of public resources, the essential point was to minimise the cost of regional policy by selecting the most rational investment areas in different regions.

In this period, many theories were developed about regional development and regional planning with the influence of development economics and geography. In this period reflections of growth dynamics of the regional economy were theorized in growth pole theory (Perroux, 1955; Parr, 1999), and economic base (Tiebout, 1956). Some theorization efforts were focused on the spatial organization to emphasize the location selection problem of the enterprises (Isard, 1960; Alonso, 1964) and location selection of services (Christaller, 1966; Berry, 1964).

The emphasis on regions as the main economic unit and regional policies became less conceivable after the 1970s economic crisis. Firstly, it became more difficult to operate regional policies due to changing economic conditions and relations, since the power of states has widely deteriorated. Secondly, the waves of liberalisation and deregulation affected negatively the development efforts via centralised decision-making systems. And lastly, the dynamics of the globalised economy favoured areas with learning capacities and competitive power. 1970s crisis pointed out that it was impossible to continue regional development policies based on strong government intervention and the external transfer of capital. Since the regional policies defined in the mass production era, which were supported by regulations and institutions of the Keynesian economics, were not able to serve following the change in the economic system.

III. THEORIES AND POLICIES ERA OF GLOBALISATION: COMPETITIVENESS 1980s-2000

The period following the 1970s economic crisis is defined by a new production system, the flexible specialisation necessitating globalisation that enables the free flow of goods, capital and human capital. To make free movement of goods and capital possible deregulation of the national economies was the first step, which meant no barriers and no protectionist attitudes of the nation-states.

In a globalised economic system, the key issue is competitiveness, since it is the only way the firms can survive and expand, and regions and cities can be able to grow. Since the 1980s, the search for competitiveness has become the object of urban and regional policies, in parallel with the academic studies and debates in this field. The interest in competitiveness originates from the observations of the different performances of cities and regions. As Boschma (2004) has indicated, some regions/cities have grown faster than other cities and they have increased their relative share in the national or world economy at the expense of others. Competitiveness is expected to contribute to the economic performance and welfare of regions and cities, first by enhancing the attractiveness of these places for international capital; secondly, by enabling local agents to export their products and services all over the world and participate in global value chains; and, thirdly, by gaining global functions that will allow them to benefit from the spillover effects of globally circulating knowledge, information and technology. Therefore, competitiveness is a way of discussing the relative economic performance of territories and their achievements in generating income, employment and new enterprises (Turok, 2004). The literature offers a very wide list of assets of competitiveness that are grouped under several headings: human capital

(Porter, 1990; Huggins, 2003); the quality of technical infrastructure and the standard of living (Storper, 1997; Begg, 1999; Turok, 2004); and local institutional and social assets, including effective governance (Kresl, 1995).

Table 1: Major changes following the 1970s economic crisis

Major changes	New concepts and issues
The changes in the production system	Economic restructuring
	From mass to flexible production
	Global and local subcontracting networks
	Technological change for competitiveness
Competitiveness	The importance of knowledge generation
	Tacit knowledge
	Learning
	Innovation
	Creativity
Human capital	Creative class
	From skilled labour to highly qualified expertise
	Networks of academic excellence
Global functions	Financial services
	Producer services

Moreover, the literature underlined the role of networks and defined them as vital to make an economy more competitive. The first type of networks is related to the production organisation (Schmitz and Musyck, 1994; Rabelotti, 1997; Glasmeier, 1991). These networks define the role and competitive advantage of firms in the value chains. Second type networks are usually defined learning networks (Amin and Cohendet, 1999; Keeble et al., 1998), which enable knowledge sharing (Asheim, 1996) and to gain access to external economies of scale. It is also true that many networks have a strong local dimension despite the emergence of global networks (van der Berg et al., 2001) and establishments that maintain R&D cooperation with partners outside their region nearly always have cooperation partners within the region. However, besides these material and knowledge networks, another kind of networks received considerable attention the past decade, namely social networks (Malmberg, 1996; Grabher, 1993).

Other important issues in the globalised economic system are knowledge and learning. Several authors (Audretsch and Feldman, 1996; Amin and Cohendet,

1999) indicated that the basis of economic vitality and competitive advantage have changed from cost-sensitive growth to knowledge and innovation-oriented development. Knowledge became the most strategical resource and learning the most important process (Lundvall, 1998).

3.1. Debates on implications of new economic conditions on space: New economic spaces, spaces of growth

The policy measures were almost clear in the traditional regional development theories, but it became difficult to transcend from theory to policy beginning from the 1980s onwards. The main policy that was followed by many of the national governments was to support the regions, which have the potential for production for international markets. However, this support was mostly in the form of stimulating the local potential with limited resource commitment and spending due to recognised financial limitations of governments as well as declining institutional capacities in the changing world conditions.

The first attempt to conceptualise the change in the dynamics of growth is new growth theory. The revision of the neoclassical growth theory (Eraydın, 2003), and introducing the New Growth Theory modified the assumption of diminishing returns to capital and introduced monopolistic competition as the underlying market form (Langlois, 2001). This change helped to endogenize technological progress and defined the turning point in the interest in knowledge, innovation and technological progress. The New Growth Theory attracted a wide interest since it was consistent with the fact of increasing divergence among the growth rates of countries, instead of convergence as formulated in the neoclassical growth theory. Its main argument is summarised by Romer (1994:3), which claims "growth is an endogenous outcome of an economic system, not the results of forces impinged from outside". This way of approach to growth and the interest of local by scholars dealing with geography and space induced several theoretical debates that can be grouped under *territorial development models*.

Spaces of production: Industrial clusters, industrial districts

Industrial clusters approach, which had a long history since the work of Alfred Marshall (1920) received increasing interest in the late 1970s and 1980s. This interest is reflected itself both formal models of industrial concentration described by Krugman (1991a, 1991b) and also on the new industrial geography literature, which comprised many descriptive studies. Most of them originated from the observation of the experience of Italian industrial districts a long time after the original formulation of Marshall. Industrial districts literature defines a new trajectory of industrial development based on flexible production

organisation (Pyke and Senberger 1991), which relies on subcontracting relations among vertically disintegrated firms specialised in different stages of production. This type of production organisation enables them to produce diversified products in small quantities (Piore and Sabel 1984).

The theoretical debates on industrial districts/clusters emphasise certain issues. Firstly, they are defined as the places, where cluster externalities provide advantages not only for firms but to all members of in that cluster. In other words, they are the places where "the spatially bounded externalities that result in higher economic rates across regions and also higher levels of innovation" (van Oort, 2004). Secondly, they are the places where knowledge spillovers and innovation take place. While human capital and knowledge spillovers became the core of the new growth theory, the industrial geographers paid more attention to the spatial diffusion of knowledge and innovation. Socially constructed inter-firm relationships (Camagni 1991, Storper 1995, Belussi 1996, Malmberg 1996), *institutional thickness* (Amin and Thrift 1994, Tödling 1994,), collaboration and cooperation by strong collective networks (Harrison 1992) and common cultural and social background (Beccatini 1989, 1990) are defined factors that facilitate knowledge spillovers and knowledge transfers. The third reason for interest in clusters is due to their export performance. They are the places for international exports.

Spaces of technological advancement: Learning regions, innovative milieu

The assets of clusters are not adequate to sustain their viability in the global economic system. That is why in the 1980s and early 1990s the evolution of industrial clusters became a new area of interest extending the context of discussions beyond the localisation process. Gordon (1996) claims that the viability of an industrial cluster is a product of their ability to articulate a coherent industrial presence within a global milieu that can be achieved via knowledge and learning. It should be noted that globalisation can also act as a process of ubiquitination of many previously localised capabilities, production factors and the embedded tacit knowledge (Maskell and Malmberg, 1999). In that respect, learning is the key issue since it is the source of innovativeness and long-range growth.

The theoretical debates focused on innovation and networking, such as learning regions (Florida, 1995) and innovative milieu models (Camagni, 1991; Lawson, 1997) are not very different from industrial districts/clusters literature except their emphasis on learning and innovation. The theories and models on learning process tried to define the characteristics of this process. One of the views on *learning* process claims that each step on the *path* is related to the previous step. It means that in the process of learning firms use resources that were developed

earlier in the path and combine them to create new ones. Learning region model, assure that firms' behaviour concerning innovation and their innovation performance is affected by the environment in which they operate (de Propris, 2002). According to an innovative milieu model, geographical proximity and informal relationships between firms facilitate information and knowledge exchange. Collective learning may be a cause of enhanced innovative behaviour by firms and defined as an uncertainty reducing mechanism in a rapidly changing technology context (Keeble, 2000; Longhi, 1999).

Spaces global finance and other producer services: Global cities and city regions

Other than these industrial spaces of growth, the literature emphasised global cities as the nodes of the new economic system and later global city-regions as the nodes of concentration of global activities. As the process of capitalist territorial development accelerated and intensified on a global scale, literature started to become increasingly interested in urban dynamics and spatial transformation, with global cities and city-regions being introduced as a privileged scale of economic transformation (Sassen, 1991; Scott, 2001a and b). This literature placed emphasis on the role of global cities and city-regions in the process of "adaptation to globalisation", and defined them as the spatial outcomes of the re-scaling or reordering of the international and national urban hierarchies (Brenner, 2003.

3.2. Major Drawbacks of the Existing Theories and Policies

Focus on endogenous capacities

As discussed above endogenous development and local and regional initiatives for economic development received a strong appeal following the 1970s crisis. While small enterprises became the core of attention, endogenous development based on small and medium enterprises was defined as an alternative to state-led regional economic policy. Concurrently, local development was accepted as a means of integration to the world markets. Although this kind of emphasis on *local* brought a new understanding, it was not enough to explain what happened in the last two decades in many parts of the world. The models of territorial development that defined spatial agglomerations in different forms named as, innovative milieux (Camagni, 1991), industrial districts (Belussi, 1999), new industrial spaces (Scott and Storper, 1987), regional systems of innovation (Cooke, Uranga and Etxebarria, 1997) or learning regions (Florida, 1995; Morgan, 1997), did not have very clear policy recommendations. The acceptance of the contingent nature of development created the difficulty to shift from theory to policy. The interest in local, however, prompted the new policy regime that is defined as governance, which denoted a heterarchical mode of self-organisation and different modes of coordination of interdependent activities (Jessop, 2013). In

practice, national governments that faced economic difficulties found it easy to define strategies for regions related to the potential and capabilities of regions, since they were searching for reducing financial commitments and spending.

The dominance of the success stories

While the literature was full of success stories, in many countries that tried to follow neo-liberal economic policies and to integrate the globalised economic system regional disparities were increasing. It became evident that in the absence of adequate local initiatives for collaborative action disadvantaged regions had only limited development opportunities. This situation caused increasing interest in regional policies in the literature. Several studies emphasised the importance of national government policies in the provision of learning infrastructure (Jin and Stough, 1998), innovation activities (Asheim and Isaksen, 1997; 2002) and the construction of scientific and technological infrastructure (Gordon, 1996:124). This new interest enforced a third way alternative to the state market dichotomy, the new regionalism, which is believed to cushion the impacts of globalisation by equipping people and regions with skills, networks and institutional thickness needed to compete in the global marketplace. However, the new regionalism, which is the combination of institutional turn-network paradigms with neo-Schumpeterian endogenous growth theory, had difficulty to answer the disparity problem and the loss of redistributive policies, since it was hard to claim that building local capacities are sufficient for establishing a privileged position for less developed regions (Amin, 1999).

Most of the policies were "replica" of the others

Although it is widely accepted that context matters for the potential development and change of the system and the potential evolutionary pathways depend on the inherited structures and existing dynamics including the adaptation or even radical transformation of the system, the theoretical arguments and policies did not consider the distinctive characteristics of the regional systems (Wolfe, 2011). For Lovering (1998: 384) the new policies and paradigms were "a loose bundle of ideas, an accretion of notions gathered together because they seem to resonate and point to broadly similar policy implications somewhere on the horizon". It has, therefore, the theoretical weakness that allows for the ready construction of ideal types and the subsequent simplistic serial copying of policy across diverse local and regional contexts (Breschi and Lenzi, 2015).

Increasing disparities

Except for the very successful development in certain areas, in this period regional disparities increased. The essential question of the relevance of existing regional policies in the neoliberal era (Peck, 2012), as contemporary literature,

emphasises, increasing regional inequality is a common problem in many countries and there is a growing scepticism on the success of policies introduced since the 1980s onwards (Hadjimichalis and Hudson, 2014).

IV. THEORIES AND POLICIES IN THE POST-NEOLIBERAL ERA 2000-2020

It is possible to observe a shift in the neo-liberal agenda following the early years of deregulation and readjustment of the Keynesian welfare institutions, which favoured the notion of competitiveness that is to be reached within the market mechanism, towards creating new forms of institutions and regulating that which has already been modified. Peck and Tickell (2002), discussing the changing nature of neo-liberalism, defined two different forms of neo-liberal practice in two consecutive periods as "a shift from the pattern of deregulation and dismantlement so dominant during the 1980s, which might be characterised as 'roll-back neoliberalism' to an emergent phase of active state-building and regulatory reform – an ascendant moment of 'roll-out neoliberalism'.

Table 2: Major changes between 2000-2020

Major changes	New concepts and issues
Volatilities in the global markets	Financial crisis
	Vulnerabilities of national, regional and urban economies
	Resilient economic development
The digitalisation of the economic activities	Digitalisation of manufacturing
	Digital economy
	Remote control systems
	Virtualised connections
Enhancement of innovation for sustained competitiveness	Innovation
	Economic programs to support innovation
	Specialisation
New technologies	Smart cities
	Smart technologies
The third circuit of capital: Real estate economics	Innovation
	Economic programs to support innovation
	Specialisation
Unexpected economic, environmental and ecological disturbances	Sustainable business practices
	The impact of climate change
	Circular economy

The literature that tries to explain these inconsistencies by indicating the need to define neoliberalism more than "increasing reliance on market mechanism". According to McGuirk (2005), neoliberalism is not a unified coherent project, but rather a series of complex and overlapping strategies that produce a hybrid form of governance. Peck, Theodore, and Brenner (2009) discuss the 'contextual embeddedness and path-dependency of neoliberal restructuring projects' and emphasise the inherited institutions, traditions, political and economic regimes as well as past regulatory struggles besides the global economic imperatives and the neoliberalisation the economy and society. Moreover, there is increasing concern on the changing nature of neoliberal policies. Peck and Tickell (2002) claim that neoliberal policies have changed substantially since the beginning of 1990s, due to emerging problems in socio-economic structures. A careful examination of the recent debates, especially the ones on the changing nature of neoliberalist agenda reveals the importance of understanding how it responds to both global challenges and the local dynamics. Moreover, how local and central state institutions redefine their roles in spatial policies and planning tells us the way the neoliberal understanding responds to the contingencies in different settings. The literature defines the new understanding and the policies shaped within the neoliberal context as the major determinants of the urban change and focuses on the spatial manifestations of the interests of the global capital.

Dealing with increasing volatilities

The last two decades are marked by increasing economic volatilities. In the last decades, cities and regions experienced several changes under the dominance of neoliberal agenda, which eroded their resilience (Hudson 2009). Changes in production structures and labour processes under the pressures of globalisation, the rise of new technologies, and the increasing role knowledge and learning processes brought substantial changes in the built environment, lifestyles and patterns of consumption, and affected cities and regions directly and indirectly, while deregulation in different fields eroded their self-regulatory capacities (Albrechts, 2010). Increasing incorporation into the new global economy brought vulnerabilities amplified by the structural problems of cities and made them wide open to external pressures, which made resilience as a core concept.

Translations of regional resilience concepts into practical policy proposals have been limited, though existing literature on policies for resilient regions defines several issues and policies adopted. Firstly, some studies define state policies as being of paramount importance in the adaptive capacity of a region (Briguglio, 2009), with the nation-state playing a key role in the transfer of different types of resources, especially those of a fiscal nature. Swanstrom *et al.* (2009) claim that

even the most resilient metropolitan areas cannot adequately address the crisis on their own, as state policies can expand (or contract) the potential for local resilience. Secondly, the role of economic planning and restructuring programmes are defined as important in building resilient regions. Cowell (2013) provided the examples of Buffalo (New York) and Cleveland (Ohio), where economic development planning has been introduced to adapt to the evolving challenges of deindustrialization, and both regions have made the expected moves towards the stage where resilience is high. Bailey and Berkeley (2014) and Carlsson *et al.* (2014) emphasise the policy instruments of restructuring programmes. Thirdly, governance and institutional capacity as factors of resilience have received attention. In a study of six metropolitan areas in the United States, Swanstrom *et al.* (2009) found that the most resilient metropolitan areas had a history of collaboration between the public, private and non-profit sectors. According to Hill *et al.* (2008), resilient regions are those with the institutional capacity to make rapid transitions and are particularly important in economic downturns due to their ability to mitigate the negative effects (Davies, 2011). In this respect, institutional coordination and political leadership are defined as essential in mitigating and responding to new challenges.

Enhancement of innovation

In Europe 2020 Report (European Commission, 2010a), the policies to be followed by European Europe (Barca Report to Commissioner for Regional Policies) is defined as smart, sustainable and inclusive growth. The Regional Policy Report 2014-20 initiated by Danuta Hubner defined the priorities in regional development, which are explained in *Regional Policy Contributing to Smart Growth in Europe* (European Commission, 2010b). This report, which is the first report that defined new fields of specialization where innovation processes to be supported, was based on smart specialization strategy that was introduced in EU document 'Knowledge for Growth' (Foray, 2009; Foray et al., 2009). The policies defined in these documents were focused on generating scientific knowledge and smart innovativeness that have to be developed with endogenous resources (embeddedness) and connections that enable the transfer of technology and knowledge from the outside world (connectedness). The main aim of smart specialisation strategy is to define new areas of specialisation with the help of knowledge accumulated in the existing industries (relatedness) (Boschma, 2017). The policy measures, in this respect, are the support for knowledge and human capital and to integrate industrial and technological structures and skills by taking account different patterns of specialisation in research and technology (McCann and Ortega-Argilés, 2011).

An easy road to growth: Real estate led development

While there is a sustained interest in innovation, in practice real estate defined the new agenda of growth. After a period of heightened entrepreneurialism, since the 1990s the dualistic nature of property rights regimes became more obvious. On the one hand, urban land and property markets have depended upon the transfer of land rents for productive purposes (new forms of capitalist development, commercial property development, etc), while on the other hand governance relations have endorsed reproductive purposes (for households), which have different socio-economic logics (Jager, 2003).

Several studies reflect upon the interaction between the social and entrepreneurial forms of governance via land and property markets, as well as the fragmentation of the modes of governance in which the role of property market actors in politics of urban development is criticised for creating local elitist coalitions (Webster, 2002; Pruijt, 2003; Edwards, 2002; Dalledetsima, 2006). Webster (2002), later on, claimed that the property market reproduces more visible "clubs" in this respect as the playing field of specific actors, compared to the social forms of governance that constantly establish a new set of relations and dynamics in cities.

These institutional relations and the dynamic interactions between the property market and urban government actors (public and private) defined new roles in the property markets for the 'city builders' (Fainstein, 1994) through negotiations, written-unwritten or official-unofficial deals, agreements and strategies. The new forms of governance increase fragmentation and exclude several possible actors in society, which, rather than leading to local activism, results in increased aggression and violence due to the conflicts around the use of land. However, in this period the characteristics of the struggle changed from the residential concerns of shelter and an equal share of services towards more commercial oriented concerns, which lead to struggles over urban land and property for commercial development of large-scale projects.

4.1. New spaces of growth

Two theoretical debates are relevant to explain to enhance innovation-oriented development of regions.

Regional Innovation systems

Regional innovation strategies that have been formulated as a new policy framework to support the needs of regions in innovative activities (Cooke, 1998a; Cooke et al., 1998; de la Mothe and Paquet, 1998; Braczyk et al., 1998; de la Mothe and Paquet, 1998a; Asheim, 1997; Asheim and Isaksen, 2002; Leigh, 1995; Mc

Kibbin, 2000). A regional innovation system is defined as "collaborative relations between the actors that translates knowledge into regional income growth" (Landabaso, Oughton and Morgan, 1999). If the actors of the system are specified the definition becomes as "a system in which firms and other organisations [such as research institutes, universities, innovation support agencies, chambers of commerce, banks, government departments] are systematically engaged in interactive learning through an institutional milieu characterised by embeddedness" (Cooke et al., 1998:1581) The argument indicates that the different kinds of R&D institutions complement and compete with one another in support of learning processes and innovative activities (Gregersen and Johnson, 1997). At the regional scale, Cooke, Uranga and Etxebarria (1997) define an innovative industrial cluster as the area likely to have firms with access to others in similar or complementary sectors as customers, suppliers and partners. They also have access to such knowledge infrastructure as universities, research institutes, research organisations and technology transfer agencies.

A regional innovation system aims to combine traditional, context-linked, regional knowledge with codified, worldwide available knowledge to stimulate regional endogenous potential. In this process, the *innovating firm* is defined as the foci of the innovation process, which is surrounded by different actors who are linked to each other within innovation activities, including their support industries (Asheim and Isaksen, 2002). In regional innovation systems, *institutions* are very important, since they determine the rate and the direction of innovative activities (Lundvall, 1998). In innovation systems, regional governments have several roles such as a catalyst, a facilitator or a broker in the articulation of innovative activities. Articulation means linking regional actors and matching these actors according to their innovation needs, initiating collaborative activities among different actors and designing policies to integrate all actors in a regional innovation system (Landabaso, Oughton and Morgan, 1999). Lastly, *networks* constitute the major component of an innovation system, since the main character of this type of territorial systems is their efficiency to create, diffuse and exploit knowledge. Networks enable the transfer of knowledge among the different parts of the system. There are flows of intellectual resources between institutions, which are linked with formal and informal networks and firms are the important parts of these networks whose activities initiate, support and diffuse new technologies and innovations (de la Mothe and Paquet, 1998).

Smart specialisation

Smart specialisation has been highlighted by the European Commission as a central pillar of the *Europe 2020 Strategy*. The Europe 2020 Strategy is intended to

act as an umbrella organizing framework under which all EU policies will operate over the coming decade. The smart specialisation argument emerged originally out of the literature examining the transatlantic productivity gap. The concept was first sketched out by Dominique Foray and Bart van Ark and subsequently developed along with their co-authors Paul David, Bronwyn Hall and by other members of the "Knowledge for Growth" expert group.

In particular, the concept has been defined as a central element in the development of a reformed European Cohesion Policy, which is based on the principles of 'smart growth', 'green growth' and 'inclusive growth'. How a smart specialisation strategy is envisaged to operate as a central theme in a post-2013 reformed EU Cohesion Policy is explained in *Regional Policy Contributing to Smart Growth in Europe* [COM(2010)553]. Here, the argument is that regions will be required to identify the sectors, the technological domains, or the major arenas of likely competitive advantage, and then to focus their regional policies to promote innovation in these fields. In particular, the argument is crucial for the regions which are not on a major science-technology frontier. From a regional policy perspective, the smart specialisation approach offers some potential advantages for both understanding the evolutionary nature of regional economies, and also for the design of appropriate policy-making. However, the application of the smart specialisation concept to a regional rather than a national case is not simply a matter of re-drawing the cartographical boundaries. Regions are far more open than nations and this brings to the fore externality and interdependency issues.

Metropolitan Cities

There exist two opposing standpoints on the role and the interest of the state on urban areas. Globalisation literature concentrates on devolution processes and defines cities and metropolitan areas as autonomous units (Scott, 2001). The devolution of the nation-state and its decreasing role, however, does not mean that the nation-state has lost all of its functions. On the contrary, in recent years many nation-states have declared their interest to enhance the competitiveness of their cities and metropolitan areas and have put forward supporting measures to enhance their innovative policies. In this context, several metropolitan areas are defined as "golden eggs" – a source of competitiveness of the national economy by the national government (McGuirk, 2007).

The literature of 1990s and 2000s indicates the sustained interest of different central government institutions in major metropolitan regions (Thornley and Newman, 1996; Gordon et al, 2004; McGuirk, 2005; Salet, 2006). Firstly, central governments accept metropolitan areas as the core of national economic

development and try to be a part of the economic restructuring and revitalisation through different organisations. Secondly, central governments try to retain control over certain activities initiated by the local authorities in major cities (Gordon et al., 2004).

However, over a quarter of world metropolises witnessed population decline in the 1990s, and despite urbanization trends, these population losses are expected to continue (Oswalt and Rieniets, 2006). Oswalt and Rieniets (2007) indicated that in the last 35 years, 370 cities with a population of 100,000 or more have lost at least 10 per cent of their population, particularly in Europe; and Turok and Mykhnenko (2007: 168-169) found that at the end of the 1990s there were more shrinking than growing cities in Europe. According to the Urban Audit (EU, 2007), out of 220 small- and medium-sized cities in Europe, 57 per cent lost population during the 1996–2001 period, and the European Commission estimates that by 2020 population decline will have been experienced all over Europe, and that in-migration will be unable to compensate for the losses after that year. The situation is much the same in developing countries, with UN-HABITAT reporting that out of 1,408 developing country cities, 143 have experienced population losses in the 1990–2000 period. It has been argued that while globalization encouraged the growth of competitive and innovative metropolitan areas, global cities (Sassen, 1991) and city-regions (Brenner, 2000; Scott, 2001a,b) while it had negative consequences on cities that were not able to adapt to the new conditions imposed by globalization.

4.2. Major drawbacks

Existing theories do not deal with the problems of regions under volatile economic conditions. There are no rigorous explanations behind the responses of regions to recessionary shocks, which is the main characteristic of the contemporary era, and the limited concern of existing policies to deal with the recession (Eraydın, 2016).

It can be argued that there is a lack of attention to the increase of recessionary shocks and limited concerns regarding the responses of regions to shocks, in other words, the lack of a resilience policy in practice. That said, as Swanstrom *et al.* (2009) emphasise, even the most prominent areas cannot adequately address the crisis on their own, which necessitates state policies. Some state policies are specific to labour markets (Duval *et al.,* 2007), the financial system (Brugiglio, 2009; Christopherson *et al.*, 2010) or the enhancement of institutional capacity (Hill *et al.*, 2008; Davies, 2011; Wolfe, 2011), but they fall far short of discussing the general performance of regions. There are some new additions to the body of literature that indicate the importance of economic planning (Cowell, 2013) and

restructuring programmes (Carlsson *et al.*, 2014) in the resilience of regions, although most of them focus on the recovery of regions rather than on building capacity to respond successfully to recessionary cycles. There are several references to the contributions of spatial planning to the resilience of regions. Foster (2007) pointed to the importance of the ability of political authorities to put in place effective planning and implementation strategies, and while Albers and Deppisch (2013) claimed that spatial planning has already contributed to urban and regional resilience, based on their studies of Stockholm and Rostock.

The literature seems weak on the theoretical foundations of institutional and multi-level governance frameworks

While creating important changes in the economy, according to contemporary literature globalisation also enforces the changes in the institutional structures. Salet, Thorley and Kreukels (2003) define the institutional transformation to all European cities after the 1980s, a reduction in the government's proactive role in the society and the diversification of decision-making throughout a wide range of organisations and the restructuring of intergovernmental relationships. In other words, what happened is the change in the institutional structure of different spaces concerning the shift from welfare state to "a more varied and complex pattern". Rescaling is defined as an implicit and/or explicit process-related primarily to the territorial re-organisation of statehood, in terms of the policies carried out by the State at the different scalar levels (Kazepov, 2005).

The territorial reorganisation can be the outcome of both implicit and explicit type of rescaling. Implicit rescaling is the territorial re-organisation of social policies that might change the balance between specific measures regulated at different territorial levels, whereas explicit rescaling occurs through explicit reforms shifting regulatory authority and fiscal capacity to institutions at different territorial levels. In other words, it is possible to discuss the redefinition of the different scalar levels of provision of services and resources besides the authority of the different institutions, especially public ones. The negotiations among the different actors of decision-making become a natural part of this process leading to the need for the legitimisation of the new rules and regulations.

V. CONCLUSIVE REMARKS: 2000+ FUTURE TRENDS

5.1. What are the expected changes that will define the future of the world economy and the economic spaces?

Although it is not easy to define the future due to fluctuations and expected changes in economic, political and environmental issues. That said, there is almost a consensus on certain issues (see Table 3).

Table 3: Major changes expected after year 2020

Major changes	New concepts and issues
Automation	Further automation in manufacturing
	Low labour investment
Artificial intelligence	Robots displacing jobs
Digitalisation/virtual networks	The new face of retail
	Loss of office spaces
Public services	Basic universal services with no cost
	Healthcare service receiving more attention
Labour	Unemployment and labour demography
Protectionism	Industrial patriotism
	Silent rise of nationalism
Governance	Agile governance
	Trust as a value

The first issues are connected to new technologies.

Automation in production activities is one of the issues shared by several scholars. As one of the studies underlined robots predicted to displace 50% of jobs by 2035. The share of manufacturing employment which has already declined in advanced countries will be growing smaller also in the developing part of the world. That will have important repercussions not only in productions systems but also socio-economic issues. Creating employment will be one of the critical problems and have implications on labour markets? The skills necessary to find jobs may be quite different in the near future.

Artificial intelligence is getting increasing attention. Some scholars underline the importance of productivity. They claim that the use of artificial intelligence will increase the productivity of the firms that can use this technology and will gain a competitive advantage.

Another widely accepted issue is the increasing ***digitalisation*** of various economic activities. It is possible to say that everything becomes smart as everything becomes connected. We're on the road to the internet of things where everything is connected, not only to the internet but also to one another. The digitalisation and boom in internet usage can bring radical changes in the way public services are provided. Actually, the world experienced such a change

in education and different types of government services and even health services during COVID 19 period.

What also expected is the change in how public services are delivered due to the decreasing cost of digital platforms. Basic universal services can be delivered at no cost, which is very important for enhancing free opportunities for different social groups. Moral capitalism will favour redistribution over inequality. Education and healthcare services can use the new technologies and this may be important for increasing access of the urban poor to different services. Actually, in the last decade, we have observed that many government services are digitalised and this may be widespread in all fields. That is also what happens in the retail sector. China recently claimed that 37 per cent of its retail sector was digital compared to 11 per cent of the United States.

The second trend is increasing global commerce and global flows of financial and human capital. Transnational corporations now wield as much, if not more, power than nation-sates. As of mid-2019, the total market capitalization of the five "FAANG"s (Facebook, Apple, Amazon, Netflix, and Google) hovered near $3.2 trillion. At the time that was more than the total world economy of all but four countries: the United States, China, Japan, and Germany (Bray, 2020). When trans-national corporations are this large, it is not clear whether nation-states or corporations have more geopolitical power.

Besides the above-mentioned issues, several scholars are defining the change in institutions, policies and politics.

Various studies claim that there are signs indicating that increasing economic and industrial patriotism and silent rise of nationalism, which is supported by protectionism against free trade. The hyper-globalisation that experienced in the last decade triggers protectionist reactions. Economic patriotism arises also as a reaction to growing economic interdependence and many countries are suffering from the deficit due trade.

Clift and Woll (2012) argues that 2008 "crisis may have revealed that in a world characterized by an overlapping network of economic governance regimes, politicians face the 'paradox of neo-liberal democracy' (an idea developed by Colin Crouch), namely their political mandate is to pursue the political-economic interests of their citizenry under conditions of complex economic, legal and regulatory interdependence where large parts of economic governance are no longer exclusively within their control." In the coming years, both citizens and governments will become more protectionist in their consumption habits or will have to redefine their supply chain. How to deal with this paradox seems very important to define the future and future spaces.

How can these principles be formulated concerning global economic relations? Different perspectives are providing different answers to this question, such as "greater intra-regional closure of the economy and greater self-reliance," as Hudson (2009:17) has suggested; or "relying on endogenous capacities," as claimed by Simmie and Martin (2010: 45-58). However, how far it is possible to "create more self-contained regional economies while securing the successful transition to ecologically sustainable and socially just forms of the regional organisation, economy and society" (Hudson 2009:17) is still an important question.

On the other hand, the experience of the COVID 19 period underlined the importance of some issues: inclusive growth, agile governance and faith in institutions.

Inclusive growth

Recent figures showed both permanent and temporary job losses. Job losses resulted from social distancing and stay-at-home, although there appeared growth in some sectors, such as logistics. While some regular jobs can recover after COVID 19, forecasts indicate that unemployment may increase, since many companies try to shift spending from wage earners to abundantly available freelance workers. Both increasing unemployed and the ones who lost enough income opportunities necessitates the governments to adopt inclusive growth policies.

Agile governance

The demands of governments are diversifying, deepening, and quickening. Traditional policy development lags innovation, and the incongruence between corporate and citizen expectations and the agility in public institutions is rising. Traditional governance structures and policy-making models need to evolve from cumbersome and slow, to agile and responsive.

Faith in institutions

Faith in institutions, government and communities are essential during a crisis. Trust in, and between institutions is critical at both an economic and societal level. The credibility of information sources will become strategic, as will transparency and deep knowledge, elements.

A new value system

Besides advocating equity, empowerment and environmentally sensitive economic development, there is need to encourage new ethics that are based

upon the responsibility of everyone to protect him/herself, with the right to protest those who do not comply with the basic ethical standards (Hudson 2009:19), which is a crucial factor in the way urban land and urban services, including ecosystem services, are used or provided. Moreover, building a value system is very important if antagonism and hegemony of power on urban systems is to be reduced. If there is no value system defining the expectations for the future, then every agreement will silence some and not others, and every decision will favour some over others (Hillier 2002; McGuirk 2001; Tewdwr-Jones and Allmendinger 1998; Purcell 2009). Without value systems, consensus or agreement stabilises power (Mouffe 2000:104), which may have very negative consequences in the long term for different resources and the way urban areas are used.

What is about economic spaces?

There are several debates trying to foresee the future, such as:

Mega-regions/cities (Bray, 2020)

"One structural possibility is hyper-regionalism, defined by what technological, commercial, and protective flow of humans, animals, and plants arises. This could be embodied by mega-cities becoming dominate geopolitical actors, dramatically redesigned in the future to provide essential services. This situation may be defined less by national identity and more by what they provide those individuals who live within the municipal areas.

Mega-cities of the future, empowered by technology to provide for those within the immediate vicinity and capable of responding at faster speeds than nations, would forge their trade agreements, public health arrangements, and climate change accords with other cities globally, via direct diplomatic relations-or a devolution away from large nation-states to smaller regional powers defined by identity.

Transnational companies

Transnational groups, organized either by ideology or corporate identity, replace the concept of nation-states defined by geography. Technological solutions may arise tied to a person's passport, or services may arise tied to a person's place of employment, commercial laboratory testing service, or some other global mechanism similar to how anyone can become an e-resident of a country without residing in or being a citizen of that country. The nation-state may be replaced with something that is more network-centric in nature.

Above discussions is all guesswork. What is clear that is we are at a turning point and we have two options.

The first one is: Back to issues of regional development, struggling against the inequalities, providing free basic services with the help of digital technologies. In this case regions as the main unit to bring a more equal and sustainable world.

The second one is: Technological advancement bringing polarisation, negative conditions for labour, increasing disparities, unemployment. This scenario means the increasing dominance of certain nodes giving less chance to the remaining ones.

Which way to build our future is though not certain depends on us. As Arnold Toynbee stated after analyzing the dynamics of development of all the major civilizations throughout history, "A civilization will begin to disintegrate when it loses its capacity to respond creatively to major challenges. Particularly in a democratic society, when civilization fails to employ its inventive capacity and begins to disintegrate, then it is the people themselves who bear ultimate responsibility."

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KEYNOTE SPEAKER

13 October 2020 Tuesday, 11.30 – 12.00

Prof. Dr. Ewa STACHURA

Housing in a Contemporary City: Liberal Economy versus Sustainability

HOUSING IN A CONTEMPORARY CITY: LIBERAL ECONOMY VERSUS SUSTAINABILITY

Ewa STACHURA*

ABSTRACT

Housing development is a predominant component of urban fabric in cities. Its quality is defining standard of living in terms of inhabitation, work and leisure. High demand for new homes and high costs of housing property purchase in most of European countries stimulate rapid development of new settlements.

The aim of the paper is to identify and characterise selected housing market factors that influence contemporary urban development of cities in Poland. After 1990, when the economic transformation in Poland started, it has strongly influenced the shape and spatial circumstances in Polish cities. The liberal economy in the period of transition did not result in many social housing projects. The role of the state investor, who has been building the major part of housing estates before 90. was taken over by developers who build houses and housing estates for sale or rent. This is a typical feature of the Polish housing architecture in the discussed period.

On the opposite pole to the phenomena mentioned above various concepts of sustainable, high quality city have been elaborated. A sustainable city provides their residents a good quality of living: satisfactory social links within the neighbourhood and easy access to work and all kinds of services accessible by public transportation. Location criteria for new subdivisions protect valuable areas and respect local climate phenomena. Building technologies implemented enable saving of energy and other recourses and also improve the microclimate of the neighbourhood.

It may be assumed that the attempts to make cities more sustainable depend mainly on housing market factors as land supply for developers, prices of homes and residential preferences. Nevertheless, these factors often force development projects contradictory to the rules of sustainability. The conclusion of the paper therefore will attempt to formulate the diagnosis of the relationship between housing market and requirements of sustainable development of cities.

Keywords: Housing environment, sustainable city, liberal economy.

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1. INTRODUCTION

Today cities formulate strategies presenting their approach to sustainability. Detailed programs of actions that can help to achieve better and healthier living conditions get accepted by the governments and citizens.

During the last 20 years, the architecture and design community has established a consensus that sustainable development presents a vital topic in predicting and implementing future trends, needs, production and consumption patterns. Sustainability so is affecting the built environment and is modifying people's lives. New trends of use of the living space come from the new concepts of urban layouts and architectural projects for the housing environment (due to the sustainability rules) as well as they are results of technological development. The interdisciplinary cooperation is then necessary to meet the complexity of problems connected to global sustainable development. In practice, the urban and architectural design of sustainable housing environment should be considered in conjunction with technical, social and cultural conditions.

Ecological advantages, urban and architectural design can work as a catalyst for the advancement of social sustainability and social inclusion. A holistic approach in design, considering the social, economic and ecological dimensions of solutions, maximises the success of future developments. The above quotes illustrate that the way sustainability is framed in the architecture and design disciplines determine the issues that are considered important: technology fixes, user involvement or cultural and social interaction. The actions within the micro-level provide a better, more sustainable way of the use of some products: they can be implemented with only small expenditures but must be promoted and supported by the educational campaigns addressed to the user. To this level also belong the small improvements of existing products: e.g. non-toxic (or low toxic) fuel used by existing home heating systems. The meso-level includes new, sustainable products and technologies for construction projects. This group of improvements concerns all the innovative technologies and materials therein sustainable façade systems, intelligent services. In the last decades, we can observe the rapid development of the product services belonging to this group. Finally, the macro-level concerns more complicated action structures: network cities respecting sustainable rules, processes of social participation and neighbourhood organisation (Keitsch, 2012).

2. WHAT DOES THE SUSTAINABLE HOUSING ENVIRONMENT MEAN?

As a broad concept, sustainable development is today an unavoidable mainstream connotation, with increasing implications on how we reside, conduct business and educate. Ranging from policy agreements or guidelines to

pragmatic in-practice approaches, the global challenges we face in the time of rapid changes (whether climatic, financial or social) are addressed differently. The idea of sustainability can be applied practically to all aspects of human society and activities influencing economy and political systems, affecting ecological and environmental behaviour and social habits (Bannova, Hagbert, 2014).

2.1. Urban attributes of sustainability

Sustainability in housing environment appears already at the stage of planning. Lands for future investments must be carefully selected according to the rule of protecting the biologically active areas of the earth. This means so that the construction sites for sustainable estates would cover also the less attractive and difficult locations never landscaped before or the brownfields. All types of location specified above usually bring urban and technological challenges during the design and building processes. The other possibility to achieve a sustainable settlement is transformation of the existing fabric by improving technological quality of development and social aspects of the quality of living. An alternative for the urban sprawl creating extensive suburbia will be rather a set of new eco-districts independent of the city infrastructure.

The eco-district size of about 5-10 thousands inhabitants and sufficiently high density of development justify the local services and facilities building. Eco-district may have own transportation system, recreational and green areas and social infrastructure. It has also local job possibilities. The compact structure increases accessibility of services and encourages residents to give up the car for a bike within the district. On the other hand, efficient transportation network enables gratification of higher needs. Urban quality of the eco-district makes its structure: differentiated scale, height and types of buildings. Attractive public spaces and urban furniture help to create social life and establish neighbourhood ties (Drapella-Hermansdorfer, 2011).

2.2. Architecture design quality

While the forms of architectural response to environmental issues will differ markedly from place to place, the professional field of sustainable architecture until now has followed a trajectory similar in all developed countries. Initially the discourse was dominated by issues of energy efficiency, but quickly expanded to include broader environmental and social concerns. Currently the field encompasses a diversity of practices and perspectives that range from the pragmatic to the esoteric and extend from local discourses of place to global discourses of technology. Architects suspect that sustainable architecture is probably a term that will disappear in the future because what we are talking

about is good architecture and good architecture should be sustainable. The extreme version of this view is to construe sustainability and architecture as synonymous; sustainable architecture becomes a tautology where it is not "architecture" unless it is "sustainable" (Owen, Dovey, 2008). Sustainability has a certain currency or symbolic capital in the field, but only to the degree that it can be seen as producing good architecture. Sustainable imperative is responsible for a productive unsettling of the field, transforming the space of possibilities and producing new ways of thinking about architecture.

Respecting the principles of sustainable design an architect may use two groups of tools. The first consists of the so-called "traditional approach", while the other means implementation of sustainable technologies (Schneider-Skalska, 2012). Implementation of the so-called traditional pro-environmental actions is always supported by the use of modern, innovative technologies. Altogether they include the following actions to achieve sustainable architecture:

- Use of recyclable materials and restoration - is the appropriate choice of materials at the design stage, that they can be recycled and used in construction again;
- Water storage system - in addition to the construction of water reservoirs, rational use of water and the recovery of waste water systems should be implemented, e.g. "gray water" in toilets;
- Building orientation for daylighting;
- Attention to air quality in buildings to avoid "sick building syndrome";
- Striving to reduce the electricity consumption, replacing electricity with renewable energy;
- Use of environmentally friendly materials for building construction to minimise toxic and noxious emissions to air and waste.

All the actions mentioned above should be supported by the use of innovative energy-efficient materials and technologies, including building control systems (Zielonko-Jung, 2012). This concept of sustainability in architecture must affect the architectural form. New materials and technologies bring new forms and create a new language of architecture. The most pervasive among them seem to be *green architecture* and *vernacular architecture*. While the *green architecture* focuses on fitting the building into the natural environment, respecting location and the climatic conditions using simple, natural and low-processed materials, *vernacular architecture* (called also *folk architecture*) means the use of local skills, traditions and recourses in building design.

2.3. Social aspects of sustainability in housing

Sustainable settlements promote local governments and all kinds of social activity. An important role is played by social participation that allows creating original, individual design concepts and development. Participation in the design process teaches residents responsibility for their environment and encourages to creativity. Thanks to such creativity housing environment may become exciting place of living, neighbourly friendly, safe and giving a chance of personal development to everybody (Sassi, 2006). New settlements designed according to the rules of sustainability would have access to green recreation areas and also should have access to the fields and gardens used for home – or collective, limited ecological food production. New "garden" activities may enrich neighbourly ties and improve mutual confidence helping at the same time partly solve the unemployment problems and supply healthy food to community residents (Kujawski, 2012).

2.4. The essence of innovation in architecture and construction industry

The innovativeness of residential buildings is always a result of novel architectural solutions, both in terms of construction and organization, referring to the investment process. As far as architecture is concerned, innovative buildings have a form that stands out of the binding standards, reflect new trends in style and are experimental. Their structural materials should be environmentally friendly and recyclable. The finishing and furnishing should be consistent with the principles of ergonomics, as well as with other health and ecological requirements. Houses endowed with innovative qualities offer economic benefits to their users, because thanks to new materials and technologies their maintenance costs are reduced and safety level enhanced (fire protection monitoring, burglar alarms, etc.) They contribute to environmental protection by reduced energy consumption and rationalization.

Commercial architecture has provided a test field for such innovative solutions, especially office buildings, the functionality and maintenance of which cause intense problems. Innovative solutions in housing, transferred from commercial architecture, have been applied in apartment buildings offering high standard of flats and commonly used space. However, this offer is targeted at wealthy consumers, first and foremost, inhabitants of the Warsaw agglomeration and several other big Polish cities. Consumers undertaking the decision of buying such expensive property expect super-standard quality. Some more advanced technical solutions (mechanical ventilation, lighting control, heating control) are gradually introduced in segments of cheaper flats and are becoming popular.

The process of political and economic transformations have resulted in opening up the borders and welcoming new technologies, unhindered transfer of architectural ideas and concepts. International contests organized by Polish investors attract famous architects and their works are pride of place in Warsaw and other big cities. Polish design offices also participate in the contests and thus join the group of world-wide recognized architects. Renowned designers guarantee high quality architecture, their works are recognized landmarks that become part of their brand. Attractive and innovative architectural concepts are a response to new needs and requirements for housing, work environment and leisure facilities.

Solutions reducing maintenance costs of buildings are also an important field in which innovation is implemented. They bring tangible financial benefits for users, as well as satisfaction from their environmentally-friendly aspect. Maintenance costs may be lowered by reducing the demand for energy consumed by energy-intensive equipment and by energy conservation. In the case of the former activity, energy-efficient heating systems may be installed, or systems utilizing natural energy sources (for example: solar panels). Energy Power consumption may be reduced by energy-efficient and more durable bulbs and lighting systems, lighting control, heat supply control of flats and commonly used space inside buildings. Such solutions are convenient for occupants, as they develop the habit of conserving energy. UE standards and increasing requirements also promote the use of fire monitoring systems, burglar alarms and central monitoring enables cheaper and more reliable service and control of buildings. Another source of potential savings is rational supply and distribution of energy carriers.

The process of implementing innovative solutions, especially environmentally-friendly ones, is very dynamic in the construction industry; however, it arises some questions and doubts especially as far as financial layouts and the related savings are concerned.

3. FINDINGS OF THE STUDY

3.1. Methodology

The research findings were drawn from the survey where respondents were asked to answer 30 questions on both current and expected housing conditions. Housing conditions and expectations refer to a flat, an apartment building, a housing estate and location. The principal aim of this paper was to analyse selectively some key characteristics of housing environments. The criterion of choice was defined as follows: Can the property be considered as an indicator of sustainability. The study was a part of a research grant: *Housing preferences in Poland - Housing Models*. Respondents represent 11 Polish cities; the group of the biggest cities: Warsaw, Wroclaw, Krakow, the average city size: Bielsko-Biala,

Lublin, Szczecin and Silesian agglomeration: Chorzow, Gliwice, Katowice, Sosnowiec and Zabrze (N=900). Respondents belong to five segments of households: single, 1+1, 2+1, 2+2 and 2+3, and four income groups. Using the quota method, within each segment, eight building types inhabited by the respondents were selected.

3.2. Acceptance of selected elements of a sustainable housing environment the research findings

The research bears out the need for rigorous policy to support sustainable housing environments at both the levels of EU institutions and European government. In Poland, as is the case in other countries, the government should create legal, financial and institutional conditions to promote pro-environmental housing development. Robust legislation will enable state institutions to finance innovative projects and also open attractive possibilities for private sector investment in sustainable building technologies. These processes are progressing slowly in Poland with varying results. At the same time, we can observe the growth in pro-environmental awareness by city planners and architects. This is having a positive impact on the attitudes of investors and home buyers and is helping to promote sustainability principles. Nevertheless there is still a critical need for countrywide education and media campaigns for sustainable living environments in Poland.

Nevertheless it must be recognised that a perception still exists that new, environmentally friendly solutions and technologies in residential buildings can generate unacceptable additional costs in comparison to traditional development. This problem is often apparent in the "pioneering phase" of new and developing technologies when information about innovative technological measures has not been fully explained and widely disseminated.

Environmental sensitivity in relation to building technologies, however, is only one factor that will induce consumers to bear higher initial costs for a house/flat that incorporates various sustainable living measures. The purchasing power of the majority of buyers will severely limits pro-environmental motivations and attitudes. Buying an “intelligent home”, in Poland is still considered a luxury, a manifestation of lifestyle/snobbery. Hence the kinds of that incorporate sustainable environment solutions are usually offered to wealthier citizens in tower blocks representing some of the most expensive housing complexes in the big cities. Use of innovative and environmentally friendly solutions in housing developments can also raise the price per 1 sq. m. often making people choose between say the floor area size and the possible sustainable technologies. It is noteworthy here that as new technologies develop and are massed produced

this lowers the unit price of such technologies. Photovoltaic cell production is an example of this phenomenon. The next decades are likely to show the choices that are affordable to Polish citizens and the importance of sustainable housing solutions in the process of housing choice.

As indicated above, the research findings were drawn from the survey where respondents were asked to answer 30 questions on both current and expected housing conditions. Housing conditions and expectations refer to a flat, an apartment building, a housing estate and location. The principal aim of this paper was to analyse selectively some key characteristics of housing environments. The criterion of choice was defined as follows: Can the property be considered as an indicator of sustainability.

Among the features of a housing environment we can distinguish two groups of characteristics related to sustainability. The first group includes the **attributes of the dwelling and the building**, and the second includes the attributes of the **social dimension**. Respondents evaluated proposed features in their current home on a scale of 1 to 5, where 1 is a very low standard and 5 a very high standard. Using the same scale, they then assessed the level of importance of the same characteristics in the future home they intend to purchase (In this case 1 is a low level of importance, and 5 a very high level of importance).

The first group of characteristics included the evaluation of acoustic comfort, thermal comfort and energy efficiency. While the current standard for properties of a flat were rated average, the majority of respondents indicated that they are important or very important. Analysing the level of importance of acoustic comfort, thermal comfort and energy efficiency it can be concluded that the respondents expect both high standards of acoustic and thermal properties as well as energy efficient solutions. This indicates that the knowledge about pro-environmental technologies and materials is already widespread. Respondents also understand the nature of energy efficiency and realize that the implementation of energy saving technologies does not mean the resignation or diminution of thermal comfort in their flats. It is worth noting here that there is a significant gap between the current use of energy-saving solutions and quality of life expectations in Polish housing. Respondents unanimously declared that the energy efficiency technologies would be very important or important in their future flat/home (87.9%), while only 20.4% of them use such technologies now. Social attitudes of the housing environment seem to be of lesser importance for respondents. Expectations related to attractiveness and image of the district and easy identification of the neighbourhood were not very high. Respondents declared that the image of the district in which they live is important for them (but not very important!) and that they do not expect a better image for their

future settlement. This result can be interpreted as an indicator of the low level of identification with the place of living: i.e. the district, the housing estate and the building. It also could denote a passive approach to the value of a strong and positive image. Respondents tend to believe that the image or perceptions about a housing estate is something that they cannot influence. Attractiveness of the district, however, doesn't create a priority in terms of the future place of residence. This research result may be surprising because city housing market prices are thought to be strongly correlated with favourable locations and attractiveness. Respondents also evaluated and expressed their expectations in relation to attributes of the housing environment such as sense of security, sense of privacy and the ability to establish satisfactory neighbourly relationships. The senses of safety, security and privacy have the highest degree of importance for respondents. Interestingly it appeared that respondents do not feel safe in their current flats and houses. The expectations of a safe housing environment related to a future home is much higher than the evaluations for current housing conditions. The sense of privacy only partly satisfies city inhabitants and its importance for respondents is equivalent to that of safety. The findings related to expectations of neighbourly relationships are also surprising. This aspect of the current housing environment is assessed in a similar way to that of safety. But unlike the sense of safety, it is accorded only average importance in terms of the future living place.

The findings presented in this paper show that consumers in Poland are open to technical and conceptual aspects of sustainability. Low social capital, however, may hamper the development of sustainable communities in Poland (Stachura, 2013). And low social capital related to the housing environment means distrust of neighbors, reluctance to build communities and low level of identity with the place of residence. The phenomenon of low social capital is worrying, because it can create a barrier to community building. It is hoped that with appropriate policies, education and promotion, sustainable communities will become the new driving force behind the growth of social capital.

4. CONCLUSIONS

This paper discusses key concepts, methods, applications and lessons learned in sustainable architecture, design and housing environment in last 30 years in Poland. In the majority of cases new housing complexes are not very big: they consist of several buildings for about 100 - 500 inhabitants. Such estates are blended into the existing urban and social structures, both in city centers and in the outskirts. Together with the existing development they change for the better the quality of the housing environment: they contribute to organize the space,

they also propose new architectural forms and technologies. As indicated above sustainable housing environment (and architecture) shall be thus well built, easy to use and beautiful. Implementation of sustainability rules is strongly affecting residents' behaviour.

Housing conditions are closely related to housing preferences. Improving housing conditions that is one of the most important aspirations of Polish households means an increase in the standard of living understood as a conglomeration of characteristics of a dwelling and its environment. The level of dwelling attributes importance for Polish consumers in the nearest future will depend on the strongest megatrends: innovations and sustainability.

Housing market factors may threaten sustainability goals by pushing out new settlements to low-quality locations, limiting greenery and small scale agriculture around cities and finally, promoting homogenous social structure of neighbourhoods. These trends are more potent in countries of growing economies while the higher average level of wealth enables new developments of better quality. It leads to the pessimistic constatation that the liberal economy characteristics define housing environment development frames.

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KEYNOTE SPEAKER

14 October 2020 Wednesday, 09.30 – 10.00

Prof. Dr. Robert CERVERO

The Transit Metropolis Revisited

THE TRANSIT METROPOLIS REVISITED

Robert CERVERO*

Abstract

In *The Transit Metropolis*, written in 1998, I identified two ways which transit services and urban development patterns have been integrated globally: by adapting cities to transit and by matching transit services to urbanization patterns. This chapter revisits the transit metropolis models in light of powerful and unfolding megatrends – aging societies, shifting demographics, changing employment structures as well as changing lifestyles (e.g., collaborative consumption), public policy agendas (e.g., decarbonizing cities) and technological advances like autonomous mobility. Collectively, such forces buttress arguments for adaptive cities that are resourceful and efficient as well as adaptive transit that offers a more diverse, often atomized set of mobility choices. It is argued that both models of sustainable mobility and urbanism can, and indeed should, co-exist in any metropolitan context. International case experiences are highlighted in this regard.

1. Introduction

The Transit Metropolis was written some two decades ago, at the close of the 20th century, as a framework for advancing sustainable urbanization and mobility (Cervero, 1998). This chapter revisits the transit metropolis models from a 21st century perspective, reflecting on shifting societal and lifestyle trends, changing public policy agendas, and emerging, potentially transformative technological advances. These forces, I argue, buttress arguments for both adaptive cities and adaptive transit – i.e., cities that are resourceful and efficient in their designs as well as adaptive forms of collective-ride transport that offer more diverse mobility choices. Both models of sustainable mobility and urbanism can, and indeed should, co-exist in most 21st century metropolitan contexts.

2. The Transit Metropolis: Core Principles

The central premise advanced in *The Transit Metropolis* – that cost-effective transit services rely on a 'glove-in-hand' fit between urban settlement patterns and transit service designs and technologies – still holds today, perhaps even

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more so. More is required, however, than the integration and coordination of transit services and urban development. Notably, direction matters. Normative, holistic visions of urban futures should shape transit investments and policies, I argue, more than vice-versa. This reflects the derived nature of most travel – i.e., people hop on trains and buses to go places, and it is the designs, qualities, and make-up of these places and what takes place in them that people value most, more so than the physical act of getting there. As with any utility, transportation is largely a means, and with few exceptions, not an end unto itself. An apt analogy is the design of a house. In conceptualizing and planning a house, future homeowners dwell on what matters most to them – the layout, floorplan, bedroom sizes, architectural styles, kitchen designs, and so on. They don't start by laying out the utilities of a house – the plumbing, wiring, conduits, and pipes – and then design the house around them. Scaling up to a city, the same holds: successful linkages of transit and urbanism require a fairly cogent, widely shared vision of urban futures, most notably a well-defined long-range spatial plan, and public transport investments and services should serve as one of many tools for achieving the vision.

Transit metropolises that successfully linked transit and urban development, the book argues, did so in one of two ways. *Adaptive cities* alter their urban forms – often through higher densities and mixed land-use patterns – to promote sustainable patterns of growth, for environmental as well as social and economic reasons. Investing in what is inherently the most resourceful form of urban mobility – high-capacity, high-quality transit, such as metros – case experiences show, is critically important to shrinking a region's environmental footprint, economizing on public expenditures through the containment of sprawl, and promoting socially diverse urban landscapes that invite people from all walks of life to come into frequent face-to-face contact, to among other things build social capital. A contrasting model is *adaptive transit*: modifying traditional (e.g., fixed-route, fixed-schedule) transit services to better serve largely market-driven, low-density settlement patterns, and in so doing making it more time-competitive with transit's chief competitor, the private car. Through more flexible and demand-response service designs, adaptive transit reduces or marginalizes what for many are the scourge of public transit – the dreaded transfer and first/last-mile access – so as to mimic the door-to-door connectivity of private cars, though in a group riding context.

In today's vernacular, adaptive cities embrace and embody transit-oriented development, or TOD: compact, mixed-use, highly walkable development that is physically oriented, not just adjacent, to major transit stops. With neighborhood activities centered around stations, residents are drawn, almost instinctively, to

transit when making out-of-neighborhood trips. The transit station and it surroundings are not just places to "pass through" to catch trains and buses. They are also "places to be" -- hang around with friends after work, shop at farmer's markets, enjoy an outdoor concert, or join in a public demonstration or celebration. As such, the transit station and the civic spaces and commercial development that surround it function as the hub of a community. At the metropolitan scale, networks of walkable communities are interlaced by high-quality, high-capacity transit. Within a 5 to 10 minute "ped-shed" of a TOD, green mobility dominates: most trips are by foot or bike. Longer, out-of-neighborhood trips are mostly by train or buses on dedicated running-ways. The necklace-of-pearls metaphor well represents the arrangement of TOD in Scandinavian transit metropolises like Stockholm and Copenhagen.

The contrasting model -- adaptive transit – has also been called 'development-oriented transit', or DOT. In places where minimally regulated land markets are left to run their course, producing spread-out cityscapes, a more adaptive form of transit is needed to compete with the private car. *The Transit Metropolis* highlighted cases like Adelaide with its track-guided bus ways (a precursor to Bus Rapid Transit, or BRT) and Karlsruhe, with its flexible tram-trains that morph between slow-moving tramways and fast-moving line-haul carriers, as examples. As discussed later, more contemporary forms of adaptive transit, or DOT, include micro-transit services like van-sharing Via in New York and Pickup in Austin, shared-ride taxi-like services such as UberPool and Lyft Line, and direct-line BRT services found in many Chinese cities.

The Transit Metropolis acknowledged a third form of city-transit relationships, called hybrids, with elements of both adaptive cities and adaptive transit. Here I conclude arguing that most transit metropolises are becoming hybrids – perhaps an inevitable "regression to the mean" (Stigler, 1997). This is all the more so in light of unfolding megatrends, lifestyle choices, and technological advances. It is to the topic of how such forces are redefining the 21st century version of the transit metropolis that I now turn.

3. Megatrends and Shifting Lifestyle Preferences

A number of powerful megatrends – aging societies and shrinking cities, increasingly diverse household types and structures, new patterns of employment -- are profoundly changing travel markets and forms of production (e.g., sharing versus ownership of cars). As a result, travel is becoming increasingly heterogeneous (over space and time) and more stochastic, less predictable in nature. In many ways, such trends work in favor of adaptive forms of transit while in other ways they are supportive of adaptive cities and TOD. Hybridization,

wherein cities adapt their urban forms and embrace shared mobility options, I argue, is a natural evolution – a response to unfolding megatrends and technological advances.

Aging Societies

The fastest growing age group worldwide is individuals 60 years of age and older, who in 2015 comprised some 12 percent of global population, up from 8 percent in 1950 (UN Habitat, 2016). Growing at a rate of 3.3 percent annually, those 60 years and over will make up nearly a quarter of the world's population by 2050, except in the poorest continent, Africa. Societal aging is most pronounced in East Asian countries like Japan and Taiwan, where the shapes of population pyramids have dramatically flipped over the past half century, from bottom-heavy pyramids to top-heavy torsos. Graying societies in advanced economies are a product of declining birth rates (owing in part to changing roles of women), tight immigration policies, and medical advances and health-conscious living that have increased longevity.

Reverberations from societal aging include shrinking cities, all the more pronounced where globalization, deindustrialization and social forces (e.g., race and class segregation) have gutted the interiors of many industrial-era cities, particularly in America's rust belt and Europe. Certain aspects of aging societies favor less travel and transit-supportive growth – e.g., reduced household consumption, motorized travel, and commuting during later stages of lifecycle; residential down-sizing and empty-nesting to urban cores; a growing for appreciation for walking, cycling, and other forms of "active transport" as a means to stay physically fit. Other aspects of aging and accompanying trends could induce travel and car-oriented development – e.g., comparatively wealthy and thus relatively more active and mobile older households; aging-in-place in car-oriented suburbs; autonomous, self-driving vehicles that offer seniors door-to-door automobility. If autonomous vehicles are increasingly shared, they will effectively become a form of adaptive transit.

Public policies, like legislative mandates to de-carbonize cities, will influence the travel and urbanization impacts of aging societies. Shrinking cities could foretell a future of land reclamation, motorway de-construction, road dieting, and freeway-to-greenway conversions, as long as there is policy support to do so. With a rapidly aging population, South Korea has pioneered the conversion of motorways to greenways, especially in its national capital, Seoul. Increased land prices along Seoul's Cheongyecheong corridor, that was converted from motorway to a greenway, suggest that markets have placed a higher premium on livability and quality-of-place than on movement (Kang and Cervero, 2009).

Under the Walk-Friendly Seoul program, a number of Seoul's in-city neighborhoods, university districts, and even commercial roads have recently been converted into car-free zones. Seoul has also massively expanded BRT services while reclaiming land from cars and parking (Cervero and Kang, 2011). Thus elements of urban regeneration and BRT investments reveal an increasingly hybrid form of transit metropolis in Seoul's case.

Another example of reclaiming land and creating a more transit-oriented built form in light of shifting demographic trends comes from the suburbs of Seattle, Washington (Cervero et al., 2017). Thornton Place is a LEED-ND certified mixed-use development featuring senior housing and ground-floor retail, built atop a former surface parking lot of nearby shopping mall and adjacent to a major bus terminal-transfer facility. A light-rail transit station that connects the area to downtown Seattle will soon open. A formerly culverted creek alongside the Thornton Place project was day-lit, improving water quality, attracting water fowl, and encouraging many senior residents to take daily strolls. Housing units on Thornton Place's "Creekside", according to the project's web site, currently lease for 25 percent more than comparable units on the project's "Plaza-side" (i.e., facing the mall). With good nearby bus services and infill, mixed-use development, Thornton Place is a good example of TOD and DOT co-existing in a previously car-centric suburban setting.

The Millennials and the Shifting Economy

Millennials, the eponym for those in their late-teens to mid-30s, born between the early 1980s and the close of the 20th century, are radically transforming the demographic and cultural landscapes of modern societies. The traditional nuclear households they are not. Many are marrying and starting families later, opting out of having children altogether (i.e., dual-income, no-kids, or DINKS, households), or remaining single. They are thus associated with dramatically shrinking household sizes, in the case of U.S. from a mean of 3.14 in 1970 to 2.53 in 2018 (Statista, 2018). As notable are differences in core values and lifestyle preferences compared to prior generations. Unlike their parents and baby-boomers, where ownership of two major and costly assets – houses and automobiles – tended to be life-long goals, Millennials have other aspirations. Litman (2015, p. 25) writes: "much of the money, time, and excitement that previous generations directed at cars, Millennials direct at electronic devices (mobile phones, computers, sound systems)". Rather than 30-year mortgages and high-interest car loans, Millennials are more inclined to direct their incomes to travel, eating out, going to concerts, and other "life experiences". One survey of U.S. millennials revealed that 30 percent are willing to give up owning a car

even if it means paying more to travel around (Dutzik et al., 2014). Declining shares of Americans aged 18 to 35 without driver's license compared to the past further underscore dramatic lifestyle shifts that underway (Sivak and Shoettle, 2012; 2016). Millennials are fueling the meteoric rise in shared and rating economies, which in the housing sector is no better represented than Airbnb and in the transport sector reflected by the omnipresence of ride-hail services like Uber and Lyft in trend-setting western cities like San Francisco and London and Didi throughout urban China.

Millennials are also profoundly reshaping the geomorphology of cities, not only in terms of residencies but also workplaces, retailing, and entertainment activities. Many are drawn to accessible, walkable, connected places, increasingly in traditional urban cores (Juday, 2015; Cervero et al., 2017). Mixed-use environments that support a live-work-shop-learn-play lifestyle are particularly popular, as is good public-transit access. Portland, Oregon's substantial investment in tramways and light-rail transit, along with the transformation and gentrification of former warehouse districts (like the Pearl District) into chic, bohemian-like, mixed-use neighborhoods, is credited with having attracted five-times the rate of in-migration of college-educated individuals 25 to 34 years of age than the U.S. as a whole during the 1990s (Impresa, Inc., 2007). In Portland and elsewhere, urban amenities, ACE (arts-culture-entertainment) investments, and 'third places' (like coffeehouses and outdoor eateries) that allow Millennials to hang out, socialize, and network are central to economic development strategies aimed at regenerating once stagnant urban districts, creating jobs, and attracting private investors (Cervero et al., 2017).

Where educated Millennials go, so do employers and retailers. Since the Great Recession of 2009-2011, America's fastest job growth has been in urban areas, reversing the past few decades of job suburbanization (Broberg, 2016). In the state of Washington's Puget Sound region, tech firms like Amazon, Expedia, and Microsoft have moved offices from suburban campuses and car-oriented edge cities to transit-friendly downtown Seattle and nearby districts. Rising commercial real-estate prices and rents are perhaps the best barometer of the premium employers are placing on being in highly walkable, mixed-use, transit-served in-city areas.

Since 2000, many of the cities chronicled in *The Transit Metropolis* as adaptive cities have witnessed urban regeneration on a grand scale. Two Scandinavian cities – Stockholm and Copenhagen – originally took on the persona of transit metropolises by building TODs on Greenfields, interlinked by high-quality rail services and interspersed by open green spaces – i.e., the necklace-of-pearls metaphor. Stockholm has since shifted to a focus on strategic infill and

brownfield redevelopment, based on the city's 1999 master plan of "building the city inward not outward" and in keeping with its drive to be carbon-free by 2050. Markets have responded: from 1960 to 1980, the city of Stockholm's population fell by 20 percent; between 1980 and 2010, it grew by 31 percent (Sclar and Lönnroth, 2014). Stockholm's most notable example of urban regeneration is Hammarby Sjöstad, an energy self-sufficient, zero-waste eco-community on a former industrial site, served by a new inner-ring tramway. Through a combination of green urbanism, green architecture, and sustainable transportation initiatives like tramways, car-sharing, and bike-sharing, Hammarby Sjöstad is a "Green TOD", credited with reducing carbon emissions and energy consumption by a third relative to suburban projects with similar income profiles (Cervero and Sullivan, 2011a). Land that would otherwise be given over to asphalt parking is instead used for community gardens, playgrounds, and open space. Besides environmental benefits like reduced heat island effects and water pollution, the creation of a car-restrained, walking-friendly, mixed-use in-city neighborhood has drawn a diverse demographic: Millennials as well as empty-nesters and families with kids (Cervero and Sullivan, 2011b). Similar transformations – notably the reclamation of land from car parking to public squares and roadways to bikelanes – have occurred in Copenhagen, as chronicled by architect-planner Jan Gehl (2010) and discussed later in this chapter.

Structural shifts in employment, on the heels of globalization, modernization, and automation, have also profoundly changed urban landscapes and how workers move about them, particularly among Millennials and even younger generations (i.e., Zillenials, or Gen-Z's, reared in the era of iPhones and streaming services). Yesteryear's model of life-long employment and rising through the ranks of vertically integrated firms is being replaced by contingent employment, or in today's parlance, the "gig economy", marked by horizontal networks of independent contractors, consultants, free agents, freelancers, part-timers, and outsourcing. The dramatic growth in co-work spaces is one feature of the modern work environment. So is fluidity -- whether in the form of rapid job turnover, the proliferation of start-ups and mergers, LinkedIn networking for short-term assignments, or monthly changes in workplace locations. Job fluidity coupled with trends like shrinking household sizes foretell a future of less regularized, more atomized patterns of travel, especially for employment-related trips. This works in favor of adaptive forms of transit -- less standardized, market-responsive ones that adapt to shifting travel demand over space, by time-of-day, and even in terms of customer preferences (e.g., apps for ride requests and automatic payments targeted at convenience-minded, time-conscious Millennials). Micro-transit options, like private commuter minibuses (e.g., Pickup

in Austin and Chariot in San Francisco), dynamic vanpools (e.g., Via in New York), dynamic carpools (e.g., Carma, Scoop, Waze Carpool), and ride-share, taxi-like services (e.g., UberPool Express and Lyft Line), are best positioned to meet such market preferences.

Locational and lifestyle preferences of Millennials in combination with structural shifts in employment further underscore the likelihood of 21st century transit metropolises taking on a hybrid form – i.e., elements of adaptive cities with great walking environments as well as adaptive transit, marked by flexible, demand-responsive forms of collective-ride mobility. Technological advances are likely to exert similar influences, the topic to which I now turn.

4. Transformative Technologies and Urban Futures

In the urban transport sector, progress towards sustainable futures is constrained in good part by path-dependence that locks out major breakthroughs, paradigm shifts, and changing practices. A succession of deeply rooted forces – ascendancy of automobiles as the dominant form of mobility, the prominence of automobile-manufacturing and services in modern economies, the entrenched practice of carving subdivision tracts throughout suburbia for low-cost housing development (enabled by the automobile and government-funded motorways built to accommodate it), etc. – form powerful barriers to significant change in how cities are designed and how we move about them.

Transportation scholars argue that paradigm shifts in how we move about cities are unleashed through disruptive forces (Garrison, 2000). In the urban realm, this might include climate change, what many argue will elevate the importance of resiliency in the design of communities, now and in the future. It also includes transformative technologies, like app-empowered industries that offer fundamentally new forms of urban mobility (e.g., Uber and Lyft) and, of course, the great unknown on the horizon, fully autonomous driver-less vehicles. Such disruptive technologies, I argue, further move us in the direction of transit metropolises with elements of both adaptive cities and adaptive transit.

Smart Mobility and Autonomous Vehicles

Advances in information-communications technologies (ICT) are moving utopian visions of cities dotted with sensors and monitored by satellites that control the movement of vehicles and virtually eliminate collisions closer and closer to reality. Autonomous technologies -- like automated braking, self-parking, lane-departure warnings, and adaptive-speed cruise control – are already found in most high-end cars today. Ford Motor Company recently set a target of all of its model 2021 vehicles achieving level-four autonomy, with full driver controls but

able to operate in full-auto mode on certain kinds of roads under certain weather conditions. Places like Santander, Spain are fully committed to a smart-cities future, having implanted more than 12,000 sensors in buildings and light-posts to continuously monitor traffic conditions, parking spaces, and air pollution. There, big data are processed and used to schedule pick-ups from trash bins that need to be emptied, navigate motorists to the closest available parking spots, and adjust traffic signals, second-by-second, to facilitate green-wave traffic flows.

The likely consequences of ICT, connected vehicles, and driverless cars on travel demand, congestion levels, and ultimately urban form has sparked considerable debates in recent times (Jeekel, 2015). While there is little doubt such technologies will make travel safer, opinions are mixed in most other areas. On the one hand, driverless cars can be expected to increase vehicle miles traveled (VMT) by lowering generalized costs of travel and parking, thus inducing trips. This could happen by enabling cars to travel faster and closer together, effectively increasing road capacities; reducing non-recurrent incidences (which is said to account for as much as 60 percent of traffic congestion) from fewer road collisions; providing automobility to many who are currently unable to drives, including seniors, youngsters, and disabled people; and enabling car users to do other things (like text on their smart phones) and be less stressed when moving about the city, effectively reducing their perceptions of travel-time impedances when in the car. On the other hand, VMT could decline as a result of technology-enabled smart pricing (e.g., real-time congestion tolls) and shared-use of autonomous vehicles, particularly among Millennials as they move through mid-stages of lifecycle, their peak-consumption years. Both factors would promote compact development, shortening trips and thus lowering VMT.

In the U.S., travel forecasts suggest that VMT-inducing effects will likely outweigh VMT-reducing ones, leading to net increases in travel. Travel-demand modeling of the impacts of driverless cars in San Francisco, Seattle, Atlanta, and Philadelphia predicted 5 percent to 20 percent increases in regional VMT (versus the counter-factual of no driverless cars) (Guerra, 2016). If such forecasts materialize, the transit metropolis model, whether of the adaptive cities or adaptive transit form, will lose relevance. Cities will become increasingly car-centric versus transit-oriented. This prognosis could change, however, if the travel-inducing effects of ICT are moderated or even reversed by using technologies to promote smarter transit and green mobility as well as to 'set the prices right' (i.e., smarter pricing). Perhaps more important will be sharing (versus ownership) of autonomous cars and filling vacant seats via real-time carpooling. Recent forecasts of expected growth in autonomous cars to 2035 in seven regions of the U.S. estimated that the average VMT increases of 31 percent

could be halved if 50 percent of self-driving cars were shared (Milam and Riggs, 2018).

Ride-hailing and Shared-Ride Services

The past decade has witnessed an explosive growth in new-age forms of mobility, ones that fill the vast spectrum between expensive, exclusive-ride taxi services and highly standardized, fixed-route/fixed-schedule bus services. Using smart-phone technologies and riding the wave of increased collaborative consumption, a rich assortment of mobility providers today ply the streets of cities world-wide, from ride-hail services like Uber and Lyft to various forms of micro-transit, including private commuter minibuses, dynamic vanpools and carpools, and the really micro-carriers, electric scooters and e-bikes. New-age micro-mobility is hardly a developed-cities phenomenon: in Jakarta, a motorcycle-taxi service called GoJek that uses smart-apps for ride requests and payments has exploded onto the scene, as has BluJek, which offers motorcycle-taxi services for women, operated by women. For consumers, new-age mobility services have been mostly good news, enriching their travel options by providing heretofore unprecedented levels of, in economist-talk, 'service and price points'. My own research with Berkeley colleagues of ride-hail services in San Francisco found that what appeals to customers most is convenience and time-savings: among the chief reasons people took Uber and Lyft were ease of payment and ride requests using smart-phones plus short average wait times (compared to taxis) (Rayle et al., 2016). To no surprise, this was particularly so among Millennials.

The meteoric growth in private-sector app-based mobility seems unstoppable. In the four key markets of the U.S., Europe, China, and India, ride-hailing has rocketed from about 1 billion trips in 2013 to an estimated 14 billion in 2018 (Meyer et al., 2019). While some envisage services like Uber and Lyft becoming partners and complements of transit agencies, increasingly they appear to be competitors. One recent study found that 60 percent of ride-hail would have traveled by foot, bike, or transit had ride-hailing not be available (Clewlow and Mishra, 2017). Further evidence comes from plummeting transit ridership in cities like Los Angeles (down 20 percent in the past five years), attributed in part to competition from Uber and Lyft, despite the billions of dollars spent on new rail lines (Nelson, 2019).

While ride-hailing stands poised to weaken the role of transit in cities, to the degree that Uber and Lyft users begin sharing rides in return for a break in fares, it could transform "mass transit" as we know it, elevating the mobility role of dynamic ridesharing worldwide. As they continue to scale up and lower unit costs, shared ride-hailing has become the fastest growing market for companies

like Uber and Lyft. In 2016, UberPool operated in more than 30 U.S. cities, claiming over half of all journeys in some (Hawkins, 2016) and has since steadily expanded across the country. In Los Angeles and San Francisco, shared ride-hail services (UberPool and Lyft Lines) are flourishing, sometimes functioning as station cars, a form of micro-mobility envisaged for California's urban rail systems two decades ago (Cervero, 1997): in 2014, 14 percent of UberPool trips in Los Angeles and 10 percent in San Francisco began and ended at rail-transit stations (Hawkins, 2016).

What could be truly transformative, catapulting shared ride-hail services into the big leagues of urban mobility and advancing the adaptive transit model more than anything, is the mapping of and organizing services around 'hot spots' – i.e., frequent passenger pick-up and drop-off points. In return for walking a few blocks to a hot spot, customers get a break in fares. Hot spots effectively convert the much more complicated ride-matching of many-to-many trips to a much more tractable pattern of matching few origins and few destinations. It is infinitesimally easier for on-board computers to work out a traveling salesman algorithm to pick up multiple passengers along a route if people load and disembark at hot spots rather than their individual street addresses. In 2018, Uber used heat maps to design such services in San Francisco, Boston, and six other U.S. cities. Called Uber Express Pool, customers share vehicles by typically walking a few blocks for a pick-up and to their final destination after drop-off in return for upwards of 70 percent break in fares compared to door-to-door ride-alone ride-hail service.

The marriage of self-driving cars and car-sharing, in the view of some, could be the real game-changer. Waymo, Google'a autonomous vehicle arm, envisages car-sharing subscription services as the company's 'end game', profiteering from 3-D Lidar mapping and storage of big data on roads, traffic, and passenger demands, at all times of day and days of year, to optimize the delivery of driverless car-sharing services to its subscribers (Jiang et al., 2015). Waymo along with Uber and other tech companies venturing into the shared mobility space see themselves one-day becoming the 'Spotify of shared mobility' – i.e., one-stop concierges, providing on-demand 'mobility as a service' (MaaS) to subscribers for any origin-destination combination across a range of price and comfort/convenience levels. With MaaS, travel simply becomes conveyance, not unlike an elevator, escalator, or airport people-mover co-shared by unrelated individuals. The reduced emotional attachment to vehicles, some speculate, will dramatically reduce private car ownership over time. Research by the International Transportation Forum (2015) estimates that 'Robo-Taxis' (i.e., driverless shared taxi services) could replace 90 percent of cars in large cities by 2030, eliminating on-street

parking and reducing congestion. For medium-sized cities, Robo-Taxis could obviate the need for conventional public transit, providing 3-to-4 passenger "micro-transit" connectivity throughout a city. If they ever come to fruition, they would be the archetype of adaptive transit services.

Yet a future of robo-taxis and shared, smart urban mobility could very well also work in favor of TOD, infill development, and walkable communities, principally by reducing numbers of cars and parking spaces. Ride-hailing services by themselves, whether shared or not, are strongly associated with low car ownership: a 2015 survey found the average car ownership of Uber and Lyft riders to be 1.05 vehicles per household versus a 1.50 average for all households in cities served by Uber and Lyft (Shared-Use Mobility Center, 2016). This reflects in good part the sharing preferences of Millennials: the San Francisco study of ride-hail services, for instance, found three-quarters of Uber and Lyft riders to be between 15 and 35 years of age, compared to 44 percent of frequent taxi users and 30 percent of citywide residents (Rayle et al., 2016).

The 20th century model of individual car ownership and single-occupant travel is unsustainable. The typical car sits idle 23 hours per day. When it is used, three out of four seats are often empty. For many trips, cars are vastly overpowered and oversized: relying on a two-ton steel cage to shuttle a 150-pound person around a neighborhood is unforgivingly wasteful in an era of increasingly turbulent weather patterns and steadily rising sea levels, fueled by anthropogenic carbon emissions. Shrinking the car's urban footprint by de-populating vehicles would densify cities and thus shorten travel distances, making it easier and cheaper to share driverless cars, kicking off a virtuous cycle if you will.

Smart Pricing and Technologies

Besides smart micro-transit, smarter pricing will also be critically important in moderating the potential trip- and sprawl-inducing effects of autonomous vehicles and smart-car technologies. Smart pricing is needed when cars are both stationary and moving. Dynamic parking pricing has been introduced in San Francisco, under the SF Park pilot program. Donald Shoup (2005) maintains that to prevent excessive cruising for open parking spaces, no more than 70 percent to 80 percent of curbside spaces should be occupied. Too many unoccupied curbside spaces are also wasteful, namely of valuable urban land. Under the SF park program, some 6000 sensors have been installed in curbside spaces, both to inform motorists of closest available parking spots and to allow prices to be adjusted to achieve 70 to 80 percent occupancy targets. Block faces with fewer occupied spaces see hourly parking costs drop, to as low as 25 cents. Streets that are consistently full cost more to park, as much as $6 per hour. Over the pilot

program's first two years, the number of miles driven and amount of exhaust spewed during parking searches dropped 30 percent (SFMTA, 2014). The average time spent hunting for parking, moreover, fell by 43 percent, or by 5 minutes (Millard-Ball et al., 2014). Smart parking charges contribute to the transit metropolis model as an "auto-equalizer", helping to 'set the prices right' and in so doing drawing more travelers to transit and a transit-oriented lifestyle.

Singapore was highlighted in the 1998 book as a model transit metropolis, buttressed by TDM (travel demand management). The most prominent TDM measure introduced was electronic road pricing (ERP), relying on gantries and on-board transponders to pass on charges to motorists for traveling into cordoned zones during peak periods. Singapore pioneered congestion charging, soon followed by London and Stockholm. Cordon pricing, however, is a fairly crude and often inequitable way to pass on congestion charges, not necessarily reflecting the marginal contributions of individual motorists to traffic tie-ups. Taking advantage of smart technology, Singapore is in the midst of introducing the next generation of ERP, using the Global Navigation Satellite System (GNSS) to dynamically adjust prices according to actual congestion levels. Under ERP 2.0, prices will be based on the actual length of congested roads used by motorists. Motorists will be charged according to when, where, and how far they travel. Such VMT-based congestion charges will move Singapore closer than any other city to what transport economists have long maintained is necessary to substantially reduce traffic congestion and emissions – marginal social-cost pricing. It will also reinforce the city-state's unwavering commitment to island-wide transit-supportive development.

Yet Singapore also shows signs of moving in the direction of a hybrid transit metropolis through the introduction of new, innovative forms of surface transit. An example is the pilot-testing of autonomous station cars, aimed at providing first-mile/last-mile connectivity to MRT rapid-transit stations. At two MRT suburban stations, Singapore built automated and elevated people-movers, similar to those found at many airports, to connect to surrounding housing developments that are beyond a 5-to-10-minute walk. Jerry Schneider calls the use of people-movers, or personal rapid transit (PRT), to connect housing to nearby rail stations an 'Extended TOD'. In her study of human-scale mobility, Roxanne Warren referred to the interface of PRTs and metros in clustered suburban development as an 'Urban Oasis' (Warren, 1997). People-movers, however, are very expensive to build and maintain. More economical is to run 'pod-cars' on surface streets, using automated technologies. Singapore's Land Transportation Authority recently partnered with several private companies to pilot-test autonomous electric station cars and self-driving shuttles that operate

on local streets, connecting several business parks to two MRT stations along three routes. Safety drivers currently occupy the pre-programmed smart autonomous shuttles however as the program matures and kinks are worked out, Singapore's station cars are to become fully autonomous. Smart pricing and smart shuttles are but part of Singapore's big push towards a 'car-lite' society, aimed at zero automobile growth and eventually 'mobility as a service' substituting for individually owned cars (Hean, 2019).

E-Commerce

Another technology-driven, potentially transformative trend that could reshape 21st century transit metropolises is e-commerce. On-line shopping is growing exponentially. In 2014, over $1 trillion in retail goods were purchased on-line, 6 percent of retail sales worldwide, up from a fraction of a percent a decade earlier (Berg, 2016). By the end of 2018, one out of ten retail sales in the U.S. occurred over the internet (U.S. Department of Commerce, 2019). The nature of urban goods movement is radically changing as a result: from truckloads of merchandise hauled to brick-and-mortar stores to parcels and packages carried to purchasers' front doors. With Millennials leading the way in on-line purchases and increasingly concentrated in urban centers, new urban logistics challenges have surfaced – notably, more and more delivery trucks encroaching on in-city residential neighborhoods and compact urban districts. Big e-commerce players, like Amazon, have opened freight warehouse-consolidation-distribution centers on the peripheries and in the exurbs of numerous U.S. cities. To save on costs, parcel deliveries are often consolidated and traveling-salesman algorithms are used to reduce the amount of freight VMT logged on central-city streets. Still, new, somewhat unprecedented problems are cropping up, such as increased noise, fumes, and traffic disruption in residential neighborhoods and worsening pavement damage from steady flows of FedEx, UPS, and other package-delivery couriers. The arrival of more and more delivery trucks has prompted some to insist that staging areas, curb-side spaces, and even passageways be provided for these carriers in keeping with 'complete streets' principles. Parcel trucks are legitimate users of street-space and just as with cyclists and pedestrians, it is argued, need to be accommodated. Some even call for wider roads and thicker pavements to accommodate rising numbers of parcel delivery trucks. To do so, however, would favor mobility over place, the antithesis of the transit-metropolis model. More consistent with the place-making focus of transit-oriented communities would be the siting of drop-off/pick-up bins near neighborhood bus stops or the conversion of vacant stores in outdated local shopping plazas and even decommissioned public schools to parcel-pick-up areas (Haake, et al.,

2016). This could reduce truck traffic or at least deflect it from neighborhood centers. A number of Germany cities have installed package delivery/drop-off boxes, some refrigerated, on neighborhood peripheries for the very purpose of minimizing in-neighborhood truck traffic.

Pandemics and The City

The lingering effects of COVID-19 on cities and public transport in particular remains a huge uncertainty. In the near term, public transit systems are introducing cleansing and physical distancing measures to lower the risks of transmissible diseases. Chinese cities like Shenzhen and Shanghai have used QR codes for contract tracing. In China, access to public spaces is controlled through QR codes. When boarding a train or bus, passengers must scan their PR code. If a user is found to have COVID, other passengers can be quickly tracked down and, if necessary, quarantined. As a result, ridership has largely recovered from pre-COVID levels, from a 90 percent decline in January of this year when cities were under lock down to only a 10 percent drop in early Fall of 2020.

The longer term implication of pandemics on public transport and cities remains unclear. Some forebode a future of increased low-density living and (accordingly) car travel. Increased VKT from switching from transit to cars could be off-set by more people working at home during the work week, eliminating commute trips. Some predict the emergence of "transit villages" – less dense housing with limited neighborhood retail and a less welcoming environment for outside visitors. The adage that "mass transit" needs "mass" holds as much for today as ever thus a de-coupling of transit and densification of cities suggests a smaller mobility role for shared mobility in coming decades. New micro-forms of transit that allow social distancing – e.g., autonomous micro-shuttles or some form of PRT hired by family members or friends for group travel – could lie on the horizon.

5. 21st Century Transit Metropolises as Hybrids

A number of powerful megatrends and technological forces, touched on in this chapter, are profoundly changing household structures, lifestyle choices, travel patterns as well as the physical make-up of cities and regions worldwide. Collectively, they are reshaping the 21st century version of the transit metropolis. The dichotomy of transit metropolises as adaptive cities and adaptive transit, while apropos in the 20th century, is far less so in the 21st. Most of today's transit metropolis are hybrids, featuring not only well-designed TOD but also an assortment of flexible, near-door-to-door forms of mass transportation. As a result, the modern transit metropolis is adapting in ways that produce a rich assortment of mobility options – e.g., high-capacity transit, micro-transit,

movement by foot and bike, ownership versus shared consumption of cars and bikes – and built forms that serve changing lifestyle preferences among city-dwellers.

Copenhagen, like Singapore, was prominently featured in *The Transit Metropolis* as an adaptive city, compact and mixed-use in form, with housing and commercial development physically concentrated around radial metro-rail lines. Like Stockholm, Copenhagen's early-generation TODs focused on suburban corridors, however over the past few decades, the city has emphasized urban re-generation, partly through land reclamation that has shrunk the amount of land given over to using and parking private automobiles. In 1962, all of Copenhagen's 18 public squares were parking lots; today, all are car-free, populated by pedestrians and cyclists (Gehl and Svarre, 2013). Copenhagen has also invested massively in bicycle infrastructure, on the heels of policies that require every square meter of additional road capacity to be matched by at least as much added bicycle lane and cycle-path capacity. Copenhagen is today's Europe's most bicycle-friendly capital city, with more than a third of residents getting to work by bicycle and comparable shares of access trips to suburban rail stops being by bicycle (Pucher and Buehler, 2008; Martens, 2004). In this sense, Copenhagen's rail-served corridors function as Extended TODs, featuring compact, pedestrian-friendly development but also high-quality bicycle and zero-emission bus connectivity to outlying areas. The reach of bicycle infrastructure is soon to extend well beyond rail corridors. Currently, 26 Cycle Super Highways, spanning 300 km in length, are being built in Greater Copenhagen, providing long-distance, grade-separated bicycle mobility throughout the region. Copenhagen is also using smart technologies to expedite bicycle flows: smart-phone apps exist that allow cyclists to pace themselves so that they catch 'green waves' through signalized intersections, in addition to providing route navigation assistance and GPS tracking of bike-sharing opportunities. It is this widening array of green mobility choices that makes regions like Copenhagen more of a hybrid than a transit-oriented metropolis.

Guangzhou, China has also taken on the persona of a hybrid transit metropolis. Guangzhou boasts Asia's most cost-effective BRT service, handling more than three times the peak passenger flows of any BRT system outside of Latin America (Suzuki et al., 2013). This partly due to a careful matching of BRT services to the 'lay of the land'. Rather than operating a trunk-feeder system that requires BRT riders to transfer, Guangzhou opted for a 'direct-line' service that mimics the many-to-many travel patterns found in many Chinese cities that are dense, yet spread-out (Yang et al., 2012). In Guangzhou, most BRT bus routes operate as both mainline carriers and feeder connectors, converging on a 23 km center-city

busway (Figure 2). Having buses that operate at high speeds along busways morph into neighborhood feeders ensures a high degree of regional connectivity, reducing and for some riders eliminating transfers altogether. For this reason, Guangzhou bus-based services have been called "adaptive BRT" (Suzuki et al., 2013). Yet most of the stations along Guangzhou's BRT spine are TODs: mixed-use development concentrated within a five-minute walk of stops. Guangzhou's BRT spine features seamless pedestrian connectivity to surrounding development, courtesy of gently sloped footbridges and same-level integration with the second floors of adjoining commercial buildings. Owing to the combination of high-quality BRT services and pedestrian connections to stations, high-rise commercial development is gravitating to Guangzhou's BRT spine, increasing real estate prices by 30 percent relative to non-TOD projects during the first two years of BRT operations (Cervero and Dai, 2014).

Some of the emerging technologies reviewed in this chapter, such as autonomous and connected vehicles, are controversial for the very reason that they could end up inducing motorized travel and, as a result, sprawl. Public policies become critically important in moderating and possibly reversing some of the unintended consequences of such technologies. Notably, public policies should nudge technological advances in the direction of smarter transit, green mobility, and, as in Singapore, marginal social-cost pricing of car use. The public sector also needs to break down barriers to the emergence of efficient and market-responsive forms of micro-transit, like dynamic ride-sharing. Key in this regard is relaxing taxicab regulations that restrict market entry, service delivery options, and innovative pricing, and eliminating the outdated and market-distorting system of regulating supply through taxi medallions (Gilbert and Samuels, 1982; Cervero, 1985; Transportation Research Board, 2015). Public policy can also play a critically important role in promoting inclusive transit metropolises. An example is Central Saint Giles, a mixed-use TOD in central London, near the Tottenham Court Road underground station. In the *TOD Standard*, the Institute for Transportation and Development Policy (2014) rated Central Saint Giles as the 'best' TOD worldwide, earning a 'TOD score' of 99 out of a possible 100. Besides being compact, varied in land uses, and highly walkable, Central Saint Giles also earned high marks for being inclusive. To promote affordable in-city living and create opportunities for middle-income workers to reside at Central Saint Giles, the city of London granted the project's developers two additional commercial floors in return for nearly half of the project's 109 dwelling units being priced below market rates.

Fortunately, public policies that promote sustainable mobility (e.g., GPS-informed VMT charges and dynamic ridesharing) also tend to promote sustainable

urbanism, including TOD. A 2006 pilot-test of VMT charges in Portland, Oregon, for example, found a larger decline in VMT among those living in dense, mixed-use neighborhoods than those living elsewhere (Guo et al., 2011). This suggests strong interactions and positive synergies between policies that advance adaptive cities, including TOD, micro-transit, and smart pricing. Consistent with the visions set in *The Transit Metro*polises, public policies that help create great walkable communities along transit corridors, promote short-distance travel via slower modes, and that embrace smart, clean technologies as well as smart pricing offer promising pathways to sustainable urban futures.

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KEYNOTE SPEAKER

14 October 2020 Wednesday, 10.00 – 10.30

Prof. Dr. Keith HALFACREE

The Rural in an Era of Global Mobilities and in Localised Viral Moments

THE RURAL: IN AN ERA OF MOBILITIES AND IN LOCALISED VIRAL MOMENTS

Keith HALFACREE*

Abstract

Numerous academics have argued that we now live in an era where a multiple sense of mobility has displaced a more fixed sedentarist everyday existence. Whilst expressed daily in news stories of international migrants and the contested politics of their migrations, mobilities extend far beyond human migration. It is a state, moreover, closely allied to the more generally and widely noted process of globalisation. This talk will address the question of where 'the rural' fits within this era of global mobilities combination. On the one hand, consolidating its position within 'modernising' discourses, the rural may seem to be an increasingly anachronistic category, out of date and out of step with the 21st Century. It is a spatial term to be discarded. Yet, on the other hand, the rural may be seen as reinvigorated and of considerable contemporary relevance to the demands placed on people by the global mobilities condition. This reading will be illustrated with reference to counterurban migration and rural leisure, where aspects of place, home, relaxation and nature will be drawn out. Attention will then turn to a perceived very recent realisation of the importance of the rural when the dominant global mobilities era is temporarily disrupted and even stopped. A Lefebvrian 'moment' of suddenly localised life, experienced from the Covid-19 threat, is argued to have thrust the rural into a desired existential foreground once again. Overall, the talk will propose the rural to be a fecund source of 21st Century identity and even as still a radical socio-cultural force.

Long-debate on (non-)place of the rural today… given recent 'stimulus' via Covid!

1. Contextual paradigms: an era of mobilities and globalisation

Mobilities

Globalisation

Mobilities and globalisation qualified

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2. Where is the 'rural'?

Anathema?

3a. Mobilised and globalised

E.g. GLOBAL-RURAL project (2014-19) (Woods* et al.*)

E.g. global asset for food security & resilience

3b. Mobilised and localised

E.g. rural second home consumption

3c. Immobilised and globalised

E.g. rural craft working

3d. Immobilised and localised

E.g. pro-rural migration (Halfacree & Rivera 2012)

4. Conclusion: alter-rurality or re-statement in Covid times?

'Place' of rural within era of mobilities & globalisation

Rural = Janus-like with respect to mobilities & globalisation:

i. Caught up with / implicated: irrelevant or built-on (asset)

ii. Challenge: obstacle, critic, escape (local mooring)

***Site of* counter-space *& potential* differential space**

And/or: re-stating itself as 'non-urban' in these Covid times?

SESSION 1A

Theme: Technology and Innovation

13 October 2020 Tuesday, 13.00 – 14.15

Chairperson: Prof. Dr. Norzailawati HJ. MOHD NOOR

Invited Speaker: Norzailawati HJ. MOHD NOOR, Marina MOHD NOR

Geospatial Technology and Innovation Enablement for Physical Planning

Selda TOKLU, Seher GÜZELÇOBAN MAYUK

The Implementation of Building Information Modelling (BIM) in Turkey

Veli Mustafa YÖNDER

Case Studies of Generative Facade Design Using Building Information Modelling (BIM) Tools

İrem USLU, Saniye KARAMAN ÖZTAŞ

Sustainability Assessment of Nanotechnological Building Materials

GEOSPATIAL TECHNOLOGY AND INNOVATION ENABLEMENT FOR PHYSICAL PLANNING

Norzailawati Mohd NOOR*, Marina Mohd NOR*

Abstract

The needs of geospatial technology and Innovation are crucially recently, especially in managing urban planning issues. The challenges of urban and rural development become more increased, and the need a big data analysis are vital, to ensure wise and correct decision can be made for the sustainability. This paper purposely to review the robustness of the development and challenges on the geospatial technologies and innovation enablement for continuous planning, monitoring handling urban planning issues. The ultimate finding shows that the scientific world has made commendable progress by providing geospatial data at various spatial, spectral, radiometric, and temporal resolutions enabling usage of the data for various urban applications. Finally, conclude that enablement progress is the best promising for future sustainability and resiliency.

Keywords: Geospatial, Remote Sensing, GIS, GNSS and urban planning

1. Introduction

Rapid urban development recently required digital data has increasingly become the basis on which governments, organizations and businesses alike base their decisions. Today, the volume, size, speed, diversity and complexity in which geospatial data was generated requires change: to the processes currently used by governments and businesses across the world, and to workforces that are capable of searching, analyzing and merging these massive amounts of data. Geospatial data has become a ubiquitous part of everyday services and is central to the business models of many of the digital disruptors that have become prominent in the 2020s. The rise of smartphones, tablets, and other mobile devices has contributed significantly to people's expectation of the use of geospatial applications. User demand for increasing accuracy, currency, and

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detail is growing and will require more automated data capture and feature extraction to keep pace with those requirements.

Physical planning is a design exercise that uses the land use plan as a framework to propose the optimal physical infrastructure for a settlement or area, including infrastructure for public services, transport, economic activities, recreation, and environmental protection. The physical plan was prepared for an urban area or rural area developments. A physical plan for an urban region can have both rural and urban components, although the latter usually predominates. A physical plan at a regional scale can also deal with the provision of specific regional infrastructures, such as a regional road or a bulk water supply system. The world's population is expected to reach double as it making the 21st-century transformative trends. Therefore, the study on the urban comprises of the multidisciplinary field including climate change, urban green space, urban areas, urban forest, urban landscape, urban growth, and more that related to the urbanization process of city planning (Shekhar and Aryal 2019). This field has been extensively studied with the aid of geospatial technology that can help to map, combine, analyze, modeling, visualization, and significantly able to spatial decision making (Avtar et al. 2020; Ismail, Muhamad Ludin, and Hosni 2020; Huneter et al. 2012).

The United Nations has highlighted issues of data quality and data collection abilities to optimally measure various indicators and has emphasized the need for a Data Revolution to enhance the data quality (Kharas et al., 2013). The United Nations has highlighted issues of data quality and data collection abilities to optimally measure various indicators and has emphasized the need for a data revolution to enhance the data quality (Kharas et al., 2013). The capability of geospatial technology to provide accurate information of land use land cover (LULC) in monitoring, interpreting, and projecting future changes in LULC become a greater help to the professional, research communities and policymaker in tackling the problem that arises ((Ismail, Muhamad Ludin, and Hosni 2020; Noor et al. 2020). Remote sensing and GIS is one of the geospatial technology that is widely used in governance and planning at national, regional, and local scales (Shekhar and Aryal 2019; Dangermond and Goodchild 2020). Rapid urbanization in cities and village can cause high demand for resources, and it leads to the overpower of the sparse resources and impact to unmanaged an unsustainable development situation (Adzandeh, Alaigba, and Nkemasong 2020). Thus, it tends to provide space for illegal agriculture or development, and the encroachment of land becomes more aggressively uncontrollable.

The risk of a natural disaster such as floods or landslides is higher when there is no proper land use planning, and this could affect the loss of life and property.

Therefore, geospatial technology such as satellite, drones, Wireless sensor of network and Internet of Things (IoT) are important to manage and control minimal impact from natural disaster. Additional, the preparedness process in terms of disaster management and planning will be effective (Lwin et al. 2019) (Noor et al. 2019). Hence, geospatial technology can provide a solution and guide in controlling the development in that manner, which further contributes to the sustainable ecology and environment. This study attempts to review the robustness of the development and challenges on the geospatial technologies and innovation enablement for continuous planning, monitoring handling urban planning issues. This section explains the paramount of geospatial technologies in urban planning while the second section describes the variety of geospatial databases. The third section discusses the correlation of geospatial technology towards sustainability in a measure of the SDGs and its challenges. The last section identifies future research priorities.

2. Recent progress on geospatial technology and Innovation in urban planning

Since the introduction of geographic information systems (GIS) in the 1960s, it has evolved tremendously to the extent that it permeates our daily lives. Geographic information systems (GIS) and geospatial information science (GSIS) has grown and matured over the last decade (Malczewski 2006; Malczewski and Rinner 2015; Yuan 2017 (Mohd Noor et al. 2018; Mohd Noor, Abdullah, and Hashim 2018; Noor and Abdullah 2015)). Advances in remote sensing, information communication technology (ICT), big data, geolocation-based services, and geotagged social media have propelled GSIS into an influential field (Goodchild 2009, 2014; Li et al. 2013; Tao 2013). Geospatial information in urban planning has increasingly been applied in municipalities, land use planning, infrastructure planning and improvement of service delivery (Yeh 1999; Kohsaka 2000).

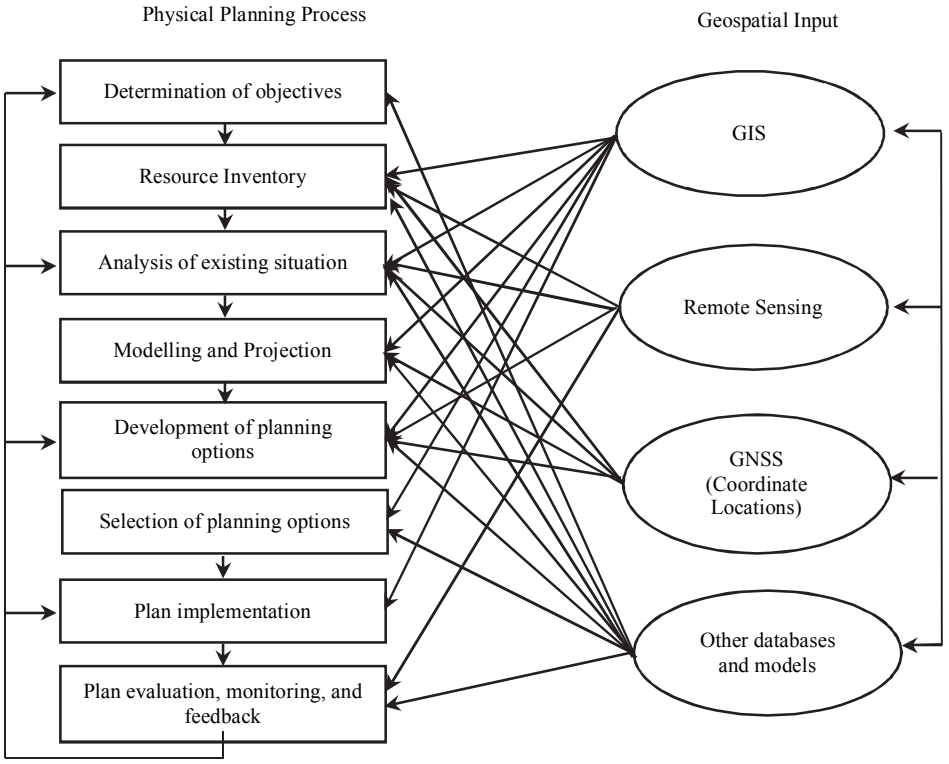

Figure 1: The integration of Geospatial databases in the urban Planning Process *(modified after (Rajaram 2015)*

The recent enablement of technology and innovations in urban planning can be understood as a general integration of geospatial databases in the urban planning process. Nowadays, there is an assortment of geospatial databases such as GIS, remote sensing, GNSS and other databases and models (Figure 1). These provide a privilege to the researcher communities to apply the geospatial database according to their research focus. Each of the databases has it is specialty and character that helps in the decision making support system. For instance, the application of remote sensing is prevalent as it provides leverage features and able to support the planning process. It can be summarised such as, synoptic view of areas that afford a general view of a whole especially in an inaccessible area, fast data acquisition, the capability of the spectral range that converting the information into visible representations, spatial-temporal and automatic or semi-automatic processing. Besides, GIS or Geographic Information System can depict differences, spatially coincident features that are similar to CAD. However, the power of a GIS lies in its ability to analyse relationships

between features and their associated data (Samson, 1995). This analytical ability results in the generation of new information, as patterns and spatial relationships are revealed. Meanwhile, GNSS or Global Navigation Satellite System is a global navigation system that provides location, velocity, and time synchronization. Previously, GNSS is a complex and refined technology, but as time evolved, the GNSS interface becomes more friendly and able to access to the non-technical user. The variance of GNSS units available from 10 to 20 meters and it can be obtained to centimetre-level accuracies depends on the pricing factor. GNSS technology act as an imperative tool for the management of urban planning issues.

3. Geospatial and Sustainability Challenges

The Sustainable Development Goals (SDGs) are a universal call for action to end poverty, hunger, protect the planet, and ensure that all people enjoy peace (United Nations, and Nations, U 2015). The success of the Millennium Development Goals (MDGs) has encouraged us to achieve 2030's Agenda for 17 SDGs which lead the world to prosperity and sustainability. The challenges in the twenty centuries are to provide and improve sustainable development for the long term health of human and ecological systems. To have a progressive action, the needs to support the delivery action must be supported by a suitable tool. Therefore, since 1992, the United Nations Conference on Environment and Development recommended GIS as an appropriate tool to achieve 17 SDGs (Nabiyeva and Wheeler, 2020;). Besides, Earth Observation (EO) is one of the promising geospatial data that undoubtedly play insightful roles in achieving SDGs (Cochran et al. 2020; Anderson et al. 2017). As mentioned by Avtar et al. (2020), geospatial data is one of the assuring data sources that can be applied for monitoring and achieving SDGs. Similar to Nagabhatla and Brahmbhatt (2020), geospatial tools can be integrated and combined with referenced data, ground knowledge and can be applied in the multidisciplinary field such as disease control management, land-use changes, poverty, education, policy, or other social issues that provide analytic ability to manage spatial and non-spatial information (Srivastava et al. 2009; Avtar et al. 2020)

As is well known, the 2030 Agenda of Sustainable development are consisting of 17 SDGs at its core. However, the frequency of a geospatial approach to support sustainable development is still less as discussed by Nabiyeya and Wheeler (2020) in their study by using database engines of Web of Science and Scopus. The result shows that only certain of SDGs, namely "Life On Land", "Sustainable Cities and Communities", "Climate Action" and "Quality Education" that have large numbers of scientific papers that applied GIS in their content. For instance,

most of the content related to GIS and SDG is the "Life on Land" goal, which provides the researches with the ability in decision making. GIS helps the authors to integrate the data for mapping, modeling, monitoring, and measurement, which explained the usage of the spatial analysis approach. Compared to other SDGs that have least frequently GIS in the context of SDGs. The authors synthesize that, GIS was limited in linking with SDGs due to unspecified issues or topics that can relate to the field of sustainable development GIS.

Moreover, some problems are not spatially orientated and tend to neglect the power of GIS; which can be used even it is less spatially oriented at the beginning. The challenges of GIS can be seen through the country that faced scarcity of data compared to the country with an abundance of data. Scott and Rajabifard (2017) discussed that due to the insufficiency of data, most of the nations will tend to be vulnerable and at the stake of risk or left out to achieve a sustainable development compared to those countries that have limitless of data. This is the gap that needs to tackle or it will become a vast digital divide. Now in its fifth year of global reporting, the challenges in able to bridge the digital divide must be solved progressively. Considering the broad range of SDGs' targets, geospatial information is one of the most important tools for monitoring their achievement. It will also pave the way for the successful accomplishment of SDGs. Achieving the SDGs undoubtedly demands massive global concerted efforts to efficiently make use of data sharing, processing, and aggregation in a highly multidisciplinary framework. National geospatial information agencies will need to collaborate closely with national statistical and earth observation professional communities to deliver consistent and reliable data to fit into the formulation of wide-ranging sustainable development policies.

4. Recommendation and Future Outlooks

The study has attempted to highlight the ability of geospatial technology for physical planning. Geospatial technology is a technology relating to the collection and processing of data associated with the location. It is an emerging study field that includes GIS, remote sensing, and Global Navigation Satellite System (GNSS). Nowadays, numbers of the new geospatial portal are created to solve various dimensions of development for local, and national level such as Google Maps, Open Street Map, and Nasa Earth Observation. Apart from this, the demand for information is high and it needs effective public participation. The engagement of public involvement is necessary (Choi et al. 2016; Bugs et al. 2010) to provide useful data and exchange ideas to help to characterize the local space. The need for collaboration between public participation and geospatial will help to measure the SDGs. Besides, it helps to form and implement a successful

practice of policy that considers public perception. Thus, the high commitment of professionals and research communities is vital to facilitate the integration of multidisciplinary experts and mobilizing the resources and support to enable technology evolution with more interactive methods (Chen et al. 2020).

Geospatial technologies are known for the richness of data; however, the gap of the digital divide need to solve to prevent those countries that have limited access to the technology. Towards Agenda 2030, this matter should raise attention to have a comprehensive implementation of SGDs. Digital transformation is required to make sure the availability of data to all countries. Steiniger and Hunter (2012) suggested that free and open source and access notably support the documentation, publication, sharing models, algorithm, and tools for analysis and visualization regardless of the purpose; educational, or business purposes. Giuliani et al. (2020) also agreed that the low entry barrier for the providers and resources to reduce waiting for time or loss of interest to the user. Therefore, by 2020, geospatial technologies must able to increase the availability of high-quality, timely, and reliable national data. In some ways, it shows that the advancement of geospatial technology has been driven more interest to the user and consumer as it a response to multidisciplinary developments and breakthroughs. Big data, cloud computing, unmanned aerial system, mobile devices, and location-based services are some of the evidence that ensured the people to appreciate the need for geospatial information. Thus, the future outlook and trends of geospatial enablement can be outlined as following potentials:

- Earth observation technology such as satellites, high altitude or vehicle-based sensors are providing a greater variety and volume of data about the urban to higher resolution and temporal frequency for lower costs;
- Provision of web service infrastructures enters the mainstream, making it easier to create new technology-based products quickly and more cheaply than before and to outsource costs;
- Applications of sensors, robotics, cameras, encryption, cloud computing and other software, and hardware intelligence are converging, enabling new ways for organizations and their equipment to perceive and capture reality;
- Artificial Intelligence-driven solutions and machine learning will drive cost efficiency, accuracy and speed in GNSS and Positioning, spatial analytics and Earth observation; and,
- Satellites, unmanned aerial vehicles (UAVs), and sensor technology are being invested in by leading tech giants, existing providers of sensed imagery and governments.

Technological developments, the nature of machine-led decision-making in autonomous mobility, and other applications that require multi-stakeholder partnerships are creating new challenges in a world that will increasingly virtually. In the context of trends, cybersecurity, data privacy, ethics, trust and licensing will increase in relevance as interdisciplinary collaborations and are now at the forefront. Government-led geospatial infrastructures will need to take account of and consider responses to these emerging legal and policy top trends.

5. Conclusion

This paper addresses the importance and roles of geospatial technology and innovation for physical urban planning. Physical planning acts as an indicator to measure and monitor the progress of the city. Hence, the enablement of geospatial technology has acknowledged Agenda 2030, which is to measure sustainable development comprehensively. It is not only capable in produce maps, combine and analyze the data, but it is sophisticated proven in support of geographically decision-making support systems. The ability to add location to almost all existing planning information, unlocks the wealth of existing knowledge about physical, social, economic and environmental matters, playing a vital role in understanding and addressing the many challenges we face nowadays.The potential and advancement of geospatial technology with the existence of new technology enablers indicates that it has reached the level of maturity that allows this information as a core contributor to provide information to a multidisciplinary field to achieve SDGs.

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THE IMPLEMENTATION OF BUILDING INFORMATION MODELLING (BIM) IN TURKEY

Selda TOKLU [*] ***, Seher GÜZELÇOBAN MAYUK*** [**]

ABSTRACT

Building Information Modelling (BIM) is one of the most important development that has started to be used in Architecture, Engineering and Construction (AEC) sectors. BIM is also used in life cycle starting from designment, project design, feasibility, planning, energy analysis, construction, facility management to destruction. It is also defined as a process which covers not only three dimensions (3D), providing to superimpose of all project of the construction during modelling phases, but also seven dimensions (7D), being facility management. Despite of these advantages, it is seen that BIM is not commonly used in Turkey. Therefore, the questioning of both the reasons of this problem and the boundaries in Turkey are aimed within the scope of this study. For this reason, the situations and the examples in the countries where BIM is highly used in are analysed by the study. In addition to these, the comparison with the current situation of Turkey's BIM usage is made. By this way, the positive and negative states of BIM usage were tried to be defined. Also, the lacks of using BIM in Turkey's building sector are tried to be found. The study is completed with the evaluation of the obtained results. At the end of the study, it is found that there is a limited number of BIM experts and trainings about BIM in Turkey's building sector. Also, it can be said that there is a direct relationship between the usage of BIM system and the size of the project in Turkey.

Keywords: Building Information Modelling (BIM), BIM in the world, BIM in Turkey, Boundaries in the implementation of BIM.

1. INTRODUCTION

Time, cost and quality factors are at the forefront of the success of a project in the building construction sector. In this sense, the success of the cooperation between the stakeholders involved in the project is important. In recent years, it is seen that the data in the projects have increased and the projects have become

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more complex with the growths in the project scales and the innovations brought by the technology. Furthermore, it is seen that the cooperation between the stakeholders becomes more important in the construction process due to the expectation of the investor to finish the project in a short time, the depletion of natural resources and the increase in the need for energy efficient building. In order for this cooperation to be realized effectively, information needs to be managed correctly. Otherwise, project costs may increase due to reduced productivity and delays in projects (Becerik-Gerber & Rice, 2010).

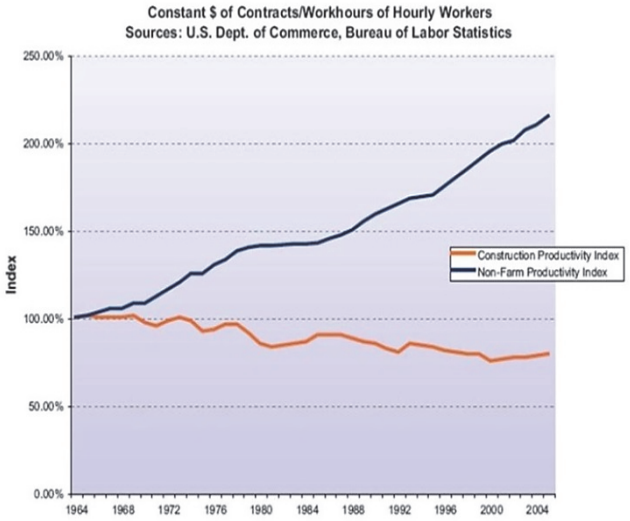

Figure 1: Construction Productivity Index (Teicholz, 2004)

As it is seen in the Figure 1, according to the results of the efficiency research in the sectors between 1964-2004 based on US Department of Commerce data; there is a 20% decrease in the Construction Productivity Index, despite the increase in productivity in other sectors by 80% (Teicholz, 2004). In recent years, digital transformation and technology have been utilized to increase this efficiency in the building sector. Building Information Modeling (BIM) is used for this purpose (Becerik-Gerber & Rice, 2010). Building Information Modeling (BIM) is a working systematic in which information is shared by creating a digital model of the designed project with the necessary software (Jernigan, 2008), and this information is used throughout the life cycle of the design, construction, use and destruction of the building.

On the other hand, when it is looked at the use of BIM in the world, it is seen that the BIM experience of each country is at different times. It is known that BIM is mandatory for public projects in the UK in 2011 (UKCO, 2011) and in the United

States in mid-2012 by the National Institute of Building Science and the Building Smart Alliance National BIM Standard (National BIM Standard, 2012). In addition, the use of BIM is mandatory in Finland and Norway, and the rate of BIM use is very high in Australia, Singapore and many European countries (McGraw-Hill Construction, 2014).

Compared to other countries, it can be said that Turkey has live on the transition to BIM. Although the utilization rate is quite low in local projects, in this sense it is seen that Turkey has been increasing awareness in the expansion of domestic demand BIM contract. Therefore, the companies in Turkey BIM transition rates began to rise (Oktem S., 2016). However, the lack of documentation about BIM in Turkey as in other countries, lack of education and the transition to BIM reasons such as high cost has been slow. To overcome the process of transition in a more effective way, taking reference from the other countries in the same process previously and adaptation to Turkey is important. In this study, firstly, the definition of BIM was made, then the use of BIM in the world and Turkey was investigated and the data obtained and the findings were revealed. In this way, it is thought that awareness about BIM will increase in Turkey.

2. BUILDING INFORMATION MODELLING (BIM)

BIM is defined as the way in which all information about the building is managed during the whole life cycle of a project, from the design phase to the construction phase, from the operational phase to the demolition or reuse phase (Underwood & Isikdag, 2010), (Ofluoglu, Building Applications throughout the lifecycle BIM, 2014), (Seeker & Aouad, 2010), (Eastman, Teicholz, Sacks, & Liston, 2011). In addition, it is a system that enables all stakeholders related to the project to work on the same data so that they can be integrated with geographic information systems and learn about the relationship between the building and its environment (Przybyla, 2010). BuildingSMART 9 is one of the organizations established to improve the exchange of information between software in the BIM working format. In order to work on the compatibility of file formats under the name of International Alliance Interoperability (IAI), this organization, led by Autodesk and HOK companies in 1994 with 12 companies, changed its name to building SMART in 2005.

Ofluoglu (2012) summarizes the uses of BIM as follows in his study:

- In the design process,
- In structural / environmental analysis,
- Building in the process of construction,
- Building operation,
- GIS (within the scope of Geographic Information System (GIS).

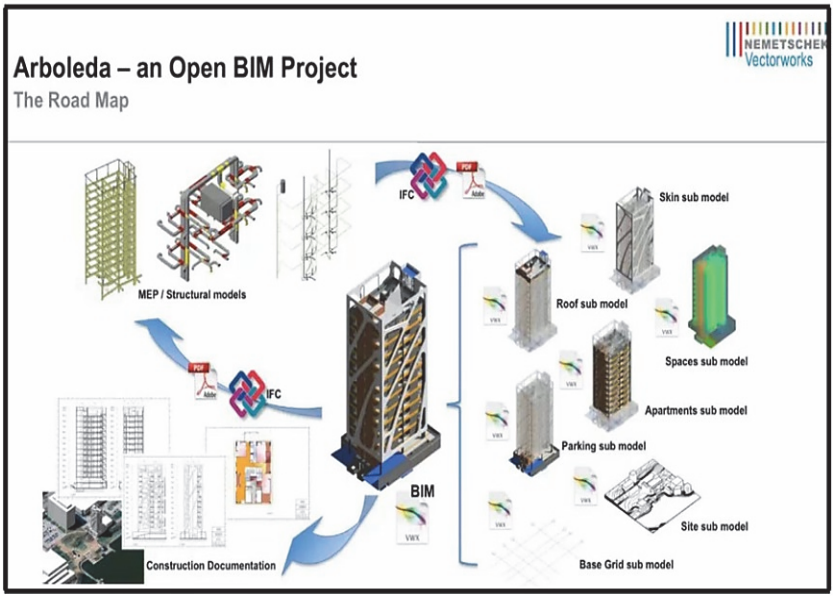

Figure 2. Data sharing between BIM and IFC (Samuel, Joseph-Akwara & Richard, 2017)

In the BIM system, projects can be produced on different softwares. By saving the file in IFC format, the information can be used without being lost among stakeholders. IFC provides a set of definitions for all object element types encountered in the construction industry, and it is possible to store these definitions in a data file based on text (Figure 2). In addition to the IFC format, in the BIM system, cloud-based document management (Common Data Environment) software is widely used as a common working platform. In the UK, National Building Specification (NBS) national BIM report construction performed with the participation of professionals in 988 by 2019, according to the most preferred cloud-based document management software; 41% Viewpoint/4projects, Autodesk 360, which is the second most commonly used software in Turkey is determined as the range of the software (NBS, 2019). The contributions of such softwares to the project can be sampled as follows:

- Allows all project team members to access the project online and offline from anywhere.
- Saves time as well as reduces risk and errors.
- Speeds up the project delivery process by providing a digital task description to the project team on issues such as description, location and delivery date.
- With authorization, limits can be imposed on which projects and data individuals can access.

- Without having any drawing or document software, it makes it easy for project stakeholders to access the correct information and the current version of the project.
- Facilitates coordination between project stakeholders.

  According to a 2008 study conducted by Alliance for Construction Excellence, the following positive features of BIM system use are mentioned in projects (ACE, 2008).
- Provides common design and construction techniques.
- Increases communication and information sharing among all project stakeholders such as owner, design experts, construction team and vendor suppliers.
- Defines the project risk, determines the conflict during the project's design phase as well as during the construction phase, determines the error, reduces the errors, risks and changes in the design and construction of the house at the same time.
- In the early stage of the design, system analyses such as energy, light, acoustics provide facilities and facilities for making energy efficient designs.
- Helps with facilities and asset management for the owner or investor.
- Provides all project stakeholders with a visual view of the project's digital twin during the early phase of the project.

3. THE IMPLEMENTATION OF BIM IN THE WORLD

BIM usage rates are very high in the world and some of the countries that adopt the BIM system can be counted as America, UK, Singapore, Australia, Japan, Brazil, South Korea, Scandinavian region (Figure 3) (Bahadir, 2018).

In the United States, which is one of the leading countries in the construction sector, the use of BIM in public projects is mandatory as of 2007. In the country, the General Services Administration (GSA) has developed several BIM guidelines under the "National 3D-4D BIM Program" (GSA, 2007), (Oktem S, 2016). Some of these guides are USC University of Southern California BIM Guidelines, V 1.6, Penn State University BIM Planning Guide for Facility Owners, Georgia Tech BIM Guidelines (Oktem S. , 2016). In 2014, the level of use of BIM between 2007 and 2012 was investigated by McGraw Hill Construction in North America. This survey, conducted with the participation of 592 people from different disciplines in the sector, shows that the level of use of BIM has increased from 28% to 71% in five years (McGraw-Hill Construction, 2012).



Figure 3. Global BIM Regulation Evolution (McAuley, Hore, & West, 2017)

In the UK, the BIM system is widely used, a five-year gradual implementation plan for BIM was established in 2011. According to this plan, BIM is required to be used at the second level in construction projects in the public sector by 2016 and BIM has published standards (Bahadir, 2018). The BIM usage rate in the UK was increased from 10% to 70% between 2011 and 2018, with the UK mandating BIM use in projects aiming to achieve savings in the construction industry (Figure 4) (NBS, 2018).

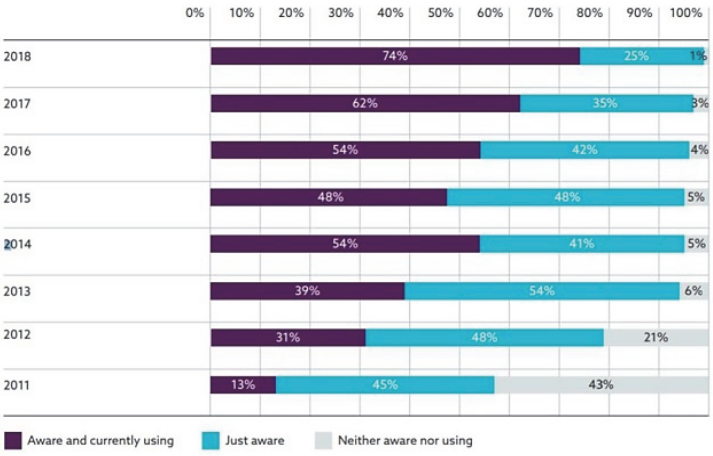

Figure 4. BIM Adoption over time in UK (NBS, 2018)

In addition, the UK Government has formed a BIM Task Group to support and further use of BIM (McGraw Hill, 2014; Kivircik, 2016). This group also assists in issuing specifications such as the Publicly Available Specification (PAS1192-5) and in identifying reference guidelines that need to be taken according to BIM maturity levels. In this sense, BIM maturity levels are shown in Figure 5 for the purpose of defining BIM usage levels in the UK.

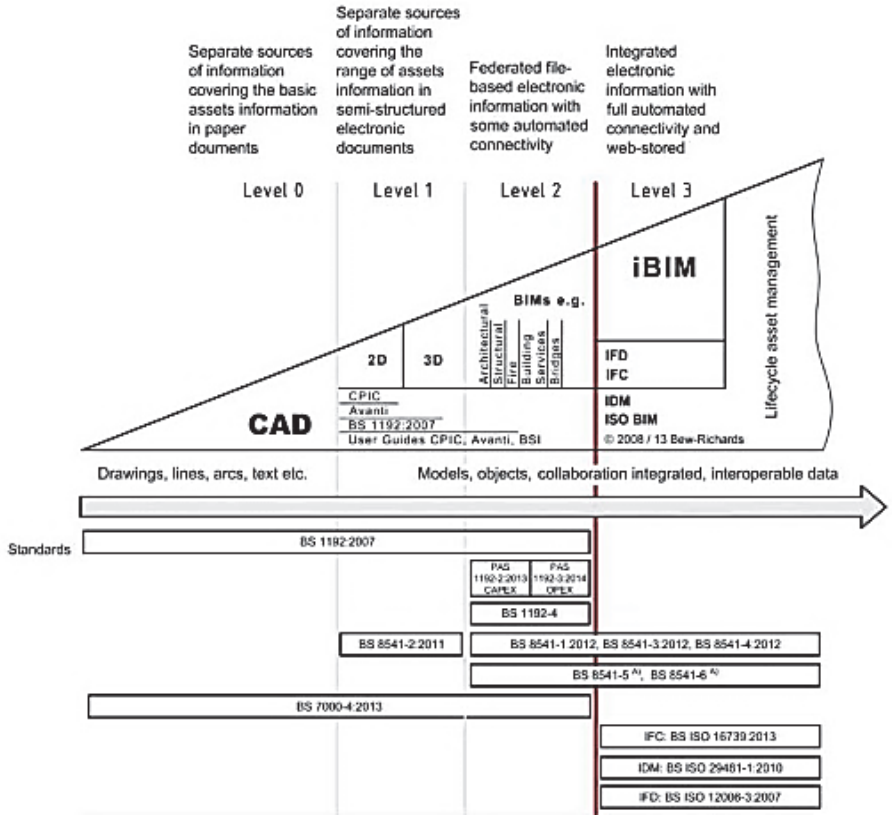

Figure 5. Mandatory levels of BIM use for the UK (Muratoğlu, 2015), (Alkawi, 2016), (Bahadir, 2018), (Bew & Richard, 2008)

McGraw-Hill Construction conducted a survey of 727 contractor firms from 10 different countries in 2014, including BIM utilization rate of firms between 2013 and 2015, the firm's scale knowledge and BIM experience. As a result of this research, the US used BIM in 2013 by 55%, while in 2015 it was ranked first by 79% (McGraw-Hill Construction, 2014).

Another country that uses BIM highly is Singapore. In Singapore, regulation checks were carried out in the building permits system with CORENET (Construction and Real Estate Network) software and BIM-based work Systematics

were preferred in the approval of more than 200 projects (McGraw-Hill Construction, 2014). "Singapore BIM Guide" was published in 2012 to guide studies on BIM in the country. BIM lectures, general seminars and workshops on BIM have been conducted at universities to raise awareness about the spread of BIM in the country and BIM (Kopuz, 2015).

Another of the countries with the most experience with BIM can be counted as Scandinavian countries. From the earliest years when ArchiCAD software was released, Finland, Denmark and Norway started using this system (Arac, 2018). These countries are those that adopt model-based design, prefer open standards and IFC technology as work Systematics, and are able to adapt to many collaborative initiatives (Smith, 2014).

One of these Scandinavian countries, Finland, has published standards for the implementation and dissemination of BIM by the country's government since 2007 (Bahadir, 2018), (Bolpagni, 2013). According to the 2007 study for Finland, 93% of architectural firms and about 60% of engineering firms use BIM (Wong, Wong, & Nadeem, 2010). Finally, the standards were updated in 2007 and the new BIM regulation (COBIM) was amended in 2012 (Bahadir, 2018).

In Denmark, efforts have been made to develop the BIM Classification Standard and to increase its efficiency in the construction sector, with the aim of establishing a common standard not only for Denmark but for all European Union countries. All Danish Employers are aware of BIM's returns and therefore demand the use of BIM in their projects (Arac, 2018), (BCA, 2012).

BIM applications in Norway are managed by the company Statsbygg (Arac, 2018). The firm has made the use of BIM mandatory in all public projects in Norway since 2010 by publishing a BIM manual to eliminate problems in the construction sector. At the same time, IFC compliance is requested in all files (Akkoyunlu, 2015), (Bahadir, 2018), (Arac, 2018), (BuildingSMART, 2012).

Looking at the examples around the world, the legal obligations imposed by governments to promote and popularize the use of BIM have been effective. Surveys conducted in Britain and America support this result (McGraw-Hill Construction, 2014), (NBS, 2018). The countries that have lagged in the use of BIM are Italy, China and South Korea, which can be said as a result of researches (Bahadır, 2018), (Akkoyunlu, 2015), (Kivircik, 2016), (McGraw-Hill Construction, 2014).

4. THE IMPLEMENTATION OF BIM IN TURKEY

As stated in Aladag's (2016) study on the use of BIM in Turkey's construction sector, the construction industry is undergoing a change due to the development

of technology, globalization, customer expectations and changing demands and BIM creates a competitive environment.

Turkey is known to be ranked in the list of the 250 largest contractors in the world, with 46 companies having the second most companies after China in 2018 (ENR, 2018). BIM usage in the world is over 60% in developed countries, while the BIM usage level is lower in Turkey which is one of the developing countries (McGraw-Hill Construction, 2014), (Ademci, 2018). In this respect, the country needs to adapt to technology and use BIM as an important tool by not resisting change in order to maintain its place.

However, while many countries that use BIM in the world have BIM-related standards and guidelines, there is no national BIM standard in Turkey. This obliges firms to apply the BIM operating system and try to compete by drawing up an implementation plan on their own. Although there is a lack of BIM standards in Turkey, awareness about BIM has increased with the Ministry of Transport mandating the use of BIM in railway infrastructure projects and the number of projects produced with BIM has started to increase (Selim, 2019), (Erdik, 2018), (Inusah, 2018). One of these projects is the Kabataş-Mecidiyeköy-Mahmutbey Metro Line project (Acar, 2019), (Inusah, 2018), which is the first metro project designed using BIM working system with a total construction area of 27.400 m2 between 2014 and 2018. This project has also been a finalist in the infrastructure category at the 2017 Autodesk AEC Excellence Awards (Prota engineering, 2019). One of the most important and major projects produced by BIM is the Istanbul New Airport project (Acar, 2019), which was completed in 2018 and has a total construction area of 76.5 million m2.

Some of the projects produced with BIM in Turkey are listed below (Erdik, 2018), (Inusah, 2018), (Acar, 2019). Looking at the list, it is seen that large-scale projects such as airport, subway and hospital projects have started to be produced in the country with BIM. Later, the use of mixed-use buildings began to become widespread. When the projects and applications are examined, it can be said that the awareness about BIM in public and private sectors has been increasing in the last 5 years.

- Okmeydani Education and Research Hospital (2015-2016)
- Emaar Square Mall (2013-2017)
- And Pastel Housing Project (2016-2018)
- Ataköy-Ikitelli Metro Line (2016-2019)
- Dudullu-Bostanci Metro Line (2016-2019).

On the other hand, looking at the usage rate of BIM in Turkey, although many survey studies have been done on this subject, the report covers the 2018 Turkey BIM report (Basyazici 2018). Although the BIM usage rate is 54.26% as a result of this report, it is stated in the comments in the report that this rate is actually 40% according to the other information in the report.

When the standards and concepts related to BIM are considered on the basis of experience, it is seen that those with experience between 1-3 years have more knowledge (Basyazici, 2018). The majority of BIM users in Turkey are technical personnel with between 1-3 years of experience, and it can be said that Turkey is at the beginning stage of its awareness of BIM. Although the rate of use of BIM in Turkey is still considered as at the beginning stage, it is seen that there is an effort. However, many of the survey studies show that the obstacles to BIM are customer demand, lack of technical personnel related to BIM, lack of BIM experts, lack of education, software and time-dependent expenses (Basyazici, 2018) (Adamci, 2018) (Bahadir, 2018). In addition, the adoption of BIM is difficult as there is resistance to change during the transition period from traditional method to BIM working Systematics. As the number of projects using the BIM working style increases and the benefits are discovered, the use of BIM will increase by learning by doing as Arayici (2011) says.

5. COMPARISON: BIM IN THE WORLD VS BIM IN TURKEY

Looking at the literature review, a comparison between BIM in the world and Turkey can be done summarized as the Table 1.

Table 1: A comparison of BIM in the world and in Turkey

COUNTRY	USA	UK	Singapore	Finland	Denmark	Norway	Turkey
Start year	2007	2011	2007	2007	2007	2007	2013
Mandatory year	2008	2016	2015	-	2015	2010	2014 (only railway projects)
Experience of personnel	more than 5 years	more than 5 years	more than 5 years	more than 5 years	more than 5 years	more than 5 years	1-3 years
Project type	public projects	public projects	for all project over 5000 m2	public projects	public projects	public projects	railway systems projects

Looking at the Table 1, it can be said that Turkey has started to use BIM nearly seven years. It shows that Turkey is in a transition position at a beginner level. Despite the other countries have mandatories using for other public projects, BIM has been a mandatory at railway projects in Turkey since 2014. Especially in Singapore, it has been used for all projects over 5000 m2. When it is looked at the experiences of personnel using BIM in the world, it is seen that they are more experienced persons than who works in Turkey. After the Table 1, it is possible to say that there are several boundaries in the implementation of BIM in Turkey.

6. RESULTS AND SUGGESTIONS

Findings show that Turkey have a position at beginner's level of BIM. In this study it is also seen that Turkey is in a transition period in the implementation of BIM and there are several boundaries regarding BIM in Turkey. These are basically summarized as follows;

- lack of technical personnel and lack of employee at high level of BIM specialty as well,
- not working of subcontractors of project stakeholders with BIM,
- lack of public standards, guide and regulations about BIM,
- lack of government promotion to use BIM,
- lack of BIM implementation plan,
- high software and hardware costs,
- few institutions providing training for BIM,
- lack of competent technical personnel in companies offering consulting service
- lack of knowledge about contribution of BIM to construction sector.

Turkey needs to increase the knowledge about BIM and its' usage as well in order to gradually meet the boundaries regarding BIM and maintaining its position in the construction sector. Furthermore, both the professionals in sector and specialists in academia should collaborate with each other. Also, they should contribute to development of BIM in Turkey by organizing voluntary trainings. BIM should take more place in AEC education in the whole curricula .The countries have already experienced this transition and are succeed in the implementation of BIM can be taken as a reference for a more effective transition period in Turkey.

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CASE STUDY OF GENERATIVE FACADE DESIGN USING BUILDING INFORMATION MODELLING (BIM) TOOLS

Veli Mustafa YÖNDER*

ABSTRACT

Multi-dimensional and intricate building design processes involve numerous dissimilar meta-design methodologies and complex build development procedures. In today's design approach, Building Information Modelling (BIM) tools are included in the process to understand and control the life cycle of the building. It is essential to take advantage of digital information modeling instrument during the new structure design, implementation, and project management stages. The modeling and processing of all structural elements on the BIM platform are effective for controlling all progressions. Forming virtual models to know and manage all the details of the structure is necessary for the solution of problems that may be encountered in implementation. Also, digital mock-ups guide the designer from the early design stages to the final product because virtual models that include all components of the building make it easy to analyze and study at different levels of detail. In the facade design process, it is possible to step out of traditional methods by using novel digital methods. One of the modern methods is BIM tool and innovative design solutions. The design of the facade systems has taken on a diverse physical character with the effect of developing technology. Because of the different types of facades and their implementation, more than one parameter affects the facade design. Apart from aesthetic concerns, it is one of the main parameters to be compatible with building physics and environmental factors. Necessary analyzes and revisions can be made via BIM environment, which enables physical simulations and real-time calculations. In addition, these parameters can be used to find geometric form factors. If the complex geometry challenges are not solved in this digital platform, they can be solved through specific add-ons. Dynamo, an Autodesk Revit extension, is algorithmic based and works with visual coding logic. Digital fabrication techniques, pre-fabrication methods, and on-site production options force the designer to choose at a certain stage. In this study, it has been tried to develop a facade model serving multiple design thinking by using BIM program and generative design methods for Izmir Basmane

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location. In the studied example, the role of BIM in facade design is discussed with its advantages and disadvantages. The flexibility of digital models is examined, except for the parameters that help form the facade form. Moreover, compulsory processes for modeling complex geometries are scrutinized in this study.

Keywords: Facade Engineering, Generative Design, Curtain Wall, BIM (Building Information Modelling)

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SUSTAINABILITY ASSESSMENT OF NANOTECHNOLOGICAL BUILDING MATERIALS

İrem USLU*, Saniye KARAMAN ÖZTAŞ*

ABSTRACT

Increase of natural resource consumption and environmental pollution due to population growth and industrial expansion causes considerable damage to the ecosystem. With the ecological crisis experienced in the 1970s, alternative ecological discourses have been expressed, measures have been taken to reduce the use of resources, and new technologies have been developed accordingly. Research has revealed that most of the natural resources are consumed in the construction sector. Therefore, sustainable technologies have started to be used and gain importance in this sector.

The term 'Nanotechnology' means the engineering of matter at the atomic molecular level and reveals its new properties. Research on nanotechnology has increased worldwide. However, the most important paradox encountered in the developmental stages of this technology is whether nanotechnological materials (nanomaterials) are harmful to nature during production, use and post-use stages.

In this study, it was aimed to

* contribute to improving the environmental aspects of nanomaterials with the findings of this study

* guide architects and other decision-makers in selecting nanomaterials considering sustainability

In this context, an assessment was made to determine the environmental advantages and disadvantages of nanomaterials used in the construction sector. In line with these purposes, nanomaterials were classified, and the types of these materials used in the building sector were investigated based on literature in the first part of the study. The environmental impacts of nanomaterials were evaluated in the context of energy, raw material, and water efficiency through the literature in the second part. The

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environmental advantages and disadvantages of nanomaterials used in the building sector were determined.

As a result of the study; reducing the consumption level of raw materials, production of durable materials, increasing energy efficiency and consequently reducing CO_2 emissions, low pollutant emitting materials, the feasibility of reuse of wastes are the environmental advantages of these materials, while the increasing environmental toxicity (air, water, soil and sediment) are the disadvantages of these materials, although scientific uncertainties still exist.

Keywords: Sustainable Building, Nanotechnological Materials, Environmental Assessment, Resource Efficiency

1. INTRODUCTION

Construction activities in the world are responsible for forty percent of materials and energy use, more than thirty percent of carbon emissions, twenty-five percent of tree cutting, and more than fifteen percent of clean water consumption (Say and Wood, 2008).

Sustainable architecture is defined as all activities that consume minimum energy and resources during the construction and usage phase, adapt to its environment, protect human health and comfort, and exhibit participatory structures in the ecosystem cycle. People spend ninety percent of their lives in buildings. Therefore, it is clear that buildings have a significant impact on human and environmental balance (Yılmaz and Vural 2015).

Nanotechnology is today seen as the fastest growing technology. Nanotechnological materials are developing in the construction sector as well as in many disciplines in terms of production and usage. Many positive developments in the field of architecture have emerged with nanotechnology (Niroumandet al. 2013).

In this context, it is aimed to present the nanotechnological materials used in the building sector firstly by classification, then to determine their environmental advantages and disadvantages by examining the environmental impact categories in this study.

2. NANOTECHNOLOGY AND NANOTECHNOLOGICAL MATERIALS

Nanotechnology aims to reveal the new properties of the material by engineering it at the atomic molecular dimension; It is a set of technologies that includes the development of functional materials, structures and systems for the understanding, control, and production of physical, chemical and biological phenomena at the nanometer scale.

The earliest example of nanotechnological materials is the cup of Lycurgus made by a Roman glass master in the 14th century. This work has the property of converting its color from green to dark red with the effect of sunlight due to the silver and gold nano-particles in its content. In 1959, at Richard Feynman's famous conference titled ''There is a lot of room at the bottom'', unnamed technology, in these years, emerged with the words as "If materials and devices can be made at the molecular level, this will be the source of discoveries " (Feynmann 1992). The term nanotechnology was first used by the Japanese scientist Norio Taniguchi in 1974 (Taniguchi 1974).

Nanotechnology is an exciting field of scientific development that promises more for less. It is a science that can create smarter, cheaper, lighter and faster devices that can do smarter jobs, use less raw materials and consume less energy (Elborombaly 2016).

Nano-scale particles naturally occurring spontaneously by environmental influences in nature are mineral oxide, iron oxide, silicate and carbon group. There are also particles such as metal oxides, carbon nanotubes produced in the laboratory environment. As a result of these studies, they have become the most important technological parts of today both industrially and scientifically with their atomic sequences that can be changed in order to meet the desired usage as well as having perfect properties (Ünşar 2013).

It is needed to use renewable energy resources very efficiently due to the need for less harmful, more flexible, more durable and long-lasting building materials during production and process. Nanotechnology, which is one of the most important technology fields of today, is expected to contribute significantly to the development of the building materials with these properties (Candemir et al. 2012).

Nanotechnology research has increased worldwide since 1980. However, an important challenge encountered in the developmental stages of this technology is that nanotechnological products are harmful to nature during production, use and post-use stages. Fear of any technology has led to the prevention of harmful effects on humans and the environment. This technology, which has the potential to create many new materials and devices with a wide range of applications, raises concerns about the toxicity and environmental impacts of the nanomaterials (Elborombaly 2016).

The effects of the developed nanotechnological materials on human and environment are complicated. These effects vary depending on particle properties and chemical toxicity (Science for Environment Policy 2017).

2.1. Classification of Nanotechnological Materials

In this study, nanotechnological materials (nanomaterials) used in buildings are classified according to their *formation, size, position in the product* and *ingredients.*

According to their formation, nanomaterials are classified as; organic and inorganic. Organic nanomaterials consist of biological, geological, atmospheric particles. Materials such as fullerene, carbon nanotube, aerogel etc. are examples of organic nanomaterials. Nanomaterials that do not contain carbon atoms are called inorganic such as nano-titanium dioxide (nano-TiO_2), nano-silica (nano-SiO_2), nano-aluminum oxide (nano-Al_2O_3) (Hansen 2009).

According to their size, nanomaterials are classified as zero-dimensional (nano pellets, nanoparticles etc.), one-dimensional (nanowires), two-dimensional (nano-films, nano-coatings) and three-dimensional nanomaterials (fullerenes, carbon nanotubes, aerogels) (Hansen 2009).

Considering the position of nanomaterials in the product, they are classified as nanomaterials in mass, nanomaterials applied to surface, and nanomaterials containing nanoparticles. For the materials in mass, it can be one or more different types of nanomaterials in the mass. Nanomaterials applied to surface can be grouped as the materials where the mass and surface are same, the materials coated with a nano thin patternless film on the underside of a different material, and the materials covered with a nano thin patterned film on the bottom surface. Nanomaterials containing nanoparticles can be grouped as the materials containing nanoparticles attached to the surface of a different solid form material, the materials containing nanoparticles suspended in a liquid or solid materials or the air (Hansen 2009).

Nanomaterials according to their ingredients, they are divided into three as carbon-based, metal-based and nanocomposites. Tubes (nanotube / nano rod), ellipsoids, and empty spheres (nanotop) are the types of carbon-based nanomaterials. Nano zinc oxide, nano silver, nano aluminum oxide, and nano titanium dioxide are the types of metal-based nanomaterials. And, polymer, ceramic, metal types are the example of nanomaterials (Hansen 2009).

2.2. Nanomaterials Used in Buildings

Nanotechnology controls substances at the nanoscale and changes their structures at the molecular level. In this way, it can improve the physical and chemical properties of traditional materials used in architecture. And new materials can be produced by changing the basic properties forming the structure of the materials such as strength, surface area, conductivity, and flexibility (Elvin 2013) (Tepe 2007).

In this study, the nanomaterials used in the buildings were classified as structural nanomaterials, nanocoatings, nanotechnology and insulation applications, nanotechnology and photovoltaic panels, nano adhesives, nano plastics, and nano lighting elements.

Nanomaterials according to their use in buildings they are classified. This classification and related materials were listed below.

- Structural nanomaterials

Nanoparticles are used in the structure of concrete, steel and wood bearing systems in structures.

- Nano coatings

Self-cleaning nanocoatings, lotus effect self-cleaning nanocaps, self-cleaning nanocaps with photocatalytic effect, easy to clean nanocoatings, air-clean nanoclays, anti-fog nanocaps, anti-bacterial nanocaps, fingerprint-free nanocoatings, uv-protected nanocoatings, non-scratch and abrasion resistant nanocovers.

- Nanotechnology and insulation applications
- Nanotechnology and photovoltaic panels
- Nano adhesives
- Nano plastics
- Nano lighting elements.

3. THE ENVIRONMENTAL ASSESSMENT OF NANOMATERIALS IN THE CONTEXT OF RESOURCE EFFICIENCY

Nanotechnology has significant potential in the field of construction and building materials. In the scope of this study, the environmental impacts of nanotechnological materials were assessed in the context of energy efficiency, raw material efficiency and recyclability, water efficiency through literature review.

Energy Efficiency;

According to researches, forty percent of all the energy produced in the world is consumed by buildings. Considering that thirty percent of carbon dioxide emissions are caused by the buildings that we live in, it is clear that the largest users of the resources in the world are the building construction sector and the man-made environment (Özdil 2007).

Approximately one-third of the total energy consumed in the world and Turkey is used in the construction, maintenance, operation, and demolition processes of buildings. Therefore, energy-efficient building design has recently become one of the important research areas in architecture (Tokuç 2014).

Figure 1 indicates that if the current trends continue, approximately one-third of the world's energy will be used by the building sector (URL 5).

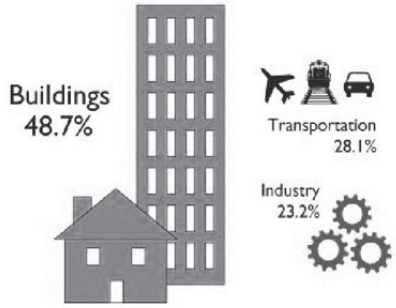

Figure 1: Distribution of world energy consumption and energy consumption by sectors [URL 5]

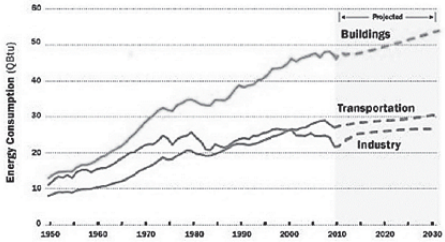

Figure 2: Energy consumption by sector (foreseen date) (URL 5)

High strength nanomaterials and nanocomposites can carry more weight per unit than conventional materials. Because of these properties, they consume less energy (Avcı 2009).

Ultra-fine carbon nanotubes can perform structure, structure and shell functions simultaneously, provide sustainable structures with higher strength, less maintenance, and lower energy consumption replacing traditional construction systems (Akyol and Örgülü 2014).

Raw Material Efficiency and Recyclability;

One of the major problems of the construction sector is the depletion of non-renewable raw material resources. In the world where natural resources are rapidly depleted, the use of alternative sustainable building materials that

reduce raw material consumption will have a positive impact on the country and the world economy. It will also provide future generations with the opportunity to benefit from natural resources (Gürer et al. 2004).

Forty percent of the raw material extracted from the world is used in the construction sector, and forty percent of the man-made wastes are produced by this sector (Özdil, 2007). Therefore, recycling practices are important especially in the construction sector (Gürer et al. 2004). According to Keller et al. (2013), total nanomaterials wastes comprise 63-91% landfill waste, 8-28% soil emissions, %0,4- 7 water emissions, and air emissions are less than 1,5%.

The most important reason why nanomaterials have an environmental impact is that nanoparticles can easily bind to the porous environment, usually under the ground and in the water (Bradley 2010).

The nanomaterials are used for various purposes. Nano wastes are considered as normal waste in solid or liquid form and are therefore disposed of through existing waste management systems. Thus, a nano-waste can be mixed directly into the environment as waste. For all these reasons, the release of nano-waste the environment should be prevented through appropriate waste management practices (URL 4).

Water Efficiency;

The amount of water per capita in Turkey is 216 liters per day (TSI). In addition to direct consumption, the amount of water consumed indirectly through goods and services, the amount of virtual water is 5,416 liters (URL 1). According to the studies, Turkey will be among water-poor countries, and the amount of water per capita will be reduced by a quarter in 2030 (URL 2). Therefore, better management and sustainability of water resources is very important.

By using nanotechnology, significant gains in water efficiency are achieved and studies are carried out to reduce the energy requirements associated with the transport and use of water (Kim et al., 2013).

According to the researches, it is predicted that 100.000 liters of water will be saved during the service life of buildings used with self-cleaning glass with photocatalytic titanium dioxide coating. Besides, in terms of the actual construction and maintenance costs in the buildings where these glasses were used, the average return on investment was calculated to be six years (Orhan 2013).

The self-cleaning glasses look like standard glazing and require less frequent cleaning while staying clean longer. These glasses, which are easier to clean, are environmentally and economically advantageous by providing less water and detergent (URL 3).

However, since these materials are very small in size, they are easily regarded as toxic contaminants passing through existing treatment systems. The toxic effects of nanomaterials vary depending on their characteristics (chemical structure, size, etc.), dose and storage time. Filtration studies with the use of nano membranes in water purification systems are continuing (Arif 2012).

Environmental Advantages of Nanotechnological Materials;

It is expected that nanotechnology can reduce stress on energy demands by providing clean, alternative energy sources, such as photovoltaic and fuel cells, at a lower cost. Photocatalysts based on nanomaterials that can remove organic pollutants have been developed. Therefore, some estimates claim that nanotechnology will actually reduce the air and water pollution we have today (Kulkarn 2015).

Table 1. Environmental Assessment of Nano Building Materials (Sánchez and Sobolev 2010 and Leydecker 2008), (Krishnamoorthy and Iniewski 2016), (Lee et al. 2010), (URL 5 2016)

Nano-particles	*Field of Applications in Buildings*	*Environmental Impact Assessment*	*Environmental Advantages of Nanotechnological Material*		
			Energy Efficiency	*Water Efficiency*	*Raw Material Efficiency*
Nano Silica (SiO_2)	*Concrete*	Reinforcement in mechanical strength, energy efficiency use	)		
Nano Silica (SiO_2)	*Ceramic*	Increased scratch resistance, increased fire resistance	)	)	
	Window	Fire resistance, increased scratch resistance	)		)
Titanium Dioxide (TiO_2)	*Cement*	Self cleaning, water efficiency use increased durability of structures and components, energy efficiency use	)	)	)

Table 1 Continued. Environmental Assessment of Nano Building Materials (Sánchez and Sobolev 2010 and Leydecker 2008), (Krishnamoorthy and Iniewski 2016), (Lee et al. 2010), (URL 5 2016)

Nano-particles	***Field of Applications in Buildings***	***Environmental Impact Assessment***	***Environmental Advantages of Nanotechnological Material***		
			Energy Efficiency	***Water Efficiency***	***Raw Material Efficiency***
Titanium Dioxide (TiO_2)	*Concrete*	Mechanical durability rapid hydration, self cleaning		)	)
	Window	Increased fire resistance, self cleaning, energy efficiency use, water efficiency use	)	)	)
	Photo -voltaic Panel	Increase in electricity generation efficiency	)		
Carbon Nanotubes (CNT)	*Concrete*	Mechanical durability, crack prevention, increased lifetime, energy efficiency use	)		)
Carbon Nanotubes (CNT)	*Steel*	Mechanical durability, increased lifetime, energy efficiency use, anti-corrosion protection	)		)
Carbon Nanotubes (CNT)	*Ceramic*	Advanced mechanical and thermal properties, energy efficiency use	)		
	Photo -voltaic Panel	Increase in electricity generation efficiency	)		
Silver (Ag)	*Coating*	Removal of harmful components		)	)
	Paint	Anti-Bacteria Effect Improving air quality and providing indoor comfort, Prevent the formation of organic dirt, bacteria, germs and odors		)	)

Table 1 Continued. Environmental Assessment of Nano Building Materials (Sánchez and Sobolev 2010 and Leydecker 2008), (Krishnamoorthy and Iniewski 2016), (Lee et al. 2010), (URL 5 2016)

Nano-particles	*Field of Applications in Buildings*	*Environmental Impact Assessment*	*Environmental Advantages of Nanotechnological Material*		
			Energy Efficiency	*Water Efficiency*	*Raw Material Efficiency*
Magnesium (Mg)	*Coating*	Useful as protection for surfaces exposed to corrosion, moisture, oxidation increased durability and service life of structures and components	⎫		⎫
Zinc oxide (ZnO)	*Solar Cells*	Increase efficiency in electricity generation	⎫		
Copper (Cu)	*Steel*	Corrosion resistance			⎫
Lithium (Li))	*Photo -voltaic Panel*	Energy efficiency use	⎫		
Nano-alumina	*Water Filters*	Water efficiency use		⎫	
Aluminum Oxide (Al_2O_3)	*Concrete*	Improving the mechanical and physical properties of concrete	⎫		⎫
	Steel	Corrosion resistance	⎫		⎫
	Wood	Improving resistance to surface damage due to UV radiation	⎫		⎫
	Lighting	Energy-saving	⎫		
Iron Oxide (Fe_2O_3)	*Concrete*	Increased compressive strength, Abrasion resistance			⎫

According to the Tablo 4, it has been revealed that nanoparticles such as Nano Silica (SiO_2), Titanium Dioxide (TiO_2), Carbon Nanotubes (CNT), Magnesium (Mg), Zinc oxide (ZnO), Lithium (Li)), Aluminum Oxide (Al_2O_3), Aerogels, Nano structured thin films and Nano-Membranes provide energy efficiency to the materials they are used with. Nano Silica (SiO_2), Titanium Dioxide (TiO_2), Silver (Ag), Nano-alumina, Aerogels, Nano-Membranes, Nano-Catalysts provide water efficiency to the materials they are used with. Nano Silica (SiO2), Titanium Dioxide

(TiO2), Carbon Nanotubes (CNT), Silver (Ag), Magnesium (Mg), Copper (Cu), Aluminum Oxide (Al2O3), Iron Oxide (Fe2O3), Aerogels, Nano-Membranes provide raw material efficiency to the materials they are used with.

Besides the many positive effects of nanotechnology, it also has negative effects. Researches show that nanoparticles used in structures can penetrate the skin, lungs and intestinal system (Helland A., 2004), (Kreyling et al., 2002). Also, nanoparticles can react with other substances and mix with organisms, soil and groundwater. This situation may cause other negative effects (Oberdorster et al., 2004), (Falkner and Jaspers, 2012). Besides, many studies indicate that nanoparticles can pass to organs such as lungs and liver (Baalousha, 2016), (Karlsson et al., 2009).

4. CONCLUSION

Nanomaterials can provide solutions to important environmental problems with energy, raw material and water efficiency thanks to its many properties. In addition to these advantages, nanotechnology reduces the numbers of production processes and thus contributes to the environment by providing resource efficiency.

According to this study, it is determined that concrete, steel, cement, ceramic and glass based nanotechnological building materials provide energy and water efficiency structure. Besides, it was determined that photovoltaic panels produced by using nanotechnology are energy efficient by reducing heat loss due to their high performance in thermal insulation and coating applications.

In this study, it is highlighted that nanotechnological materials provide mechanical resistance, efficiency in energy use, fire resistance, corrosion protection, removal of harmful components, anti-bacterial effect, more efficient heat insulation to respond positively to many environmental effects. However, it is important to determine the negative environmental properties of nanomaterials during production, use, and recycling stages within the framework of the Life Cycle Assessment methodology in terms of obtaining more sustainable nanotechnological materials.

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SESSION 1B

Theme: Conservation and Regeneration

13 October 2020 Tuesday, 13.00 – 14.15

Chairperson: Prof. Dr. Romolo CONTINENZA

Invited Speaker: Romolo CONTINENZA

Heritage Interpretation for a Deep Knowledge of Cultural and Natural Heritage

İmre ÖZBEKEREN

The Meaning of Urban Morphology in Terms of Cultural Heritage through Changing Urban Space

Koray GÜLER

Architectural Reflections of Falconry (Sparrowhawking) Tradition as an Intangible Heritage of Eastern Blacksea Region, Turkey

Fatma YELKENCİ SERT, Özgül YILMAZ KARAMAN

Investigation of Acoustical Characteristics of Hüsrev Ağa Mosque and İbrahim Çelebi Mosque in Manisa, Turkey

HERITAGE INTERPRETATION FOR A DEEP KNOWLEDGE OF CULTURAL AND NATURAL HERITAGE

Romolo CONTINENZA*

ABSTRACT

Born in the context of the dissemination of environmental heritage, Heritage Interpretation (HI) was subsequently extended to include cultural heritage and has been widely disseminated and internationally recognized. The contribution aims to briefly show the reasons, the history, the principles and methods of the discipline, by highlighting the most recent developments at international level and by showcasing applications carried out in Italy and abroad.

Keywords: Intangible assets, Translation, Interpretation, Multiculturalism, Globalisation

1. Foreword

Museums, monuments, sites of historical, environmental or archaeological interest are typically equipped with comprehensive and well-illustrated iconographic and illustrative systems. However, it is not uncommon, to see groups of visitors who lose interest in the exhibition, after the first few rooms: they are sometimes even more interested in the snacks on sale in the vending machines, rather than in what remains of the exhibit.

You may have noticed that children and teenagers often end up playing with their phone or with each other, sometimes even disturbing other visitors. Younger children take advantage of sheltered corners and comfortable seats to take a nap, sometimes next to some elder.

Although the situation I just presented is not always that gloomy, it is a fact that cultural heritage sites (CH-Cultural Heritage) often fail to capture the attention and arouse real interest in the visitor, despite attracting tourists. More and more people today, unfortunately, tend to consider these spaces and the objects exhibited therein, as intended for a niche group of experts. This tendency contributes to creating a sort of barrier between the public and CH, often triggering feelings of boredom and indifference in the visitors.

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These tendencies demonstrate how the organisation of communication materials is often conceived for expert users, rather than for the wider public. The language used is often specialised, naming conventions used are often too scientific. The information contained in the explanatory panels is often extensive and detailed, while illustrations are essential and mainly technical (plans, sections, etc.), given they're often taken from technical and administrative documents.

This communication material can be unsatisfactory even for experts, who would like to access a lot more information than what is included in the panels. We therefore see that these materials fail to satisfy both users, on the one hand the more cultured visitors, who don't receive the detailed information they expect and the wider public, that often finds them boring and distracting.

Those objects we consider to be important elements of CH, and therefore worthy of being included in museum collections, are, in reality, artefacts conceived and made by men for other men. They are intended to perform important functions in the daily social, political and religious life of men. They constitute the material testimony of our continuous struggle for survival and of our attainment of happiness. The person in front of these objects lives the same struggles as the person who made these artefacts many years, if not centuries before him/her. He or she may therefore look at those artefacts with more interest, if the information on their creation were presented in a more accessible and clear fashion, if the social, political and historical context in which these objects came about was better framed.

This is how CH can fully fulfil its function as an important component of personal education. Hence, the contents, the recipients and the communication methods of CH become central elements in the planning on these processes.

2. History and promotion of Heritage Interpretation (HI)

Over time, in this field, pedagogical techniques based on knowledge but also on emotions and behaviours of user groups have been developed. These techniques have been widely applied and further explored and formalised into a new applied social science called "*Heritage Interpretation (HI)*".

This discipline was born in the USA, with the aim to promote natural environment conservation policies, through the creation of natural parks and by training staff to involve users in a pleasant and instructive learning experience.

The term "*interpretation*" was first used by John Muir[1] who defined it as a purely individual learning process, which allows the subject to translate the language of

[1] Wolfe, L. 1978, The life of John Muir. Madison, The University of Wisconsin press.

natural phenomena into a personal experience. This learning method that can be defined as a romantic way of relating to naturalistic values has long been tested, since the foundation of the US National Park Service in 1916.

In 1920, Enos Mills introduced a training and certification system for nature guides of the Rocky Mountains National Park, that he saw as "*translators of the great book of Nature*[2]". This approach to knowledge dissemination was then extended to Cultural Heritage (CH). In 1940 the term Heritage Interpretation (HI) was used to define all existing information and educational services.

In 1954 the first trade association was founded in the USA: the Association of Interpretive Naturalists (AIN). In 1957 the journalist Freeman Tilden[3] set the theoretical framework of the discipline[4] which aimed to develop of a new relationship between the user and cultural and naturalistic assets by highlighting the profound connections between these and the daily lives of users.

Besides providing comprehensive information on the phenomenon under consideration, the interpreter, in Tilden's conception, must provoke emotional reactions, by revealing unexpected aspects or by emphasizing some that are otherwise neglected. The interpreter has to show users how the phenomenon relates to problems and situations they may experience in their everyday life. By involving the users and by raising their interest, CH wins back its temporal and experiential dimension.

Similarly, the conservation of architecture characterised by meticulous conservation methodologies and precisely regulated restoration processes, has to be undertaken with the aim to define a strong relationship with the material and cultural wealth of the past, thus justifying its preservation.

A holistic consideration of CH, requires a balance between the container (e.g. the building) and the intangible conditions that contributed to giving it its shape and structure. Stories, myths and traditions must be kept in mind and preserved, together with works of art and architectural objects, thus striking complementarity between material and immaterial conservation.

This balance is crucial to any discussion addressing the elements of cultural heritage and really allows architectural monuments to be "*living monuments*". "*Living*", in this case, refers not only to the conservation of the material that constitutes the buildings, but also their intangible components. The heirs of the cultural heritage do not seek to experience only the tangible evidence of the

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[2] Mills, E. 1990, Adventure of a Nature Guide. Friendship, New Past Press (first published in 1920), p. 130

[3] On behalf of the US National Park Service

[4] Tilden F., 1957, Interpreting our Heritage. Chapel Hill, the University of North Carolina Press

activity of their ancestors, but also to those non-physical aspects of life, such as the history and culture of those who inhabited these places. The intangible components are as important as the material ones. A good interpreter must try to leverage these to create new and unexpected ways of fruition.

3. Principles and fundamentals

Heritage Interpretation, characterised by the ethos of North American romanticism and transcendentalism that opposed to European rationalism, is first outlined in the book "*Interpreting our Heritage*" by F. Tilden, where the characteristics of the "*interpreter*" are delineated. Tilden details various methods to engage with users and encourage them to interpret phenomena through their own personal experience and by seeking deeper meanings underlying the facts. Through specific communication strategies, the interpreter must capture users' attention and make them discover particular aspects of the phenomenon with the aim to expand their level of knowledge.

3.1. Tilden's six points

In his book, Tilden describes a communication strategy built around in six points that are still considered today as basic elements of the HI discipline:

1. Any interpretation that does not somehow relate what is being displayed or described to something within the personality or experience of the visitor will be sterile.
2. Information, as such, is not interpretation. Interpretation is revelation based upon information. But they are entirely different things. However, all interpretation includes information.
3. Interpretation is an art, which combines many arts, whether the materials presented are scientific, historical or architectural. Any art is in some degree teachable.
4. The chief aim of interpretation is not instruction, but provocation.
5. Interpretation should aim to present a whole rather than a part, and must address itself to the whole man rather than any phase.
6. Interpretation addressed to children (say, up to the age of twelve) should not be a dilution of the presentation to adults, but should follow a fundamentally different approach. To be at its best it will require a separate program.

The interpretation process must therefore be calibrated on the specific needs of the user, whose personality and experience must be swiftly identified, in order to increase the level of knowledge. The interpreter must be able to provoke

fascinations and then reactions, avoiding excessively emphasising details to preserve a global vision of the phenomenon.

3.2. Tilden and his cultural environment

Tilden's work collects and responds to the educational needs of his time. The experiential learning that he theorizes in the field of Natural and Cultural Heritage originates from the wealth of pedagogical studies and insights gained at the beginning of the twentieth century in the Western world. Among these the best known are to be found in the pedagogical experiences of J. Dewey in America, of A. Sutherland in Scotland, of CB Freynet in France and of M. Montessori in Italy[5], which, in turn, are permeated by contributions, in the psychological field, from the thought of AH Maslow, M. Csikszentmihalyi, KZ Lewin.

In Tilden's approach, the user, personally involved by the interpreter in experiencing the phenomenon, through well-calibrated maieutic expedients, is emotionally led to learn about the phenomenon's history as well as to internalise its values, thus better appreciating its conservation, also in consideration of future generations.

3.3. Users

Understanding the user's needs is a primary requirement of the interpreter's work. This knowledge allows him/her to calibrate his/her communication methods. In general, only few people will be interested in knowing all about a certain site. Some users will be moved by simple curiosity or the desire for entertainment, while others by the desire to offer their family, or a group of friends, the experience of a particular site. Others still will choose to visit a certain site in order to respond to social status criteria, such as being able to say, within their networks, that they have visited that place. Other, in conclusion, may want to visit a site because of its mystical / magical aspects.

Age groups are even more varied: the cultural level of users also presents many differences, ranging from young people in school, to more mature and educated users in university, to those who are just literate, up to elderly users. All of them are willing to expand their knowledge. In recent years, a new phenomenon emerges, that of relatively young and fit grandparents who accompany their grandchildren. Each category needs to be approached in a different way and each use may fall into one or more of the categories we just outlined. The interpreter's training must also include elements of psychological and behavioral disciplines that will allow him to better manage varied group of users.

[5] But also in Europe, in the US and in many other countries.

3.4. Operational tools and methods

In order not to disappoint individual users, the interpreter must be prepared to use physical, emotional, philosophical or spiritual stimuli as well as all possible tools available. These may include replications of artefacts that can satisfy experiential needs, graphic and photographic reconstructions, illustrative panels, as well as using immersive environments: think, for example, of the reproduction of the Altamira caves, created to avoid the contamination of the original environment. Digital technologies allow the production of three-dimensional representations as well as multisensory experiences, hot / cold sensations and tactile, acoustic, olfactory, gustatory experiences.

The main operational characteristics of a good interpretation process are:

a_ Breaking down groups into homogeneous subgroups that share the same characteristics and expectations;

b_ Reporting of peculiar elements;

c_ Storytelling to illustrate facts, events and stories of the past;

d_ Interrogation through open questions (such as: "what would you have done in those conditions?") intended to activate multiple answers, initiate dialogue and encourage participants to share their experiences;

e_ Re-discovery of peculiar elements of the site.

Among these, storytelling is certainly one of the most effective tools. A tree, a particular stone, an image, any object can be used to illustrate little-known stories, often originated by tradition, that are, as a result, memorised in a mucho more immediate and permanent way.

3.5. Evaluation methods

This innovative way of approaching knowledge sharing is, by its nature, subject to continuous scrutiny that aims to improving the quality of the services offered. There are many tools used in this evaluation process:

_ Questionnaires may seem a rather obsolete and scarcely stimulating method but allow to collect objective feedback

_ Individual or group interviews addressed to participants;

_ Careful and impartial observation of the behaviour of the participants during the visit;

_ Other methods that, from time to time, may be considered relevant.

2.6. Other players in the field

The interpreter must not only focus on the needs of visitors: other players also bear an interest in the site. There are, for example, the owners or managers of the CH and those who take care of its hospitality, maintenance, merchandising and advertising. Even more involved, if possible, are those who live on site, or reside and work in the surrounding areas.

It is therefore crucial to develop a certain sensitivity to manage the impact of tourism on the population and to consider the issues originating from intensive tourism, such as traffic, availability of parking spaces, waste-management issues and well as noise and air pollution.

3. Dissemination at an international level

The many years of practice of Heritage Interpretation have led to constant improvement and refinement of the methods as well as the operating methodologies of this discipline. The positive outcomes of knowledge dissemination and the considerable promotion of social growth brought about by the discipline were at the origin of the wider dissemination of HI at international level. The discipline proved to be effective in promoting feelings of belonging, knowledge and tolerance of diversity and social cohesion.

International organisations such as UNESCO and ICOMOS (International Council on Monuments and Sites) also recognised the effectiveness of these methods: in 2008 the International Council on Monuments and Sites promoted the so-called "*Ename Charter*" (Charter for the Interpretation and Presentation of Cultural Heritage Sites). In 2011, ICOMOS issued the Paris Declaration on "*Patrimony as a motor for development*[6]" and, in 2014 the "Florence Declaration[7]", adopted at the 50th anniversary of the Venice Charter, to further promote the collaboration between local communities involved in CH, to support sustainable development programmes.

3.1 Dissemination in the UK

Cultural affinity, the use of the English language in the theorisation of the discipline and similarities in the way public and private players interact in

[6] in which it is hoped "to put authenticity at the heart of the development of cultural tourism and the growth of interpretation and communication strategies"

[7] Declaration of the principles and the declarations on the values of Cultural Heritage and Landscape and the creation of peaceful and democratic society. Web - https://www.icomos.org/en/about-icomos/governance/general-information-about-the-general-assembly/list-of-general-assemblies/18th-general-assembly-florence-2014/3479-18th-general-assembly-the-florence-declaration (last consultation: Sept 2020).

managing cultural and natural assets were the main reasons for HI to become widespread in the United Kingdom. In 1975 British interpreters founded the Society of the Interpretation of Britain's Heritage, which counts today more than 400 members among professionals and volunteers who are active in sites managed by public or private bodies. James Carter's book[8] titled "*A sense of place - An Interpretive Planning Handbook*" was highly regarded as an agile manual for the design of interpretative strategies, not only in the UK but also in Europe.

3.2. Dissemination in Europe

The activation, in 1999, of two European projects in the HI sector marked the first European initiative in this field. These are the EU Lifelong learning project TOPAS ("*T.O.P.A.S.-Training of Protected Areas Staff*", originated from the participation of 20 partners from 9 countries) and the EU Leader project *Transinterpret*[9]. Thanks to this program, the "*Interpret Europe - European Association for Heritage Interpretation*" association was created in 2010. Interpret Europe counts more than 300 members from 40 countries; it organises annual international meetings and provides training activities in the field of Heritage Interpretation.

Recognising the educational and training value of the HI activity, the discipline has been included in several European Lifelong Learning projects. In addition to the being included in the Erasmus projects, the InHerit program - Professional Development in Heritage Interpretation - was launched in 2016 at European level, to promote the dissemination and training of environmental interpreters, creating study materials and opportunities for discussion on the topic.

At the national level, HI associations are also operational in Croatia, the Czech Republic, Portugal and Spain.

4. Recent applications

4.1 Italy

In Italy, the involvement of the State in the promotion and management of cultural heritage has for a long time slowed down the spread of experts in the field of Heritage Interpretation. The opening of protected natural areas, as well as the creation of museums and historic sites under local or regional management, is gradually opening up spaces for professionals trained in the HI sector.

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[8] Carter, J. , 1997, A Sense of Piace - An Interpretive Planning Handbook, Tourism and Environment Initiative, Inverness

[9] Protected Area Staff Training Guidelines for Planning and Management, 2011, Svetlana L. Kopylova and Natalia R. Danilina, Ed., International Union for Conservation of Nature

Interpretation appeared in Italy in 1983, during a course given by the Parks Management Office of the Lazio Region to promote work in the field of tourism in protected regional areas and, in 1985, the same office, in association with the Latina Tourism Agency, organised the first training course for newly recruited guides working in the National Park of Circeo. In 1992 in this park, the Pangea Onlus Institute was founded with the specific aim to organise environmental training and education. The first course for Naturalistic Interpreters of the State Forestry Body was organised by the Pangea Onlus Institute. Since 1992, Environmental Interpretation has been applied in many national and regional protected areas, with courses for official Park Guides, for the creation of "Interpretation Plans", and for the planning of structures, equipped paths, exhibitions and other media.

Since the nineties till today, Heritage Interpretation in Italy has extended its scope from purely naturalistic and environmental themes to those concerning historical and Cultural Heritage. To underline this expansion, in December 2015, the Directorate General for Education and Research of the Ministry for patrimony, cultural activities and tourism, in agreement with the Superior Council for Cultural Patrimony and Landscapes, published the first National Plan for Education of the Cultural Heritage.

In academia, since 2018, Prof. Marta Brunelli holds courses in "*Heritage Education and Interpretation*" and "*Pedagogy of Art and Heritage*", at the Department of Education, of Cultural Heritage and Tourism of the University of Macerata. Prof. Brunelli is the author of numerous specific contributions as well as of the first book on HI in Italian.

4.2 L'Aquila

In 2015, the University of L'Aquila, the Pangea Onlus Institute, the Caetani Onlus Foundation, the Institute for Construction Technologies of the CNR (National Research Council) and Federparchi (representing national and local protected areas) signed an agreement to encourage the dissemination of HI methodologies in the academic environment and initiation of training programs in this sector. This agreement has so far only led to the organisation of seminars within the courses of the Department of Human Sciences of the University of L'Aquila.

4.3 A practical seminar

In the third semester of 2018, at the Faculty of Architecture of the Gdansk's University of Technology (PL), I held a 60-hour seminar on the topic of HI with practical applications. During the seminar I applied the basic principles of the HI

to the study of an illustrative panel referring to one of the three proposed themes:

1. the recovery of an Art Nouveau railway station for commuters and its transfer to an area of the university campus;
2. the enhancement of a residential settlement located at the foot of the Gran Sasso mountain (AQ)
3. the illustration of the history of a building in the center of L'Aquila as a result of the finding of a series of frescoes emerged during the renovation of the building.

Students were captured and showed great interest in developing explanatory panels that were remarkably and effectively conveying information by means of text, illustrations and other graphic elements.

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THE MEANING OF URBAN MORPHOLOGY IN TERMS OF CULTURAL HERITAGE THROUGH CHANGING URBAN SPACE

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ABSTRACT

In line with recent paradigm shifts like globalism, the increase in population or commodification of urban land beside cultural demands, have been giving rise to regeneration of cities via high-rise buildings, infrastructural interferences or building up new areas in the city. In historical cities, there occurs an encounter with urban space and heritage. This new space production mechanisms inevitably cause degenerations on historical cities' characters. Recent approaches in heritage thought has been trying to find solutions to this dilemma. 'Historic Urban Landscape' approach provides a holistic view for all these issues.

If we read the urban space as a text, we can say that the language of this pattern is composed of either tangible or intangible words. This tangible dimension is embodied within urban morphology. Although urban morphology had been evaluated mostly as just the physical form until recent times, today we know that it has a further meaning embedded in its cultural and historical codes. So, urban morphology also contains cultural heritage. Although urban morphology is generally a neglected dimension in conservation, it has a potential to be a kind of stalker in order to understand and sustain the sense of place via its generic codes.

This paper aims to consider urban regeneration processes that affect urban morphology in the context of cultural heritage. It also aims to bridge the gaps between space theory and conservation as an architectural phenomenology via urban morphology. The method is based on the evaluation of several cases from Istanbul via three readings: Diachronic analysis based on morphological reading**,** synchronized analysis based on current urban space reading and analysis of issues related with the meaning of historic urban landscape. The results show that; the embedded codes of urban morphology have a pathfinder character for sustainability of cultural heritage with development; historical urban landscape approach has different thresholds and interfaces which cannot be limited to traditional scale/buffer zone approach because it is hard to define where the urban

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heritage ends, and natural or cultural heritage starts so a contextual evaluation is essential; topography and its tectonic are vital determinants on the historical urban landscape; it is a must to bridge urban morphology with conservation beside revisiting space theories and architectural phenomena; in order to decide what is heritage in terms of 'trust'.

Keywords: space, urban morphology, cultural heritage, historical urban landscape, Istanbul.

1. INTRODUCTION

In line with the changes in the perception of time-space, new paradigms have emerged in space production processes those effect also the historical cities. As a living organism, a city has numerous layers like memory, culture, ecology, aesthetic, topography or morphology overlapped in time which need to be perceived. Although there is a debate whether the place still matters in a globalized and digitalized world, the ontological needs of man bring us to the view of place matters. Starting from this point, we have the question 'what makes a historical city a place?'.

The interaction of disciplines in recent years like hermeneutic, phenomenology and their contributions to space theory beside globalization and post-modern paradigm have widened our approaches to space and urban heritage. Although space theory and conservation thought have been evaluated as if they are different disciplines, the spirit of both derives from the same matter: human and its search for the meaning in this universe. So, if we consider the heritage paradigm in such an approach, it may allow us to see deep layers inherent in the term heritage while bridging the related disciplines. Furthermore, new space production mechanisms inevitably cause degenerations on historical cities' characters.

In this context conservation theory has been transforming since its occurrence in the 19th century and has been trying to find solutions to mentioned dilemma. New approaches make us to think heritage as an ethical mindset. Historic urban landscape approach (HUL) provides a wholistic view to heritage in this context.

This paper aims to make a contribution to current heritage paradigm through three approaches. First, to reconsider the meaning of urban morphology in a way that it becomes a new approach for understanding and stalking the concepts of conservation and sustainability. Second, to address urban morphology as a bridge between the theoretical approach of space theory and conservation paradigm. Third, to determine the extent and context of historic urban space in terms of HUL practice.

2. THRESHOLDS IN CULTURAL HERITAGE PARADIGMS

2.1. A Brief History Through Main Paradigm Shifts

Conservation thought has been evolving through many paradigm shifts up to now. In the beginnings of the 20th century, the emphasis was on the conservation of monument with its cultural historicity and aesthetic value (Jokilehto, 2004 [1999], pp.284-295; Ripp & Rodwell, 2015). Between the two world wars, Athens Charter (1931) and CIAM (1933) were effective meetings interested in monuments with their environments through the modern planning approach. This period's approach had the tendency to see the historic city as a cultural dead weight (Day, 2011; Jokilehto, 2004 [1999], 289).

After the 2nd world war, the conservation thought turned its way from 'historic monument' into a widening approach including the historic urban and rural areas with Venice Charter (1964), while concerning with the restoration of the damaged cities (Jokilehto, 2004 [1999], p.289; Ahunbay, 1996, p.117). In the following period, we see the cultural approach (Ahunbay, 1996, p.19) beside the urban scale.

With the conventions in 1970s and 80s such as World Heritage Convention (1972), European Charter (1975) or Nairobi Recommendation (1976), the emphasis on "*integrated conservation"* has increased (Ripp & Rodwell, 2015) beside Washington Charter (1987) and Brutland Report (1987). The scope of cultural heritage has broadened (Landorf, 2009) including development and planning approaches while on the other hand introducing new concepts like place, cultural significance, fabric (Jokilehto, 2004 [1999], s.289; Ahmad, 2006) in Burra Charter (1979) or landscape.

With the turning point in the 1990s, relativity paradigm and globalization were determinative factors in new heritage approaches, with the help of effective participation of different cultures with their authentic experiments. Besides, increasing critics on the western influences on heritage, gave rise to questioning of basic terms like authenticity. So, some new concepts emphasizing the intangible/ cultural heritage like spirit or feeling started to be mentioned along with the concept of heritage beside sustainability which were the parts of the new paradigm shift (Akagawa, 2016; Smith, 2006, p.55). Rio Declaration on Environment and Development (1992), Nara Document (1994) or Aalborg Charter (1994) were the basic agreements of this period reflecting these mentioned changes.

In 2000s, *"the adopting the phrase management of change*" (Ripp and Rodwell, 2015) emphasized in Charter of Krakow (2000) and management of cultural heritage (Dinçer, 2013) provided an important view of point. Budapest

Declaration (2002), Faro Convention (2005), Vienna Memorandum (2005) and Leipzig Charter (2007) are other important agreements of this period reflect these paradigm shifts regarded with sustainable development, change and the emphasis on "*spirit of place"* (ICOMOS, 2008).

In 2011 UNESCO Recommendation on the Historic Urban Landscape (HUL) presented the last paradigm shift in heritage thought in which urban heritage is considered as a whole -with the city's all dynamics including tangible and intangible heritage- beside its development and management. Global Report on Culture for Sustainable Urban Development 'Culture': Urban Future (2015) emphasizes the culture is a key tool for promoting sustainable urban development through the safeguarding of cultural heritage and the promotion of the diversity of cultural expressions.

After all, in this recent work of UNESCO (2016) it is said that *"for the first time in history, humanity is predominantly an urban species"* which forces us to remember our responsibility and role in the universe. Today, we have to think heritage as an ethos regarded with the past and future, tangible or intangible, physical or spiritual. Heritage now belongs to place and not only people (Turner, 2011) while Déom & Thiffault (2013) say that there is the common term 'value' in the middle. The perception of the values of the historic city has been broadened to include the aesthetic and symbolic values of places, and to a new use and enjoyment of the urban space that defines the city as 'living heritage' (Bandarin & Oers, 2012, p.68) and cultural landscape (Taylor, 2016). Although the term heritage is an umbrella term, "*still, the finer terminology of 'heritage' has not been streamlined or standardized"* (Ahmad, 2006). The reason is inherited in the concept: *"Heritage is something vital and alive. It is a moment of action, not something frozen in material form"* (Smith, 2006, p.83) and *"is more concerned with meanings than material artefacts"* (Graham, 2002).

2.2. Embodying Cultural Heritage Via Historic Urban Landscape Approach (HUL)

Historical urban landscape approach is based on a wholistic view which evaluates the urban heritage with its different layers such as space, heritage, culture or nature beside its development. In this context, first we may ask how culture and landscape come together in terms of urban heritage thought history (Paniabi and Winter, 2009 cited in Taylor, 2015). The term landscape may be defined as an area made up of a distinct association of forms, both physical and cultural. (Sauer, 1925). It points out "*the focus is upon the agency of landscape rather than upon its simple appearance"* (Corner, 1999 cited in Bandarin 2015). As Rossi (1984, p.97) says, "*the history of the city is always inseparable from its geography; without both we cannot understand the architecture that is the physical*

sign of this human thing". The development of the landscape approach to heritage conservation since the 1990s is part of the wider interest in the epistemological value of the landscape (Taylor & Lennon, 2011 cited in Wang and Gu, 2020). Taylor (2012 cited in Taylor 2016) points out the interaction between different disciplines -like geography-accelerated this process. According to UNESCO (2011), the historic urban landscape defined as follows:

"HUL is the urban area understood as the result of a historic layering of cultural and natural values and attributes, extending beyond the notion of "historic centre" or "ensemble" to include the broader urban context and its geographical setting. This wider context includes notably the site's topography, geomorphology, hydrology and natural features; its built environment, both historic and contemporary; its infrastructures above and below ground; its open spaces and gardens, its land use patterns and spatial organization; perceptions and visual relationships; as well as all other elements of the urban structure. It also includes social and cultural practices and values, economic processes and the intangible dimensions of heritage as related to diversity and identity".

The recommendation is directed towards all kinds of urban places enlarging the notions of historic center or urban ensemble to include the broad urban context and larger setting (O'Donnell, Turner, 2012; Erkan, 2018) while it moves away the traditional concept of historic area/centre/city to the concept of urban heritage (Bandarin, 2015). It is *"a mindset"* (Van Oers, 2010: 14 cited in Taylor, 2016), involves the management of historic cities, conservation of the visual images, providing a better future whit the help of enhancing cultural diversity, protecting the ecology and continuing the sense of place (Van Oers, 2006 cited in Rodwell 2009; Erkan, 2018; Huybrechts 2019; Punekar, 2006 cited in Taylor, 2016) while suggesting the unification of separated approaches in heritage. Although HUL is a widening approach, there are theoretical and practical obscure points (Pérez & Martínez, 2018, p.101 cited in Wang and Gu, 2020; Ripp and Rodwell, 2015). In our view, two basic points are evaluated as follows:

- First one is the extent /scale /context of historic urban landscape. As a reflection of rupturing in conservation and space theories as emphasized above, urban heritage has been considered irrelevant with the space. Due to the scope of HUL that contains development and sustainability, traditional buffer zone approaches are not enough anymore and causes "*the lack of integration with the wider urban context*" (Ripp and Rodwell, 2015). The whole image of the city needs to be considered with its all dimensions -two, three, visual or experimental-*time*-. Therefore, the extents and the contexts of historic urban landscape have to be evaluated carefully. Even in the cases that the regeneration areas are far from the

historic center, they may still have impacts on the silhouette, visuality, ecology or sense of place.

- The second issue is the evaluation and sustaining HUL. UNESCO (2016) suggests an application process in which there is a matrix that combines the several layers of a historical urban landscape. According to Taylor (2016), there are three crucial points in HUL application process which are, understanding of the city as an evolving process; respect for the overall morphology of the city with its intangible meanings and values; understanding conservation of the urban landscape as embedded meanings. Beside these recommendations, there are few academic researches (Fredheim, Khalaf, 2016; Pingyao; Korr, 1997; Kaya & Demir, 2018; Zeayter at all., 2018; O'Donnell & Turner, 2012, Bahrami at all., 2015) whose scopes are limited (Veldpaus,et all. 2013). Moreover, in some cases, as Landorf (2009) says, there is a gap between the management plans and integration of sustainability principles into the planning processes. Mentioned theoretical studies put forward some criteria based on UNESCO HUL recommendations which is a kind of checklist. Form this point of view, the codes of historical urban landscape extent can be summarized as follows;

- Urban morphology (with it 2nd, 3rd, 4th ... dimensions and embedded other layers)
- Natural character (topography /habitat, shore, valley, hill…; climate; ecology...)
- Perceptional/aesthetic character (visual-aesthetic layers; vistas-perspectives; cognitive maps; harmony (*"sing with the choir and not against it"* (Larkham, 1996, p.20); hierarchy (*"if a building can't express itself, how can we understand it?"* (Larkham, 1996, p.20)).
- Thresholds and interfaces in social and economic profile on urban space
- Time (memory, historical layers…)
- Sense of place and experience (*"the place: don't rape the landscape*" (Larkham, 1996: 20)).
- Urban development, planning, economy and macro decisions.

3. BRIDGING THE GAP: The Meaning of Urban Morphology in Terms of HUL

Urban morphology provides an opportunity when penetrating to the logic of built environment which is a per se manifest of past and present layers. In this context *"it deals with the topographic, socio-cultural and physical context*" (Bianca, 2015) while focusing on the *"tangible results of social and economic forces"* (Moudon, 1997). The history of urban morphology overlaps with histories of several other disciplines such as geography, sociology or space theory. Whitehand

(1992) says, although urban morphology interested in the physical dimension of urban pattern until recently, the interaction between different disciplines like semiology or linguistics changed its concern into social context: *"an understanding of the processes of morphological change, including cycles in the economy, building industry, but also in thought, legislation, architectural style and taste, is vital"*. (Larkham, 1996, p.26). So, it refers to an understanding of urban space with its inherited layers beside its tangible aspect. These layers such as topography, nature, legal procedures, culture and other contextual components have given shape to it in time. It is the pattern of numerous codes -the language of the urban space-embodied in time. With this potential, "*morphological analysis can also be used to inform generative processes"* (Wang & Gu, 2020) which is different from the "*obsession with the past"* (Bianca, 2015). If we use urban morphology in this context, it may allow an important contribution to *"sustainable evolution and development of historic cities worldwide"* (Rodwell, 2009; Whitehand & Gu, 2019). It may act also as "*an essential inter-disciplinary tool"* (Ripp & Rodwell, 2015) to *"overcome the daunting dilemma between the two extremes of sterile conservation and radical redevelopment, and to ensure their long-term viability as part and parcel of larger urban systems"* (Bianca, 2015). It has a key role in understanding of the city in historico-geographical terms both as human habitat and a dynamic process: how and why a city looks and functions the way it does beyond a narrow focus on its architectural fabric an appearance (Whitehand, 1992; Allain, 2005; Moudon, 1997; Rodwell, 2009; Whitehand, 2010 cited in Ripp & Rodwell, 2015).

Although the presence of this theoretical discourse, "*there is a gap between urban morphology and urban conservation and its management"* (Whitehand, 2010; Rodwell, 2009). Furthermore, Ripp & Rodweell (2015) say, *"the quintessential relationship between the tangible and intangible heritage of cities is, however, frequently ignored or over- looked by urban heritage professionals"*. In order to bridge the gap among urban morphology, space theory and conservation, we may also reference to architectural phenomenology via Norberg-Schulz's (1993 [1985], p. 26) words: *"morphology is concerned with the "how" of built form, and in the single work of architecture is concretized as "formal articulation"*.

Then how we will evaluate and analyze urban morphology in terms of HUL? There are limited approaches to this question. For example, Ripp & Rodwell (2015) suggest a methodology that takes into account different views from the outside and inner sides of the city beside the seasonal views or aerial views. English Heritage (2011) also has suggestions about the visual effect of historical urban context. Beside these, Moggridge's (2010) suggestion about *"cones of view"* is a sparking view in urban morphology-based analysis. If we consider urban space as a palimpsest, all the layers including the erased ones, have a

meaning and trace that bridge the past and today. The language or pattern of urban space is a kind of story. In order to make it sustain in terms of heritage, we should speak the same language. This language has been developed in time via the codes embedded in Natural Character, Built Environment, Macro Scale Decisions/ Planning/ Economy, Culture/ Ethics/Beliefs, Perception/Aesthetics, Experiment/ Human and Legislation/ Planning. In this context, urban morphology could be used either as a 'stalker' that bridges the past and today or a 'helper' that enables us to read the current urban landscape. It opens out the sustainability of urban language via its implied layers. Furthermore, this synchronized reading of the texture of the landscape of the historical city landscape through its morphology, allows a new way to analyze space and its layers in an interpreted way of bottom-up approach. While current morphology tells us about those past stories, it also simultaneously shapes the 3rd, *"4th dimension"* (Sauer, 1974) or time and experience, while writing the future stories.

4. REGENERATION VERSUS CULTURAL HERITAGE- *Istanbul Case*

Istanbul city with its unique history, geography, strategic location, nature and culture is in UNESCO World Heritage List. The city history contains antique period, Byzantine (-15. Century) and Ottoman (15.-19. Century). Urban space of the historic centers rise above this culture that is in harmony with the topography. In line with modernization period, the Turkish Republic (1923-) had established. The process of transformation has emerged along with the country's urbanization processes.

Istanbul as a global city has been experiencing the current paradigm's effects which have impacts on urban space like neoliberal politics or socio-cultural dynamics, while on the other hand it has unique dynamics like earthquake risk. Those all act as a catalyzer in city's regeneration process. Especially in the last 20 years, this process and its consequences have sparked several debates. Ataöv & Osmay (2007), summarize this urban regeneration process in two main periods. First one is the 1980-2000s, in which the liberal discourse and globalization is active. The second one is the ongoing period since 2000s in which urban regeneration is determined as a strategy in which privatization and local government policies have been effective (Dinçer, 2011). With the announcement of İstanbul Environmental Plan in 2009 (IMM, 2009), the transformation of the city has been accelerated. The city has been dealing with an encounter between conservation and development. Although this is not so strange when compared to the other developing historical cities mentioned in UNESCO meetings, there is an urgent need in order to prevent the loss of the sense of historical urban heritage and the meaning inherited.

4.1. Methodology

In this section, three cases those gave rise to several debates related to urban conservation will be evaluated. The method is based on three analyses. One of them is a diachronic analysis based on morphological readings via the cases' history. The other one is synchronized analysis, based on an evaluation of current urban landscape via HUL approach. The third analysis is the determination of issues that cause the continuity, quality and meaning of historical urban landscape.

4.2. Case Studies

The cases are performed according to the criteria such as; being evident in historical urban visuality, giving rise to debates in terms of historical urban place and being located beyond the old city center but have impacts on the historical city landscape.

Yedikule- Ataköy Coastal Area

This coastal area is located beside the old city walls in Yedikule. There are three main rivers of the old city which are Ayamama, Tavukçu and Çırpıcı Rivers. There had been various historic buildings on the area such as Baruthane (1727), Sümerbank Factory (Bakırköy Textile Factory 1850; 1933), Veliefendi Hippodrome (Campus Martius; 1910s) Bakırköy Hospital (Reşadiye Kışlası, Bakırköy Hipojesi; 1914), **Yeşilköy Airport** (1924), Ataköy Houses (1954) **(**Öztürk, 2010; Türkoğlu, 2016). Beginning from 1950s, this coastal area was full of industrial factories which were founded in line with the urbanization process of the city. After 1980s, the coastal band was emptied in order to build new boulevards and green areas. In 2000s, related with housing policies and urban development, several changes were made in Coastal Legislation and several areas were opened up for construction and most of the empty areas were transferred to TOKİ (Barutçular & Dostoğlu, 2019). There were legal actions after those areas had been announced as 'tourism area', nevertheless the constructions didn't stop (Şahin, 2015). Along with these new buildings, Historical Baruthane building and its garden was announced as 'Nation Garden' in 2018 (IMM, 2019). (Figure 1, 2)



Figure 1. Morphological Layers of Case 1. (Photo: Adopted from Google Earth)

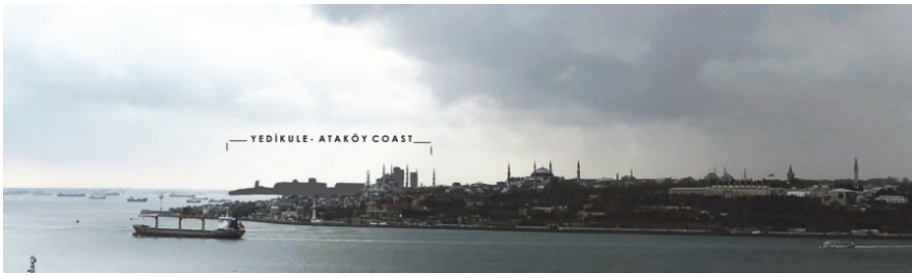


Figure 2. General View of Case 1 in the Historical Urban Landscape (Photo: Author, 2019)

The place has several historical layers (nearly four periods). Although the area was almost an empty-green area, it had the past memories partially. The morphology of the region has been regenerated with mentioned new residences and hotels. This transformation is effective either on the ground level in terms of circulation, coastal band use, pedestrian experiments, public space or vistas opening to the city or on the silhouette of the area in terms of 4th dimension (time-experience), hierarchy and visuality. This new language on the coastal band, has a deep impact on historical urban landscape with its 'new' language although it is far from the old city center.

Kağıthane - Cendere Valley

Cendere Valley starts from the end of Haliç (Golden Horn), crossings of Kağıthane and Alibeyköy Rivers. It is one of the main ecological corridors of the city. There had been small villages on those river sides during the Byzation and Ottoman period. Late in the 1900s, Kağıthane region was one of the city's biggest green-public space with its various mansions and palaces. Main changes had begun in

1950s in line with rapid urbanization and increasing population. Various factories and slums had constructed throughout Haliç's evident areas. Haliç Rehabilitaion Project (1987) and Sadabad Promenade Rehabilitation Project (1997) were important projects for the rehabilitation of the area. In 2000s, in line with the urbanization policies, natural, transport and historical features of the valley gave rise to regenerations in Kağıthane. With the announcement of 1/100.000 scale İstanbul Environmental Plan in 2009, Cendere Valley was determined as information, education and technology area with several revisions (IMM, 2009; http://megaprojeleristanbul.com/print/cendere-vadisi-kentsel-donusum; Gürsel, 2011; IMM, 2011). With this rapid process, new buildings with their new morphologies, filled the valley. (Figure 3, 4, 5, 6)

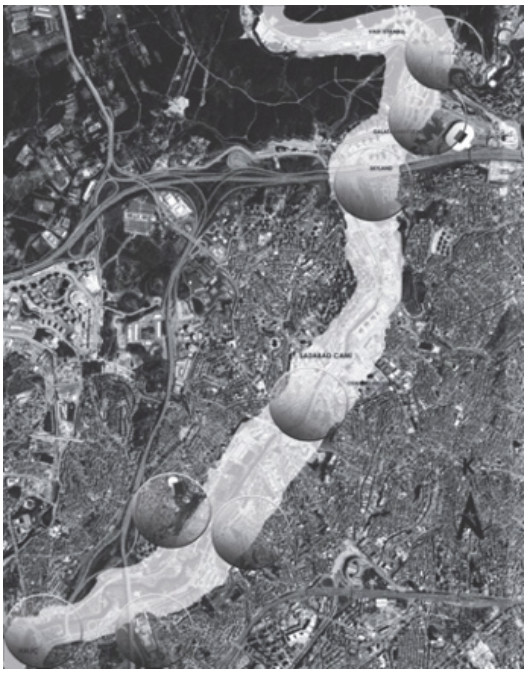


Figure 3. Morphological Layers of Case 2. (Photo: Adopted from Google Earth



Figure 4, 5, 6. General Views of Case 2 in the Historical Urban Landscape (Photos: Adopted from https://panorama.istanbul; Author, 2020; Author, 2020)

The valley is located longitudinally throughout Kağıthane river. Although the new settlements are located a little bit far from the historic center of Kağıthane, their appearances and impact start from historic Sadabad Mosque due to the region's topographical features. However, their scale and height effect the historical urban landscape in terms of ecological features (those were the spirit of that place in the past), visuality, hierarchy and experience.

Beşiktaş Shore

In the 16th century the region had become a big region of the historic city. Especially after the Ottoman palace removed from Dolmabahçe to Yıldız, the importance of the region had increased. In 1940s, in order to build up Barbaros Park, historical shore settlement had been demolished (http://besiktas.bel.tr/sayfa/1794/tarihce). After Barbaros Boulevard (1950) and Bosphorus Bridge (1973) built up, big transformations had seen in this part of the city. Due to its unique location in urban space, Beşiktaş shore and extending hills at the background, reflect almost all the transformation processes of the city. (Figure 7, 8, 9, 10, 11)



Figure 7. Morphological Layers of Case 3 (Photo: Adopted from Google Earth)

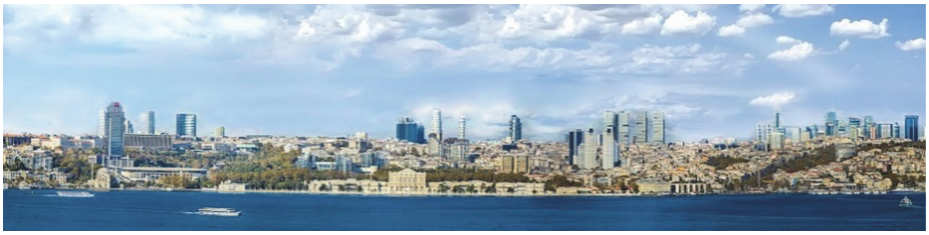


Figure 8 General View of Case 3 in the Historical Urban Landscape (Photo: https://panorama.istanbul)

This historical part is very closed to the historic center. It is located on Bosphorus which is one of the determinative features of the city of Istanbul. Due to the topographical character of the area, all high buildings are effective on the silhouette built in time. Although the historical layers have been still almost standing, the transformations done by filling voids -such as courtyards-, disrupt

the historical character. Especially high office and hotel buildings built after 1980s have a new language on the urban morphology. Even if they are functional on the pedestrian level, it creates a great deal with the historical urban landscape which is the identity of the urban scape. The transformation of urban morphology aspects could be seen either from the street -plot pattern to silhouette or time to sense of place.



Figure 9, 10, 11. A Focus on Case 3 (Photos: Adopted from Pervititch maps (1922-1945); Adopted from Google Earth; https://panorama.istanbul)

4.3. Evaluation

The three cases have different features and processes: first one is a coastal area which has various historical layers although it was almost empty recently; second one is a valley located longitudinally throughout an ecological corridor along with the historical center; third one is a Bosphorus settlement in the city center which reflect generally the historical layers. Following the consideration of the brief backgrounds of case studies, analyzes regard with searching for the meaning and sustainability of HUL beside the current impacts on it, are explained below:

Morphological reading- diachronic analyzes:

- In historical process of the city, almost all the empty areas which were important component of the urban morphology in terms of the language of the city, had been filled with new buildings those are strange to the urban morphology.
- Current empty areas in the city, may carry the urban memory. It is essential to decide what to conserve and sustain.
- Even if the general layout of the historical pattern stands-as seen in Beşiktaş-, it has deep impacts on the visuality of the urban morphology via filling gardens or courtyards.
- Some places -as seen in Cendere- can be far from the center in numerical distance, however it may stand ecological, natural or cultural instruments those are inseparable senses of that place while experiencing the city as a whole.
- Urban morphology is a key instrument as a stalker with its inherited layers such as natural character, built environment, macro scale, macro scale decisions/planning/economy, culture/ ethics/ beliefs, perception/ aesthetics, experiment/human, legislation/planning in order to understand current urban space.

Historical urban landscape reading- synchronic analyzes:

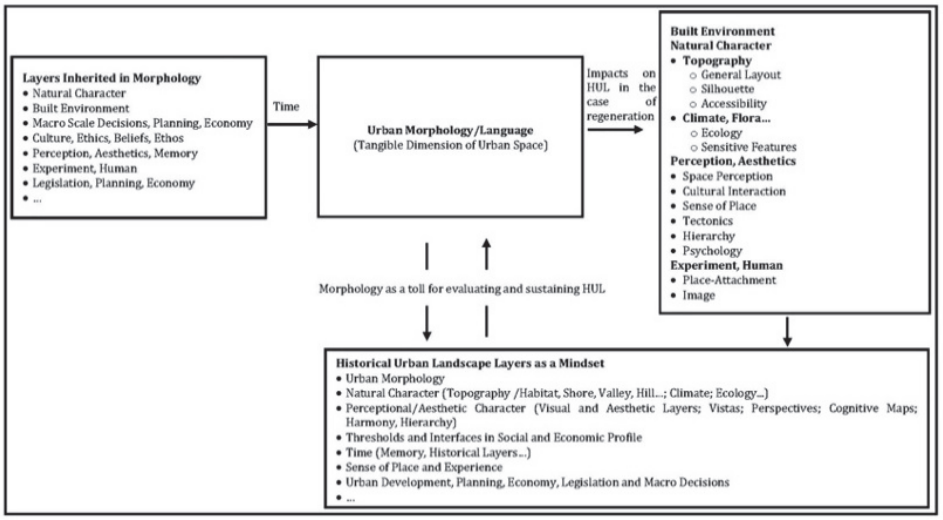
- The new language of urban morphology causes various impacts beyond the built environment such as, natural character (silhouette, topography, climate, ecology, flora…), perception/ aesthetics (cultural interaction, sense of place, tectonics, hierarchy, psychology), experiment/ human (place-attachment, image).
- Form and scale of the new morphology, give rise to hierarchy issues on the landscape and silhouette of city regarded with their heights, scales or materials.
- In some cases, the visual continuity of historical landscape is neglected. Traditional buffer zone limits are not enough for rapidly changing cities. The visual thresholds maybe inherited in the experimental dimension for the city. So even if the new urban morphological interferences are far from the historical city center, there may be rupturing in the continuity of the spirit of place.
- Although the developing areas of the city may not be closed to heritage areas, it is essential to use tools particular to place like 'cones of view'. Because morphological changes may cause ecological problems via

skyscraper buildings on the natural wind or climate corridor or distortion on the natural coastal lines beside the silhouette effect.

- Morphological changes effect HUL via; built environment, natural character (topography: general layout, silhouette, accessibility; climate- flora: ecosystem, sensorial features), perception- aesthetics (space perception, cultural interaction, sense of place, tectonics, hierarchy, psychology), experiment-human (place-attachment, image).

So, we can suggest a kind of reading that allows us to understand and widen the meaning of urban morphology **(Table 1)**. We suggest not to define the term, what is more is the to clarify and to lighten its stalker character via its numerous layers inherited. By doing so, it becomes possible to guide urban development while careful with cultural heritage in any interference with urban space.

Table 1: Urban Morphology as A Tool for Questioning the Meaning of HUL



DISCUSSION

Conservation thought has experienced various shifts in its history. Today we are aware of our responsibility to universe in terms of urban heritage throughout with its all embedded layers as a mindset.

Issues regarding urban regeneration projects in historical cities consist of several different dynamics in terms of conservation. It is a big deal to sustain cultural heritage while developing in a globalized world in which our production of space dynamics has changed. While, the problems and aims are common for all the world and HUL approach provides an opportunity for this dilemma, every

society, city or culture should develop their own authentic solutions in order to go on their 'stories'. In this context, bridging heritage approaches with urban morphology in the same ethos –space-time-human- phenomenology- is important. In this context we can put some findings related to current heritage paradigm in terms of HUL:

- The extent of HUL has different thresholds and interfaces which cannot be defined in a statistical scale approach. Sometimes, the extent could only be explained via the meaning or the spirit of that place.
- Although the terms, historical urban landscape, heritage, cultural landscape or natural heritage are defined separately, as it was seen in the cases, sometimes, it is hard to define where the urban heritage ends, and natural heritage starts. Here we can remember Greek words (cited in Heidegger, 1971 p.152) *"a boundary is not that at which something stops but, as the Greeks recognized, the boundary is that from which something begins its presencing"*.
- Topography is a vital determinant on the historical urban morphology due to the paradigm which "*our past generations had let the earth say where to settle"* (Özbek Eren, 2019). Tectonics of the historical urban landscape has a poetical sense for this embedded vision.
- It is time to bridge urban morphology with conservation beside revisiting space theories and architectural phenomena.
- When time passes, some landmarks could be a part of the city although they were strangers in urban space when they built. Then it is possible to ask the question vice versa 'what is 'trust'?'. Of course, it depends on the culture, but still we have the common answers ontologically related to our collective memories.

If we see the city as a story that is being written and if we want to sustain, it is a must to speak in the same language: If we want to sustain the heritage with development, we need stalkers those tell us how to go with our trusts. The answer is clearly ontological; if we aim a better future, we need to seed it now. Here, it would be better to notice that it is not just a conservation problem, but a mindset/mental habit issue. We need the inevitable ontological integrity of universe as being a part of it, as our *"habitus*" (Bourdieu, 2015, 69).

In Turkey, there was an approach that the environment was a 'trust' and human was an inseparable part of it with his limits that come from Islamic thought. This thought had given shape the space production processes throughout our history. It was like a pathfinder during the civilization which included heritage approach either as a part of power or as the belief of trust. The attitude based on

the thought how human saw himself in the universe regardless of it is the city, space or nature (Erzen, 1996, p 20; Cansever, 1981, p. 8-11). This approach is similar to well-known native American approach that is *"We don't inherit the earth from our ancestors, we borrow it from our children"*. These messages seem to the be the part of our ongoing stories which are beyond the space and time in my view.

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ARCHITECTURAL REFLECTIONS of FALCONRY (SPARROWHAWKING) TRADITION as an INTANGIBLE HERITAGE of EASTERN BLACK SEA REGION

Koray GÜLER*

ABSTRACT

The falconry (sparrowhawking) tradition, which is an ancient method of obtaining food from nature, has been practiced for centuries in mountain areas of the Eastern Blacksea Region of Turkey as well as in many other regions of the world, is mostly disappearing due to various reasons including the changes in social life, restrictions due to the nature conservation laws, migration and depopulation in the region, etc. Although there is a decrease in the number of falconers, a small number of people, who are living in or have a root from the region, still continue this ritualistic activity for the purposes such as sport, entertainment, relaxation in a natural environment and meeting with the neighbors and relatives. Nowadays, falconry still plays an important social role in the lives of the people in the region. The traces of this living culture can be seen in every area of the lives of local people such as folk songs, stories, poets. Such that, there are statues dedicated to sparrowhawks in the public squares of the towns also the nicknames of the football teams of the region such as Rizespor, Arhavispor, Hopaspor, Ardeşenspor are called sparrowhawks. The practice of falconry was inscribed on "UNESCO Representative List of the Intangible Cultural Heritage of Humanity" as a living heritage of 18 countries and manifested in the following domains: "Knowledge and practices concerning nature and the universe", "Oral traditions and expressions", "Social practices, rituals, and festive events", and "Traditional craftsmanship" according to the 2003 UNESCO Convention for the Safeguarding of the Intangible Cultural Heritage. The practice, present in many countries around the world, may vary regarding certain aspects, for example the type of equipment used but the methods remain similar. Despite Turkey and neighboring Georgia are not included among these countries, the cultural tradition has similar rituals and characteristics as the other countries. Starting from catching the mole cricket, the process continues with trapping and educating red-backed shrike, constructing the trapping house, trapping the sparrowhawk with this small bird and educating sparrowhawk for hunting quails. In this processes falconers have

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built some primitive shelters to meet the spatial necessities. This paper aims to discuss the architectural reflections and space uses of falconry tradition in the regional context. It was based on site trips, close observation on the falconers, interviews and the author's own experiences. Further researches will tell us more about the specific social and cultural meanings of this tradition and will enable us to develop a plan for safeguarding this intangible cultural heritage.

Keywords: Intangible Heritage, Eastern Blacksea, Sparrowhawking, Unity of Tangible and Intangible Values in Conservation, Holistic Conservation Approaches

1. INTRODUCTION

The falconry (sparrowhawking) tradition, which is an ancient method of obtaining food from nature, has been practiced for centuries in different regions of the world. Although done in the past as a way of feeding one's family, today, people practice this tradition generally as a sport or a leisure activity. According to various researchers' arguments, falconry has first emerged in China around 2200 BC., and following years it had started to spread towards Mesopotamia, Iran, and the Arabian Peninsula (Wilson, 2001). As trade between the different civilizations of the time moved from west to east, falconry also transferred from Middle East to Anatolia and Europe (Wilson, 2001). In the course of time falconry became a status symbol in the Middle Ages (Gualtieri, 2005:1; Carroll, 2015). Falconry became prominent as an important endeavor in the 11th and 12th centuries when Crusades took place (Kumerloeve, 1996). Such that the Holy Roman Emperor II. Friedrich (1194-1250) was completed his book titled "De artevenandi cum avibus", which was one of the first scientific studies about the training and biology of hunting birds, with the information obtained during the Sixth Crusade (1228-1229) (Wood and Fyfe, 1943). There is no doubt that there was also a special interest in falconry for centuries in the Turkish states established in Anatolia. As a matter of fact, there was a falconers' ward within the hunting organization of the Ottoman imperial palace (Özcan, 1991: 82; Kıran, 2015: 151). Falconry, of which many societies have shown interest in history, has been practiced by the peoples living in the Eastern Black Sea migratory raptor path for centuries. This social practice has become so familiar with the life of the local people that happiness was linked with "having a good horse, a dog and **a sparrowhawk**" in a proverb of Megrels, one of the indigenous communities in the region (Magnin and Kurdoğlu, 2017: 16).

The first systematic scientific research on this centuries-long tradition of falconry in the eastern Black Sea Region of Turkey was carried out by the forest engineer Kurdoğlu, who is from the region, in the 1980s. He has focused in his research on

issues such as processes and history of falconry in the region, the care, training, and feeding of sparrowhawks, number of sparrowhawk trappers, flyways of raptors, factors leading decrease in the number of birds of prey, and importance of birds of prey in natural balance (Kurdoğlu, 1988). After detection of alarming decline of many European raptor species by the International Council for Bird Conservation (today Birdlife International), a research team has been comprised of Magnin and Kurdoğlu, and some kind of awareness-raising activities were carried out by World Wide Fund for Nature Turkey (WWF Turkey) during the early 1990s in the region (Magnin and Kurdoğlu, 2017: 10). In the following years, there is an increase in the number of researches about falconry practice in Georgia and Turkey (Van Maanen et al., 2001).

During the recent years the concept of cultural heritage has been continually broadened. According to Bouchenaki (2009: 1), the quest for the "message" has become more important and it requires us to identify the ethical values, social customs, beliefs or myths of which intangible heritage is the sign and expression. Ito (2009: 4) stated that the relationship between tangible and intangible heritage is so close and it is impossible to seperate. Brâncoveanu (2018:7) argued with a reply to his question "Is the classification of cultural heritage as tangible and intangible only a bureaucratic tool destined to describe the sorts of cultural heritage or this distinction reflects a real division?" that, cultural heritage in its entirety is, actually, intangible and constructed. According to Karakul (2011: 2), a historical fabric, which is formed by tangible features, namely, the physical structure made of built and natural structures; and intangible values, specifically, cultural practices and expressions within the built environments, meanings expressed by them and values attributed to them, should be considered as a whole with its tangible and intangible values in the conservation studies. Despite the broadening concept of cultural heritage Pocock et al. (2015: 962) asserted that the conservation of heritage continues to be dominated by a process first identifies a physical site and the identifies the associated values that comprise its significance.

Although the tangible physical structure made of built and natural structures seems so primitive and unpretentious in the falconry case, it was aimed to discuss the architectural reflections and space uses of this tradition with its effect on the lives of people in the Eastern Blacksea context, in this paper. It is not only questioned that what is changing in this intangible heritage and its related architecture, but also tensions caused by the dilemma of safeguarding an intangible heritage and nature conservation approach taken into consideration. It was based on on-site trips, close observation on the falconers, interviews, and the author's own experiences.

2. FALCONRY TRADITION IN EASTERN BLACK SEA REGION

According to the Magnin and Kurdoğlu (2017: 6), migratory raptors, which have winged to their wintering grounds, converge in a narrow corridor between the eastern end of the Black Sea and the mountains of the Lesser Caucasus (called Eastern Black Sea flyway) during Autumn times since centuries (Figure 1). This migration should have attracted the indigenous people of the region and they tried to benefit from this natural event by developing some techniques and constructing some primitive structures.



Figure 1. Map showing a basic representation of raptor migration paths in Autumn in north east of Turkey (Magnin and Kurdoğlu, 2017: 7).

Trapping chiefly takes place in the 100 km long and 10 km wide coastal strip, which overlap with the Eastern Black Sea flyway (Figure 1; Magnin and Kurdoğlu, 2017: 14). Rize, Gündoğdu, Çayeli, Pazar, Ardeşen, Fındıklı, Arhavi, Hopa, and Kemalpaşa are the cities located in this zone. Magnin and Kurdoğlu (2017: 14) stated that the trapping sites are located generally from sea level up to 700 metres altitude, but occasionally trappers are active at vantage points at 2,000 metres. There are many sites suitable for trapping, and trappers built several trapping houses and use one of them, which best suits to daily weather conditions.

The process starts with catching the mole crickets (ğapa)[1] by digging or pouring soapy water into visible holes on the soil towards the end of July. Then captured mole cricket put into a cage trap for the migratory red-backed shrikes (ğaço). After trapping the red-backed shrikes, there is an education period lasts around 15 days or more, when the shrike is trained to get accustomed to fly with a string fastened to a one meter-long wooden rod. Generally, a piece of minced meat is tied onto the stick and replaced daily for feeding the shrikes. Because of its easiness, falconers started to give a boiled egg to decoy birds in recent years. Despite searching another instrument for trapping sparrowhawks, shrikes considered as the most suitable birds used as a decoy by interviewed falconers, because they can live long without water, and accustomed fast compared to other bird species. It can be thought that in the long history of falconry tradition other birds should be tried to be used for the purpose of decoy but as a result of the experiences, falconers still continue to prefer red-backed shrikes. Generally, two months old female chicks of red-backed shrikes, which are accustomed more easily and fast compared to male and older birds, kept for training. Then the eyes of shrikes glued with a leather cap, which still allows seeing their rod with leaving a gap on the underside, for not to dive down upon instinctively when the sparrowhawk (sifteri) approach. Otherwise, the sparrowhawk can feel the trap and not approach towards the decoy bird. Falconers built simple shelters on the hills, where the raptor migration can easily be seen, for hiding away from sparrowhawks and erect triangular or rectangular nets with wooden sticks (Figure 2).

As a similar approach in choosing for the training among those caught decoy birds, only three or four months old female chicks of sparrowhawks are kept for training and hunting quails, males or adult females are generally released immediately after capturing. The falconers have wrapped their caught sparrowhawks with a white handkerchief until the end of the day they sit in trapping house. When they return to home or hovels, they fastened their sparrowhawk to a shaped wooden branch to get accustomed to people and accelerate the domestication process.

[1] The equivalent of the word in the Laz language. The Lazs are one of the indigenous community living for centuries in Eastern Blacksea Region. The falconry in the region is mainly attributed to this community and in Laz language there are many words related to falconry tradition. Unfortunately UNESCO listed the Laz language as definitely endangered. One of the components that creates the tangible or intangible culture is definitely local languages. A large number of words related to this tradition in the language is proof of the importance of this tradition in the life of the local people.



Figure 2. Processes of falconry practiced in Black Sea Region of Turkey.

Sparrowhawks are trained for hunting the quails, which migrate through the area in vast numbers. According to the Magnin and Kurdoğlu (2017: 17) although hunting quail with sparrowhawks was widespread until the 1960s, when many of the Black Sea villages were still isolated and not yet connected to the main road system, currently hunting quail with sparrowhawks become only a marginal due to changes in lifestyle. Despite the decrease in hunting quails, feeding and training sparrowhawks is still a prevalent phenomenon in the region.

A small number of local people still hunting quails generally in the company of their trained hunting dogs. After the training period of a sparrowhawk, falconers go to open green areas such as tea or corn fields and the dog searches the environment to flush out the hidden quails from their positions. The falconer keeps tabs on their dog and when it finds a hidden quail, he/she let their sparrowhawk fly and catch the flying quail. The falconer allows his/her sparrowhawk to catch only one quail on its first hunt. The sparrowhawk flies back to falconers' arm after hunting the quail. After a successful hunt, falconer awarded their sparrowhawk to encourage and motivate for the next attacks. After gaining experience for hunting quails a sparrowhawk can catch 20 to 30 quails per day.

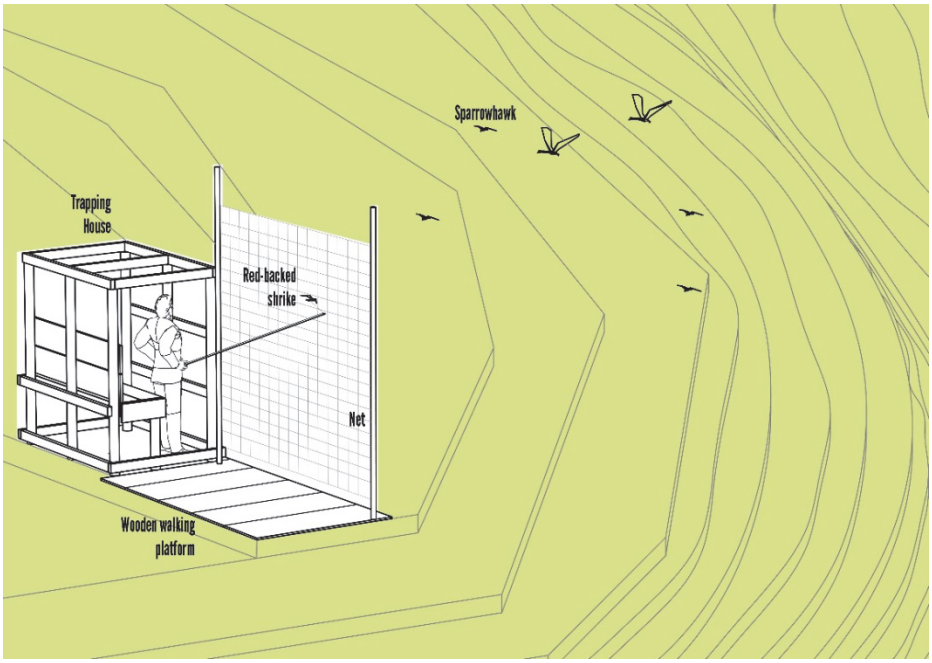

Figure 3. Axonometric drawing of an idealized trapping house.

3. ARCHITECTURAL NECESSITIES and SPACE USE

The trapping houses have emerged to meet the necessity of hiding in the process of trapping the sparrowhawks (Figures 3-6). If the sparrowhawks notice humans, they don't approach to hunt the decoy bird. Falconers have been built the trapping houses for a few days of use with brushwood obtained from the surrounding trees, in the past. It can be seen that similar primitive structures are still being built at any point on the migration flyway. However, in the last 30 years, with the building of new forest roads to the high altitude hills, falconers get the opportunity to stay longer (almost 2 months) in their hovels located on the migratory routes, which have been started to build by falconers' own means with generally industrial materials such as concrete, brick, shingle, etc. With the extension of the stay periods in hills, falconers used metal fasteners and shaped woods, generally chestnut, the main building material in traditional architecture, in the construction process of the trapping houses for increasing the durability against natural conditions. Whereas only materials obtained from the immediate vicinity could be used in the past, currently in some cases, wood or other materials are transported by cars from the city centers. The sparrowhawk trappers spend more time in hills and trapping houses, compared to limited numbers of days in the past. Although there is a decrease in the number of

falconers, a small number of people, who are living in or have a root from the region, still continue this ritualistic activity for the purposes such as sport, entertainment, relaxation in a natural environment and meeting with the neighbors and relatives.

In general sparrowhawk trappers built the trapping houses by themselves as a craftsman. It is crucial to choose the best location to build a trapping house. It should be an open spot and a good point to observe the migration from the opposite mountains. So that, in some cases falconers built their trapping house on a tree. Sometimes, the location can be changed because of the growing trees that close the viewing angle in a few years. It can be thought that this detail should cause the tradition doesn't produce stronger permanent trapping houses.

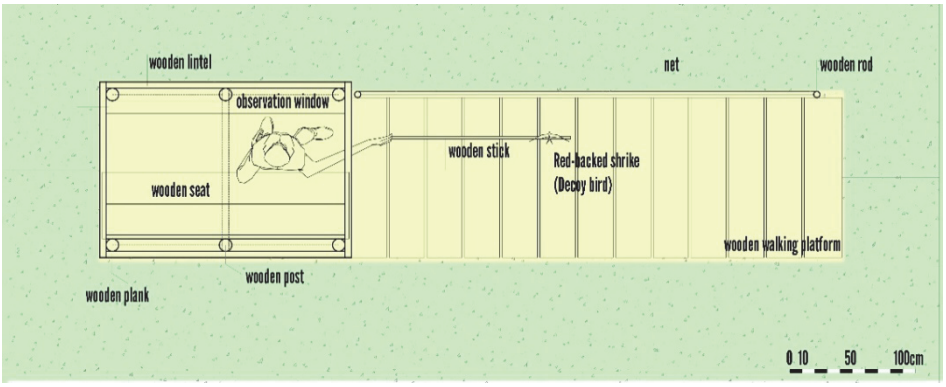

Figure 4. Plan of an idealized trapping house.

In an idealized conditions construction of the trapping house starts with the erection of 10 cm. sectioned in diameter wooden posts. Then they connect all the wooden posts in three level generally with the same 5/10 cm. sectioned wooden beams. The first level is the beginning that 10 cm. up from the soil surface, the second one is located generally to the eye level of falconer allocate to watch the migration of birds of prey from the opposite mountains, and the last one is the lintel which is generally 2 meters high (Figure 3-5). After the completion of the timbered structure, the cabin is covered from side surfaces to the roof with the leafy branches (generally branches of cherry laurel tree are preferred due to the later decay of their leaves compared to other local plants) or fern obtained from the immediate vicinity. To a large extent a wooden bench is nailed on the cabin (Figure 3-6). Leaves provide a canopy both the decoy bird and sparrowhawk trapper. For not to miss any sparrowhawk, trappers carry their lunch with them. Some of the fanatic falconers spent all the day in this cabin. Outside of the cabin a wooden walking platform is formed and a net is fixed with

the two wooden sticks. These wooden sticks are generally prepared from the hazelnut trees in the region.

The sparrowhawk trappers have carried their required equipment for this tradition such as nets, which are limited and it is fixed to wooden sticks with a triangular form or other accessories used for the training and feeding process of decoy birds and sparrowhawks. In winter times falconers prepare their tools and accessories almost all of them can only be produced with the handicrafts. So it can be said that this ritualistic activity, which has ancient roots, not only creates primitive architectural shelters for trapping but also creates some kind of handicraft works with natural leather and sewing cotton, which are transferred from generation to generation.

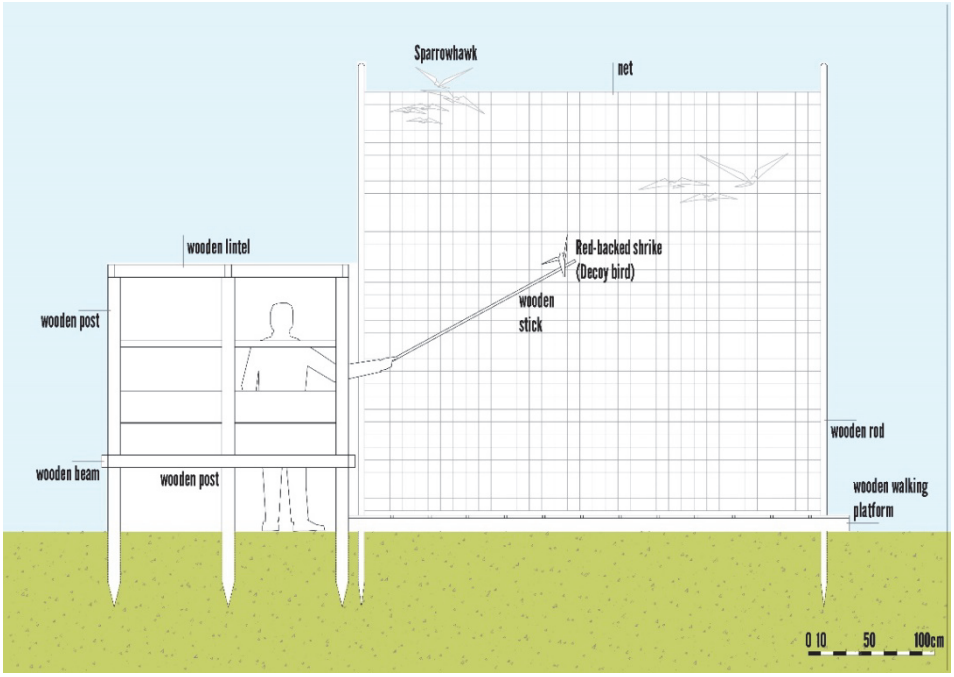

Figure 5. Section of an idealized trapping house.



Figure 6. Views from different kinds of trapping houses in the region.

4. CONCLUSION

Falconry, which has been practiced in mountain areas of the Eastern Blacksea Region of Turkey, is mostly disappearing due to various reasons including the changes in social life, restrictions due to the nature conservation laws, migration, and depopulation in the region, etc.

Although there is a decrease in the number of falconers, a small number of people, who are living in or have a root from the region, still continue this ritualistic activity for the purposes such as sport, entertainment, relaxation in a natural environment and meeting with the neighbors and relatives. According to the findings of Kurdoğlu, the number of trapped sparrowhawks is down by up to 50%, and the number of active falconers dropped from 741 to 450 almost nearly in the last 30 years. The age composition of falconers has also changed in recent years, such that the average age of trappers was between (17-50) in 1987, whereas the youngest trapper is over 40 years of age today (Magnin and Kurdoğlu, 2017: 50).



Figure 7. Views from the sparrowhawk statues located in the Black Sea region of Turkey.

Sielicki argued that (2016: 19), falconry is a sustainable activity, and the numbers of birds used are small comparing to the natural mortality rates. Furthermore, it was stated that falconry techniques have educational values, which are still widely used in conservation and rehabilitation of birds of prey, and falconers can contribute to the conservation of huntable species. Abandonment and gradual loss of this tradition have been considered as a conservation success from another perspective. As one of the reflections of this dilemma, General Directorate of Nature Conservation and National Parks of Turkey has been considered this trapping activity as a tradition and allowed only after a mandatory education process about responsible falconry but also restricted this activity in national wildlife protection laws (Doğa Koruma ve Milli Parklar Genel Müdürlüğü, 2010).

Falconry still plays an important social role in the lives of the people in the Eastern Black Sea region. The traces of this living culture can be seen in every area of the lives of local people such as folk songs, stories, poets. Such that, there are statues dedicated to sparrowhawks in the public squares (Figure 7). Much of the population in the region recognized falconry as a part of their cultural heritage and see it as a sense of their identity and continuity.

Although the tangible physical structure made of built and natural structures, which have been tried to be analyzed in Eastern Black Sea context thoroughly, seems so primitive and unpretentious, they are directly physical remnants of centuries-old cultural accumulation. As a conclusion, it can be said that all the tangible or intangible processes (the practice, representation, expression, knowledge, skills – as well as the instruments, objects, artefacts and cultural spaces associated therewith) of this cultural event should be considered as important, and to be safeguarded as a whole (UNESCO, 2003; Başat Metin, 2013: 70; Oğuz, 2007: 32). Conservation measures should be applied for safeguarding this tradition, which should be respected for cultural diversity and human creativity, as a responsible manner, that will be sustainable and will not harm wildlife and nature. Holistic rural policies should be developed for both conservation of wild-life and safeguarding the falconry tradition.

It can be concluded with a wish that falconry tradition in the eastern Black Sea Region, which can be considered as shared cultural heritage of Turkey and neighboring Georgia, can be added to the Representative List of the Intangible Cultural Heritage of Humanity of UNESCO. The practice of falconry was already inscribed on the list with including 18 countries unfortunately without Turkey and Georgia. It can be said that the extension of the list with these two countries should contribute to the recognization of this intangible heritage and encourage the efforts for safeguarding it.

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INVESTIGATION OF ACOUSTICAL CHARACTERISTICS OF HÜSREV AĞA MOSQUE AND İBRAHİM ÇELEBİ MOSQUE IN MANİSA, TURKEY

Fatma YELKENCİ SERT*, Özgül YILMAZ KARAMAN*

ABSTRACT

From past to present, the single-domed mosques, one of the most important building types for neighborhood, are generally used for daily worship. Although there are many studies on the architectural features and historical processes of single-domed mosques, it is observed that there is no comprehensive inventory of the acoustic conditions for them. It is important to evaluate acoustic conditions of historical mosques, which are accepted as cultural heritage, to identify the interventions that adversely affect these conditions and to suggest the restoration solutions for transmission them to next generations.

In this study, acoustical measurements were taken two historical single-domed mosques in Manisa in order to characterize their acoustical quality and identify the effect of single dome on their acoustical parameters. They have the similar plan schema, a central dome and built in the same historical period. Reverberation time (T30), definition (D50), clarity (C80), STI and SPLA as objective room-acoustic indicators are presented for sample mosques. Hüsrev Ağa Mosque has estimated volume of 725 m^3 and İbrahim Çelebi Mosque with estimated volume of 855 m^3 [2]. The acoustical field measurements are performed for empty mosques in accordance with ISO 3382-2:2008 [3]. The values of $T30_{unoccupied}$ are 2.1 s for Hüsrev Ağa Mosque and 1.9 s for İbrahim Çelebi Mosque in the middle frequencies. T30 values for similar volumes with samples are higher than the optimum range (0.5 – 1.0 s) [1]. Although measured T30 values are good for the musical version of the Holy Quran, they are so high for praying mode and damage to the intelligibility of speech.

(spatial impression) in the mosques is recommended between 1.2 and 1.25, is 1.4 in Hüsrev Ağa Mosque and 1.05 in İbrahim Çelebi Mosque [4]. SPL-A is measured with 6 dB difference among receiver points for both. It shows that desirable consistent sound pressure level distribution is provided in

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** Assoc. Prof., Dokuz Eylül University, Department of Architecture, İzmir, Turkey. The bass ratio, which is the optimum values for creating the desired sense

volumes. In mid frequencies, measured C80 values are suitable for each function [5]. D50 values are under 50% (recommended) in mid frequencies. Mean values of STI in mosques are lies between 48% to 58% which means a "Fair" speech intelligibility [6]. In conclusion, mosques were suitable for musical version of Holy Quran. However, the speech intelligibility is damaged by high T30 values. For the improvement of T30 values, restoration of historical mosques with original materials should be encouraged.

Keywords: Room acoustics, Historical Structures, Manisa, Mosque

1. INTRODUCTION

The mosque is one of the most important building types for Muslims which is used for religious rituals such as prayer, Qur'an recitations, Khutba and sermon, etc. Historical mosques have an important position in the society having historical significances besides religious importance. The acoustical characteristics of mosques, considered as cultural heritage, are very important. There is a significant relationship between the cultural heritage building and its acoustics. Some studies on mosques focused on acoustic evaluations and comparisons in mosques and examined them through historical and modern examples (Abdou 2003, Carvalho and Monterio 2009, Carvalho and Freitas 2011, El-khateeb and Ismail 2007, Elkhateeb at al. 2016, Ismail, 2013, Kayılı 1988, Suarez et al. 2005, Sumatera et. al. 2014, Sü and Yılmazer 2008, Sü Gül et al. 2014, Topaktaş 2003, Weitze et al. 2002).

The single-domed mosques, one of the most important building types for neighborhood, are generally used for daily worship. Although there are many studies on the architectural features and historical processes of them, it is observed that there is no comprehensive inventory about their acoustic conditions. It is important to evaluate acoustic conditions of historical mosques, which are accepted as cultural heritage, to identify the interventions that adversely affect these conditions and to suggest the restoration solutions for transmission them to next generations. The case studies are chosen from Manisa which has many cultural heritages, especially mosques belong to Ottoman Empire.

The aim of study is to draw out single domed mosque through analyzing the acoustical characteristics on samples. Hüsrev Ağa Mosque and İbrahim Çelebi Mosque are chosen due to have similar geometrical features to analyze the effect of different materials on acoustical conditions. Moreover, to examine the effects of materials (used inside surfaces of mosques) on the objective acoustical parameters by comparing samples is another aim of study. In literature, most of researcher collects data for studies by using computer simulation program or field measurements. The sample mosques are evaluated by utilizing field

measurement (DIRAC) and computer simulation techniques (ODEON). In conclusion, the study has given the results that material features on wall surfaces which is influential surface area affect the acoustic conditions of a mosque and changing type of plaster affect the mosques' acoustical conditions.

2. CASE STUDIES; MANİSA MOSQUES

Manisa, whose history resides to the Palaeolithic period, is an important settlement named Magnesia and Sipylum in the antique period in Turkey. Manisa had an important position in the historical period because it was one of the cities to be sanjak in the Ottoman period where princes were educated and managed. Many important buildings were built in Manisa such as mosque, library, school, Turkish bath, commercial building, etc. Because the members of sultanate with princes and the people who are responsible for the princes' education dwelled in this city (Acun 1999).

In the scope of study, two historical single domed mosques are selected to evaluate acoustical conditions. The mosques examined in present study have same geometrical features (volume, radius of dome, the transition elements) to investigate the effect of different material usage on the acoustic characteristics of mosques.

2.1. İbrahim Çelebi Mosque and Architectural Features

The mosque was constructed in 1549, has the similar plan schema with Hüsrev Ağa Mosque. The volume is a bit bigger than other mosque with an estimated volume of 852 m^3. The structure has a main dome with diameter of 8.6 m. The mosque has a floor area of 86.9 m^2. The mosque as a whole is built on a masonry system by using brick and stone like the other mosque. The walls have approximately thickness of 1.20 m. The main dome is located on octagon hoop supported by wall. The transition from the walls to octagon hoop is provided four pendentives. The walls are covered by painted plaster. Applied wooden panels on the interior walls are at the height of 0.6 m. The pulpit and mimbar are made of wood. The floor is covered by carpets. The loge woman takes part at the north of volume and located on the upper floor carried by wooden pillars. This area is separated from main worship area by perforated wooden panels. The three sectional narthex is on the north of mosque is elevated from the ground and covered by glass surfaces.

2.2. Hüsrev Ağa Mosque and Architectural Features

The building, was built in 1555, has a square plan (9.14 x 9.14 m) [10]. The mosque has a floor area of 83.5 m^2. The mosque has an estimated volume of 724

m^3. The mosque is covered with a single dome. The main dome of mosque has a diameter of 9 m. The transitions from walls to dome are provided by pendentives. The dome is placed on octagonal pulley. The walls of mosque are made of rubble stone, bricks, the corners of walls are made of cut stones, and the domes and minaret are made of bricks. The walls have approximately thickness of 1.08 m.

The worship area for woman is located on upper floor which is separated by perforated wooden panels. The sermon chair and mimbar are made of wood, mihrab is plastered. The floor of mosque is covered with carpet. The mosque is resembled to İbrahim Çelebi Mosque in the architectural sense by some studies in the literature (Acun 1999).

3. RESEARCH METHOD

3.1. Field Measurements

In order to evaluate the acoustic characteristics of selected mosques, DIRAC Room Acoustics Software (Type 7841 v.5.5) was utilized for collecting impulse responses for receiver points. Acoustical field measurements were held by daytime for unoccupied condition in accordance with ISO 3382-2:2008. Fan and air conditioning systems were set to off during the field measurements. The omni power sound source was located at the front of the mihrab and 1.50 m from the floor to represent the position of the Imam while he is talking and giving orders to prayers. The receiver points were placed in the main worship area and women worship area at 0.85 m representing the height of the ear of a prayer with sitting position on the floor. The measured values of the objective acoustical parameters (Background Noise Level, T30, C80, D50 and STI) for selected mosques are evaluated in 'results' section of this study.

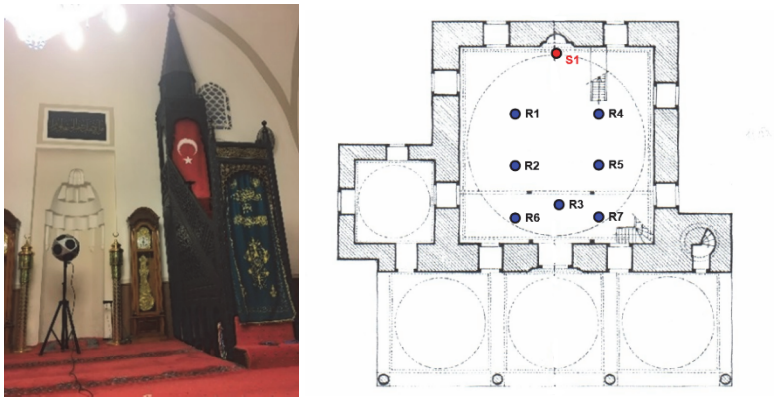

Figure 1. Interior view of İbrahim Çelebi Mosque and position of sound source (S) and receiver points (main worship area; R1, R2, R3, R4, R5 upper floor for women; R6, R7)



Figure 2. Interior view of Hüsrev Ağa Mosque and positions of sound source (S) and receiver points (main worship area; R1, R2, R3, R4 upper floor for women; R5, R6)

3.2. Acoustic Simulations

To test the differences of present and original states; simulation model of İbrahim Çelebi Mosque was done by utilizing ODEON Acoustic Simulation Program. ODEON is used for mosque to analyze the effect of dome to the reverberation time of volume. Furthermore, the importance of historical plaster is discussed in relation to original state in literature (Sü Gül, 2019). It is possible to evaluate the effects of these interventions on the acoustical features by ODEON Software. The 3D model of mosque is carried out in SketchUp and then it is imported in ODEON Software.

Odeon model is utilized to test the acoustic conditions of original state with historical plaster or current plaster and with/ without dome. The materials listed in Table 1 are applied to room surfaces in calibration process (Table 1) (Tavukçuoğlu et al. 2011). As a result of this process, JND for T30 values for simulated and measured ones is kept under 5% which is suggested (Table 2) (Koutsouris et al. 2016).

Table 1. Sound absorption coefficients of materials used in simulation models

İBRAHİM ÇELEBİ MOSQU	sound absorption coefficients	materials
wall and dome surfaces (for original state)	63 Hz 125 Hz 250 Hz 500 Hz 1000 Hz 2000 Hz 4000 Hz 8000 Hz 0,10000 0,12000 0,25000 0,23000 0,29000 0,33000 0,33000 0,33000	historical plaster tested in 30% humidity (Tavukçuoğlu, Aydın & Çalışkan, 2011)
wall and dome surfaces (for current state)	63 Hz 125 Hz 250 Hz 500 Hz 1000 Hz 2000 Hz 4000 Hz 8000 Hz 0,11000 0,11000 0,08000 0,07000 0,06000 0,05000 0,05000 0,05000	Concrete block with or without plaster, painted
floor	63 Hz 125 Hz 250 Hz 500 Hz 1000 Hz 2000 Hz 4000 Hz 8000 Hz 0,08000 0,08000 0,08000 0,30000 0,60000 0,75000 0,80000 0,80000	9 mm tufted pile carpet on felt underlay
windows & dividing panel	63 Hz 125 Hz 250 Hz 500 Hz 1000 Hz 2000 Hz 4000 Hz 8000 Hz 0,18000 0,18000 0,06000 0,04000 0,03000 0,02000 0,02000 0,02000	Large pane of glass
wooden surfaces	63 Hz 125 Hz 250 Hz 500 Hz 1000 Hz 2000 Hz 4000 Hz 8000 Hz 0,42000 0,42000 0,21000 0,10000 0,08000 0,06000 0,06000 0,06000	Thin plywood paneling (3063)
perforated wooden surfaces (minbar, divided panel for women worship area)	63 Hz 125 Hz 250 Hz 500 Hz 1000 Hz 2000 Hz 4000 Hz 8000 Hz 0,28000 0,28000 0,22000 0,17000 0,09000 0,10000 0,11000 0,11000	8 mm wood veneer on 50 mm studs
panels for Imam's room	63 Hz 125 Hz 250 Hz 500 Hz 1000 Hz 2000 Hz 4000 Hz 8000 Hz 0,18000 0,18000 0,06000 0,04000 0,03000 0,02000 0,02000 0,02000	Large pane of glass
marble	63 Hz 125 Hz 250 Hz 500 Hz 1000 Hz 2000 Hz 4000 Hz 8000 Hz 0,01000 0,01000 0,01000 0,01000 0,01000 0,02000 0,02000 0,02000	Marble slabs

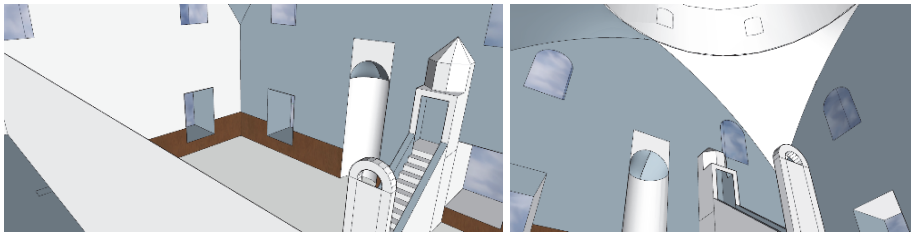

Figure 3. ODEON model of İbrahim Çelebi Mosque

To investigate the effects of using the dome or flat roof; the models of mosque are tested by using ODEON. The source is located in front of mihrab set at a height of 1.5 m. One receiver point (R1) for two types of mosque are placed at a height of 0.85 m representing the seating level. The materials for all surfaces are chosen as 30% absorbent to evaluate the effect of different covers.

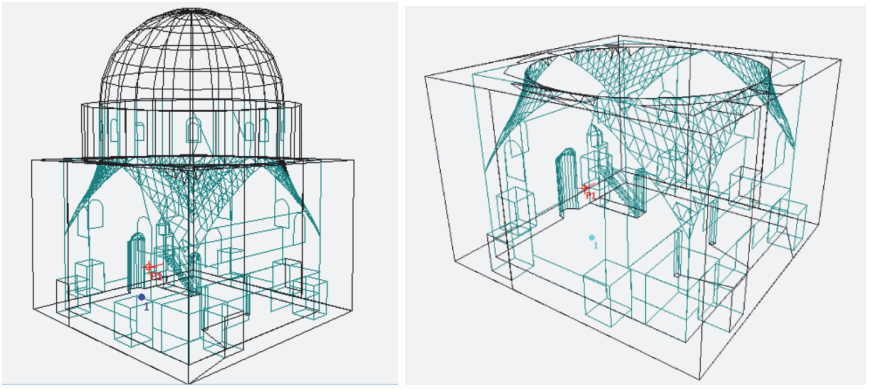

Figure 4. Simulation models of two types of cover for İbrahim Çelebi Mosque

4. RESULTS

4.1. Field Measurement Results

To summarize the field measurement results for mosques, T30 values are shown in Figure 5. It can be seen that; T30 values are mostly around 2 s in mid frequencies. Hüsrev Ağa Mosque has longer reverberation times and is more suitable for musical rituals than other one. However, İbrahim Çelebi Mosque provides better speech intelligibility because of having a nearly flat distribution reverberation line at low frequencies.

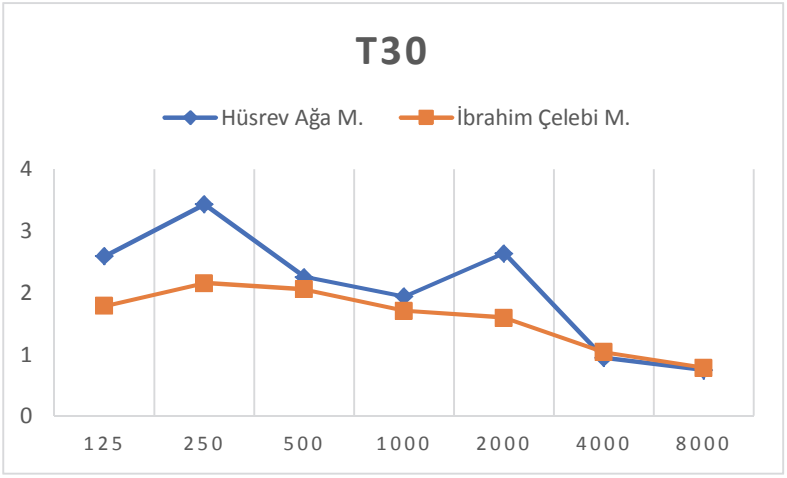

Figure 5. Average T30 results for sample mosques for frequencies from 125 to 8000 Hz

The bass ratio, which is the optimum values for creating the desired sense (spatial impression) in the mosques is recommended between 1.2 and 1.25, is 1.4

in Hüsrev Ağa Mosque and 1.05 in İbrahim Çelebi Mosque (Kuttruff 2009). SPL-A is measured with 6 dB difference among receiver points for both. It shows that desirable consistent sound pressure level distribution is provided in both volumes.

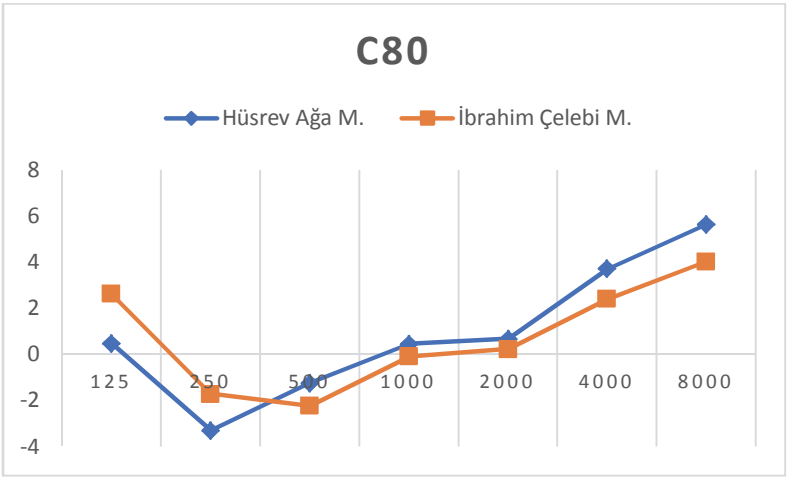

Figure 6. Average C80 results for sample mosques for frequencies from 125 to 8000 Hz

In mid frequencies, C80 values should be between 0 – (-4) dB for music and between (-2) – (+2) for speech (Figure 6). Measured C80 values for İbrahim Çelebi Mosque is between 0 – (-4) dB, for Hüsrev Ağa Mosque is between (-2) – (+2) dB in mid frequencies.

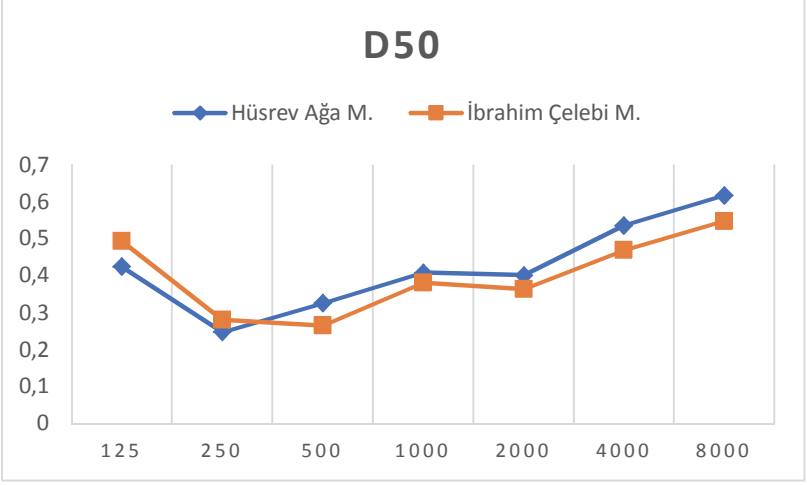

Figure 7. Average D50 results for sample mosques for frequencies from 125 to 8000 Hz

D50 values related to subjective speech intelligibility for both mosques are given in Figure 7. Measured values are found under 50% (which is recommended in literature) in mid frequencies.

STI values related speech are around 0.52 for both mosques, which can be evaluated as "fair". The background noise levels that affect speech intelligibility with reverberation time are measured as 26.4 db(A) for Hüsrev Ağa Mosque, 29.3 db(A) for İbrahim Çelebi Mosque. It is expected that background noise should be between suggested interval limits for good speech intelligibility. The interval limits vary according to the function of building. In the literature, NC25-30 is the recommended noise interval for religious buildings (Beranek 1989). Knudsen and Harris emphasized in their book that the religious buildings have the necessity for insulation from outside noise. They added the noise of inside doesn't exceed 30 db for religious buildings (Knudsen and Harris 1967).

4.2. Simulation Results

Results for evaluate present and original states for İbrahim Çelebi Mosque;

To evaluate the present state of mosque, the walls and dome surfaces are covered by current plaster in ODEON model. Besides this, Historical plaster is used for these surfaces to investigate of original states of mosque. The original state of the İbrahim Çelebi Mosque is arranged as that the wall and dome surfaces with historical plaster. In mid frequencies, the sound absorption coefficients of historical plaster are defined as in the range of 0.23 to 0.29 (Tavukçuoğlu et al. 2011).

Table 2. T30 results of measured and simulated (for original and present state) mosque

İBRAHİM ÇELEBİ MOSQUE							
T30 (s)	**125**	**250**	**500**	**1000**	**2000**	**4000**	**8000**
Field measurement	1.78	2.15	2.05	1.70	1.59	1.03	0.78
Odeon (present state)	1.60	2.29	2.06	1.66	1.43	1.21	0.76
Odeon (original state)	1.53	1.05	1.01	0.73	0.53	0.50	0.42

According to the simulation results, JND for T30 values for simulated and measured ones is kept under 5% which is suggested (Table 2). The usage of historical plaster reduces T30 values in overall frequency spectrum. Using sound

absorbing materials in the mosque caused low T30 values at high frequency for both conditions.

Results for evaluate the effects of type of roof;

Two models for mosque roof types are modeled to evaluate the effects on acoustical conditions. All surfaces for both models are covered %30 absorbent material while source (S1) is in front of mihrab and receiver (R1) is at the center of main worship area with a height of 0.85 m. According to Table 3, if the mosque constructed with flat roof, T30 values would have lower values overall frequency spectrum. It can be seen clearly that the dome gives the interior space for prayers as a spiritual environment for musical activities.

Table 3. T30 results of simulated models with dome and flat roof

T30 (s)	**125**	**250**	**500**	**1000**	**2000**	**4000**	**8000**
Odeon (with dome)	0.49	0.52	0.60	0.64	0.64	0.63	0.50
Odeon (with flat roof)	0.48	0.47	0.47	0.49	0.52	0.47	0.41

5. CONCLUSION

In conclusion, for 500 Hz and 1000 Hz as speech frequencies, T3O values are obtained 2.1 s for Hüsrev Ağa Mosque and 1.9 s for İbrahim Çelebi Mosque on an average. Obtained T30 values are out of the recommended T30 limits for similar volumes (Kayılı 1988, Orfali 2007). These mosques are more suitable for musical version of Holy Quran. However, the speech intelligibility is damaged by high T30 values.

T30 values obtained from the ODEON model, which the historical plaster is used for wall and dome surfaces, are 1.01 s for 500 Hz, 0.73 s for 1000 Hz. They are closer to the optimum limits than present state. For the improvement of T30 values, restoration of historical mosques with original materials should be encouraged. Balanced distribution of reverberation values is desired for all frequencies to provide the speech intelligibility. In this context, Hüsrev Ağa Mosque couldn't balance the T30 values in low frequencies especially 125 Hz according to İbrahim Çelebi Mosque.

Resulted C80 values in mid frequencies for İbrahim Çelebi Mosque is between 0 – (-4) dB, for Hüsrev Ağa Mosque is between (-2) – (+2) dB in mid frequencies. According to suggested values from literature, Ibrahim Çelebi Mosque is found more suitable for musical activities. D50 values are obtained at least 20% for both mosques. However, mosques couldn't be greater than 50% for all frequencies except 4 kHz and 8kHz.

STI parameter values related to speech intelligibility are measured as 0.52 which is defined as "fair". To improve STI values for having good speech intelligibility, the T30 values can be reduced by using some absorptive materials.

Measured background noise levels are in recommended intervals although they are located in the city center surrounded by parks, cafés and shops. Design criterias such as wall thicknesses of mosques, garden walls, used building materials help to have suitable acoustic conditions inside.

The dome is one of basic architectural elements used in mosques. Although concave surfaces create some acoustical problems such as focusing point, it can be seen as a tool for giving spiritual feelings to the mosque. After testing the ODEON models for two types of roof, model with dome obtained bigger T30 values than the flat roof model. The existence of dome can affect other acoustical parameters besides T30.

This study was carried out in order to maintain the documentation of historical mosques' acoustical conditions in the context of intangible cultural heritage. In such buildings, negative interventions that will affect the acoustic conditions as well as visual environment should be prevented. In addition to this, renovation works should be done by suitable materials which are closer to original ones. Besides, further investigation and analysis could be done for the effect of dome on the other acoustical parameters for mosques.

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SESSION 2A

Theme: Architectural/Urban Design, Art and Aesthetics

13 October 2020 Tuesday, 14.30 – 16.00

Chairperson: Assoc. Prof. Dr. Gökçeçiçek SAVAŞIR

Invited Speaker: Gökçeçiçek SAVAŞIR

Deciphering the Concept of Avant-Garde (In Art and Architecture)

Semiha İSMAİLOĞLU, Asu BEŞGEN

Reading the Concept of Anti-Architecture through Baudrillard's Discourses

Ayşenur DAĞ GÜRCAN, H. Ercan GÜRCAN

Darwinian Approach and Mutations: Bjarke Ingels (BIG)

Ayşe Nur ŞENEL FİDANGENÇ

Mirror Mirror on the Wall: Reflections on the 19th Century-Paris through Manet's "Bar at the Folies-Bergère

Sezgi Giray KÜÇÜK

Evaluation of the 1938 Zoning Regulations Proposal by Investigating Changes of the Bosphorus Coastal Road between Dolmabahçe and Bebek with its Nearby Surroundings

DECIPHERING THE CONCEPT OF AVANT-GARDE (IN ART AND ARCHITECTURE)

Gökçeçiçek SAVAŞIR*

ABSTRACT

This study is an attempt to draw a conceptual framework, constructed through the etymological elaboration of avant-garde. It is not only an attempt to unfold a map for understanding this concept in art and architecture, but also to open out 'a general space of knowledge' on architectural avant-garde that can also open a space for different possible interpretations. Grounded on the existing knowledge derived from architectural theory, history and criticism, this study deciphers and conceptualizes avant-garde to accommodate novel perspectives in art and architecture. Based on deciphering and destructing a concept, the methodology in this study merely introduces archaeology of avant-garde as a word.

Keywords: Avant-garde, Conceptualization, Etymology of avant-garde, Taxonomy, Avant-garde in architecture

1. INTRODUCTION

Good afternoon dear guests and speakers! Here, we get together as a part of the International E-Congress of Architecture and Planning with a specialized topic on 'Space & Process'. Within the program of this congress, our session is defined with the theme 'Architectural/Urban Design, Art and Aesthetics', which pinpoints four umbrella concepts that cover vast areas of studies within four disciplines. The difficulty of thinking within the framework of these concepts that delineate this session creates both a challenge and an opportunity for laying a common ground for these four presentations focusing on different topics. I see these concepts as common denominators of the session theme and papers. I believe that focusing on the concept of the avant-garde will open up a different dimension for relating the session and the presentations. Although I have been always inclined to think through concepts as a form of understanding and interpretation, I had the chance to dwell more systematically on the concept of avant-garde in my PhD dissertation with the title "Re-thinking the Limits of Architecture through the Avant-Garde Formations during the 1960s: Projections and Receptions in the Context of Turkey" (Savaşır, 2008).

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Accordingly, I will introduce you a conceptual framework with a title 'Deciphering the Concept of Avant-Garde (in Art and Architecture)', that focuses briefly on the etymological dimension of the concept of avant-garde. Yet, I should note that different dimensions of this concept could also be elaborated through this framework: For instance, some of the avant-garde subjects and their productions could be inquired in more detail. The possibilities could be increased by focusing independently on the discursive or physical production of these subjects, their reception of it and attributions by different subjects. This framework could also be appropriated for reflecting on different topics, periods or geographies.

Throughout history, some subjects and their productions have become activators of architecture and art, or transformed the boundaries of discipline. The architectural production of each period refers to its preceding for following or seeking the traces. In the art and architecture of the 20th century, we can figure out certain similarities and continuities by dominant tendencies, discourses and practices. Within these continuities, certain interruptions, ruptures and accompanying paradigm shifts can also be detected. For instance, bifurcations, ruptures, dispersions in the main route, or the leaps in the continuity of social, economic, political and cultural fields converged especially in the 1920s period, which is mostly called as 'historical avant-gardes' within the fields of art and architecture.

Here, I should note that this attempt does to seek the truest definition of avant-garde; nor inquires to reflect the surface appearance of avant-garde in art and architecture. Contrarily, I intend to draw a conceptual framework, constructed throughout the etymological elaboration. Therefore, this study is not only an attempt to unfold a map for understanding the concept of avant-garde in art and architecture; but also to open out 'a general space of knowledge' on architectural avant-garde that could lay a ground for different possible interpretations. I believe that such a conceptualization, grounded on the existing knowledge derived from architectural theory, history and criticism, could help to accommodate new perspectives. The methodology I propose is based on deciphering and destructing a concept, or dealing with an archaeology of a concept, in Foucaultian sense. However, in this presentation, I will very briefly reflect on this conceptualization that merely introduce archaeology of avant-garde as a word.

2. ETYMOLOGICAL ELABORATION OF AVANT-GARDE

In order to comprehend and unfold 'avant-garde', etymological elaboration of the word would be helpful. Etymologically, the word 'avant-garde' has its roots in the French word 'vanguard' dating back to the fifteenth-century, as an advance group in military or forefront of any field. The word 'avant-garde' refers to "1. (n.) the advance group in a field, especially in the arts, whose works are unorthodox

and experimental; 2. (adj.) characteristic of or belonging to the avant-garde" (Oxford Lexico, 2008a). 'Vanguard', on the other hand, refers to "1. the front part of an advancing army; 2. the forefront in any movement or field; 3. the leaders of any intellectual or political movement" (Oxford Lexico, 2008b). Matei Călinescu gives a full reference to the origins of avant-garde as follows:

The word 'avant-garde' (fore-guard) has an old history in French. As a term of warfare it dates back to the Middle Ages, and it developed a figurative meaning at least as early as the Renaissance. However, the metaphor of the avant-garde - expressing a self-consciously advanced position in politics, literature, art, and religion, etc. - was not employed with any consistency before the nineteenth century. Among other things, this fact accounts for the indelibly modern appearance of the label 'avant-garde' (Călinescu, 1987, p. 97).

Similar to Călinescu, Hilde Heynen accentuates the etymological origins of avant-garde pointing out as "the word has been used from the nineteenth-century onwards to refer to progressive political and artistic movements, which considered themselves to be ahead of their time. The avant-garde radicalizes the basic principle of modernity: the urge towards continual change and development, the rejection of the old and the longing for what is new" (Heynen, 1999, p. 129).

Through the lexical inquiry, it is clear that dictionary definitions of avant-garde point out two functions of meaning accorded to the word: 'Avant-garde as an adjective' and 'avant-garde as a noun'. The former refers to "of, relating to, or being part of an innovative group, especially one in the arts" (Harcourt, 2020). The latter indicates that "a group active in the invention and application of new techniques in a given field, especially in the arts" (Harcourt, 2020). The adjective 'avant-garde' is used as a synonym for "unconventional, having synonyms of beat, experimental, far out, far-out, head, hep, hip, innovative, lead, leading edge, liberal, new, new waves, pioneering, progressive, radical, state-of-the-art, vanguard, way-out". Moreover, the noun 'avant-garde' is given as synonyms of "advanced, camp, exotic, imaginative, innovative, intellectual, inventive, liberal, modern, novel, odd, original, pioneer, progressive, radical, singular, underground, unconventional, and up-to-date" (Dictionary.com, LLC., 2020). The 'avant-garde' is used as a synonym for many words in its adjective and noun form.

On the way to decipher the word within architectural discourse, some synonyms appeared as the foremost and these synonyms are grouped into four: If 'avant-garde' is taken as an adjective, these synonyms are grouped as 'radical', 'new', 'experimental' and 'unique'. On the contrary, the word, in its noun form, brings forth 'radical', 'innovator', pioneer', and 'unusual' for discussion (Table 1). This taxonomy is derived from dictionary definitions of the word and its synonyms,

namely 'radical', 'new', 'experimental', 'unique', 'innovator', 'pioneer', and 'unusual' are brought forth for its conceptualization.

Table 1. The taxonomy of synonyms and antonyms of 'avant-garde' - within art and architecture

A. 'avant-garde' as an adjective			
Radical	**New**	**Experimental**	**Unique**
Irreconcilable	Fluent	Exploratory	Odd
Marginal	Ephemeral	Trailblazing	Unusual
Heterodox	Transitory	Ahead	Alluring
Destructive-Creative	Novel	Advanced	Exotic
Revolutionary	Innovating	Inventive	Mysterious
Promethean	Mysterious	Creative	Singular
Unconventional	Contemporary		Underground
Liberal	Original		Alternative
Provocative	Imaginative		Different
Cutting-Edge	Current		Unexpected
Extreme	Modern		
	Up-To-Date		
	innovating		
X	X	X	X
Conventional	Old	Conservative	Familiar
Mainstream	Obsolete		Ordinary
Orthodox			Mediocre
B. 'avant-garde' as a noun			
Radical	**Innovator**	**Pioneer**	**Unusual**
Revolutionary	Originator	Explorer	Alternative
Militant	Intellectual	Trailblazer	Underground
Provocative		Advance-Guard	Way-Out
		Vanguard	
		Forerunner	

It can boldly be stated that none of the mere definitions of avant-garde is enough to understand this 'umbrella word'. It conveys different connotations in different contexts. It refers to a number of synonyms and metonyms. By definition, the meanings attributed to avant-garde have been continuous and ever changing throughout its history. In spite of the dictionary definitions of the word, a number of connotations could help to conceptualize the meaning attributed to the word. Neither dictionary definitions, nor lexical inquiry is satisfactory to decipher avant-garde. Rather, for further elaborations, 'avant-garde' should be conceptualized in different aspects.

5. CONCLUSION

The fully loaded discourse on 'the Avant-Garde' reveals that avant-garde fluctuates between a set of meanings and labels, mainly between destruction of the institution of avant-gardism and reconstruction of the concept of avant-garde with respect to the contemporary situation, between modern and anti-modern, between experimentation and convention, and between estrangement and familiarization. It could be stated that the concepts of modern, modernism, and modernity have their own domains in various disciplines, and own autonomous realms within the theoretical studies on avant-garde. Hence, the relationships between these concepts are mostly comparative rather than inclusive. That is to say; avant-garde does not necessarily mean modern, or modernist, or does not necessarily refer to modernism; thus, it's better to understand a concept within its context.

The issue of deciphering avant-garde raised some statements as follows: Putting aside all the pre-established discourses on avant-garde laden with a number of statements, there is no unanimity on *the* definition of avant-garde. Therefore, the limits of avant-garde are *indefinite*. Describing, comprehending, defining, and delimiting the concept and phenomenon of avant-garde is a hard issue; so does constructing a theoretical framework. The boundaries of avant-garde are *ambiguous*. As a concept and phenomenon, it is 'evaporative', 'ever-changing', 'trans/forming', 'meta/morphosing', 'fluid', 'erratic', 'dynamic', and 'free-floating'. Even though it addresses a number of movements and subjects, with diverse position, strategy, ethos, technique, or vocabulary; they all have some attributions, which allow us to mark out avant-garde among the others. Indeed, avant-garde refers to a coherent group of creative-subjects and the characteristics of their productions through the dissociative and productive imperatives. Focusing on an etymological elaboration, this paper claims that the conceptualization of architectural avant-garde could be fourfold: Avant-*garde is characterized as a provocative search for the shock of new; a radical formation for the redefinition of*

artistic/architectural conventions; a courageous experiment utilizing new artistic/architectural tools and techniques; and a unique statement delineating the nature of art/architectural object. Having an inherent energy for transforming the pre-established aesthetical and social values, or political structures, avant-garde creates 'the new' with a social function, and constructs 'the new' for a revolutionary culture. Proposing a controversy or a critical stand, the medium for 'avant-garde' could be anything introducing a new thing, venturing an objection, or being appropriate for de-familiarization.

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READING THE CONCEPT OF ANTI-ARCHITECTURE THROUGH BAUDRILLARD'S DISCOURSES

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ABSTRACT

Although he strongly rejects it, Jean Baudrillard, who is regarded as one of the pioneers of Postmodernism, has studies in various disciplines such as; history, sociology, media, economics art and aesthetics. In addition, he has studies expressing different ideas about the discipline and future of architecture. According to Baudrillard, nowadays one of the problems of architecture is to say that architecture cannot be done without the idea of architecture and history of architecture. If you have an architectural project idea; different data about space, history, environment, elements of the project, objectives; all of which will, at a given moment, lead to the formation of an unexpected object that will make it truly different from the initial project. In Baudrillard's words, nowadays everything is caught by cancerous cells of culture; architecture also has its share. In our age, in architecture, as in all areas, the real is lost in the virtual. He says that this "radical" hypothesis is not pessimistic. Baudrillard wants architecture and architectural objects to remain out of the ordinary and does not desire it to be reduced to "virtual reality".

The aim of the study is to read the concept of Anti-Arkitektur, which Jean Baudrillard described in his work titled "Architektur: Wahrheit oder Radikalität? (Architecture: Truth or Radicality?)", through the sub-concepts used to describe the concept in the book. Baudrillard has defined the concept of Anti-Arkitektur as structures that only function as a pure phenomenon, a pure object, without any aesthetic value. The main reason why Baudrillard's work is a sample is that he mentioned the concept of Anti-Arkitektur only in this work. NVivo 12 program, which is frequently used in qualitative research, was used to obtain study findings. Within the scope of the study, by entering the text into the program, the frequency of use of the concepts was determined. The concepts obtained were made into a word cloud in line with word grouping systems. Then a table was created with the English meanings of the concepts. An architectural scene

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in which radicalism does not exist allows us to return to the primitive period of space. In this sense, architecture now serves as an "Anti-Arkitektur". Architecture is largely doomed today merely to serve culture and communication. In other words, it is doomed to serve the virtual aestheticisation of the whole of society. The method of the study is qualitative research because it is a study conducted through discourses.

Keywords: Anti-Architektur, Baudrillard, Architecture, Concept, Discourse.

1. INTRODUCTION

Born in Reims in 1929, Jean Baudrillard died in Paris in 2007. He received his PhD degree under the supervision of Henri Lefebvre. Baudrillard is a philosopher and sociologist, who has caused significant breakdowns in the research agendas of the Social Sciences on many issues, and a critic of society and culture who stands out for his postmodern orientation, described himself as a "deadly" theorist. Although Baudrillard adopted a new Marxist position in his early works that could be considered more an extension of the Lefebvre and Marcuse tradition, he turned his back on Marxism and working-class policies in the wake of the failure of the 1968 Paris workers' and students' movement. He soon developed his own style of postmodern criticism of society and culture (Best and Kellner 1996, Ulaş 2002, Orkunoğlu 2007, Baudrillard 2014, Anık 2016). In this aim, he adopted his deadly strategy of pushing theories beyond their limits, aiming to see what happens on the other side. It seeks to perceive the age in which it lives and the structures specific to the historical, social, cultural, political and economic process to which it belongs in an objective way (Rigel 2003).

He is seen as one of the pioneers of postmodernism, although he vehemently rejected it.

Because of his rejection of any historical approaches, Baudrillard, refused to label himself as postmodernist, stated that simulation theory was one of the major reasons for his characterization as a postmodernist and that he was mentally detached from forms of approach, such as structuralism or postmodernism (Gane 1993, Adanır 2004). Baudrillard, contrary to the allegations in his various interviews, argued that first the concept of the postmodern itself has to be specified before one can call himself as postmodernist (Anık 2016).

Describing postmodernism as the destruction of earlier values and their reconstruction to the effects of synchronicity, Baudrillard defined postmodernism (on the contrary of diversity and heterogeneity) as the feminization with the entire culture in the effect of uniformity and homogenization of the ongoing mechanism action, and in this regard, in fact, as the completion of the project of modernism.

Baudrillard worked in various disciplines on many subjects such as; media, consumption, orgy, reality. Seeking to understand the soulless of his era through concepts such as simulation, virtual, illusion, hyper-reality, Baudrillard touched on the topics like; religion, art, economics, health, morality, society, and the individual (Dağ 2011). He also has studies expressing his different thoughts on the discipline of architecture and its future.

Baudrillard has always sought to put forward his ideas with spatial contributions, due to being a Lefebvre's student and his contributions in the magazine Utopie. His interest in space, architecture and the built environment has continued steadily (Baudrillard 2005, Clarke and Doel 2018).

Architecture is an integral part of culture. According to Baudrillard, architecture begins at the space, which is the first stage. The basic hypothesis is that architecture does not fill space, it creates space. But what increases symbolism in architecture is the empty space. Architecture must try to withstand this void in every way. The architect not only shapes the exterior appearance of man's urban and residential areas, but also internally affects man's social and psychological sensitivities by creating functional and aesthetic space for man's life, work and leisure activities (Baudrillard 1999). Architecture therefore represents a constructive-artistic dimension that can affect social and cultural processes in a dynamic and variable way, and conversely be influenced by external processes (Heger et al. 2001).

Empty space does not have to exist in the physical dimension. It can also exist in thought. In order for architecture to manage a space instead of creating it, the space must contain an empty core, an empty matrix. But there is a big difference between an architecture that produces space and an architecture that manages space: Both avoid filling it so as not to destroy the space (Baudrillard 2003).

According to Baudrillard, one of the problems of architecture today is that; saying that architecture cannot be built without hosting the idea of architecture and the history of architecture. If you have the idea of an architectural project, different data about space, history, environment, the elements of the project, its objectives, all of which will, perhaps, at a certain moment, create an unexpected object that will make it truly different from the original project (Baudrillard and Nouvel 2011).

According to Baudrillard, we are beginning to emerge from a certain sense of time and space. Every political, historical, cultural and artistic event is now torn from its own space by a kinetic energy and set out to a hyper-space where all kinds of meaning are lost and destroyed (Baudrillard 2017). In this way, Baudrillard theorized time and space under the conditions of hyper-reality by

aligning the powers of seduction and symbolic exchange against the third order simulacra (Clarke 2003).

According to Baudrillard, the age we live in has passed into a virtual dimension, and the greatest danger to architecture in such an age is that architecture no longer exists. Today there are countless buildings that will serve only one purpose: "*Man wanders among these structures as if he were wandering in a desert – without immersing himself in the comedy of art, art history, aesthetics and architecture*". Baudrillard calls these structures "Anti-Architektur (Anti-Architecture)", which its function is a pure phenomenon, a pure object, without considering an aesthetic value (Baudrillard 1999).

The architect's adventure takes place almost in a real world. If architecture needs to be more because of the precepts of reality, if it does not consume itself in its reality, procedures, functions and techniques, then we have to "understand it beyond its truth as radicalism". In short, it can be said that, Baudrillard answers his question; *"Architektur: Wahrheit oder Radikalität (Architecture: Truth or Radicalism?)*" in favor of radicalism (Baudrillard 1999).

In this context, Baudrillard complains that today's architecture belongs entirely to a technical, virtual world of possibilities: "*Today's architecture no longer refers to any truth or any originality, only to the technical availability of content and forms. The resulting truth is no longer a truth arising from objective conditions and the subjective will of the architect, but rather the truth of technical usability and its forms of function. It's still called architecture, but it's not that certain*" (Baudrillard 1999).

2. METHODOLOGY

The aim of this study is to determine how Baudrillard defines the concept of "anti-architecture" and how he interrogates contemporary architecture with this concept. Within the scope of the study, content analysis was done through the book "Architektur: Wahrheit oder Radikalität? (Architecture: Truth or Radicality?)". In the study, snowball / chain sampling was chosen from the purposeful samples for qualitative research. The snowball / chain sampling is intended to identify individuals or situations that may be a rich source of information about the researcher's problem. In the study, qualitative data collection by examining the existing book is defined as document review. Within the scope of this study, the concept of "Anti-Arkitektur (Anti-Architecture)" which Baudrillard described in his book "Architektur: Wahrheit oder Radikalität?" was read through the discourses in the book and the sub-concepts used to define the concept. The book, which is in German, is examined and the English equivalents of the words are sorted according to their frequent usage.

The sample of the study consists of a speech he gave at the exhibition "Im Horizont des Objekts", which opened at the Künstlerhaus in Graz on January 8, 1999. The title of the work is "Architektur: Wahrheit oder Radikalität? (Architecture: Truth or Radicality?)" (Figure 1). The speech text was translated from French to German and published in Literaturverlag Droschl. In this book, "Anti-Arkitektur (Anti-Architecture)" concept what Baudrillard put forward stands out. It defines structures that function only as pure phenomena and pure objects without regard to aesthetic value as "Anti-Architektur (Anti-Architecture)".



Figure 1. Cover of the book "Architektur: Wahrheit oder Radikalität?"

The study was conducted through the German translation since the original French text could not be reached. First, the German text was digitized. In order to obtain more accurate results from the original data, the data was not translated into English during the analysis phase. Secondly, the text file was loaded into the interface of NVivo 12, which is frequently used in qualitative research. Word cloud analysis, one of the visual data analysis techniques, was applied for the content analysis of the text. The word cloud, which provides a new and reader-friendly approach to the analysis and presentation of qualitative research findings, is a tool for visualizing words in a text that provides the reader with detailed information about qualitative data, taking into account frequency ratios. Depending on the frequency of words appearing in the source text, the font size allows to combine the determined words (Hunt et al. 2014). To show the data as word clouds, the responses are first thematically coded in a word / short sentence and then entered into a word cloud generator that generates customizable images (Mathews et al. 2015).

3. FINDINGS OF THE STUDY

The findings of the study consisted of word clouds obtained from the NVivo program. After the German text was uploaded to the program, words were excluded such as "and, with, one, two" for analysis.

Each word grouping system was implemented separately in word cloud analysis. These grouping systems include: Exact matches, with stemmed words, with synonyms, with specializations, with generalizations.

In the word cloud obtained by grouping "exact matches" which is the first grouping system, the words "architektur", "nicht", "raum", "kann", "kultur", "raumes", "objekt", "wahrheit" are in density. In the stemming words grouping system, the words "architektur", "nicht", "raumes", "objekt", "kann", "kultur", "wahrheit", "welt", "endes", "virtuellen" are in frequency (Table 1).

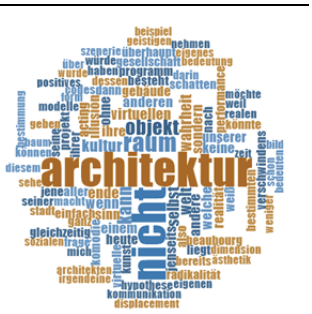
Table 1. Word clouds formed because of the first two word grouping systems



Exact matches	With stemmed words

In the word cloud formed with the grouping system, the "architektur", "nicht", "raum", "objekt", "kann", "kultur", "welt", "wahrheit", "ende", "virtuellen" are concentrated. In the word cloud created with the grouping system with specializations and with generalizations, the words commonly used are the same as those in the previous grouping system (Table 2).

Table 2. Word clouds formed by word grouping systems with synonyms, with specializations and with generalizations

		
With synonyms	With specializations	With generalizations

4. CONCLUSION

In this study, it was determined how Jean Baudrillard described the concept of "Anti-Arkitektur (Anti-Architecture)" and how he questioned modern-day architecture with this concept. The content of the book; "Architektur: Wahrheit oder Radikalität? (Architecture: Truth or Radicalism?)" is analyzed within the framework of the concept of "Anti-Arkitektur (Anti-Architecture)".

The content of "Architektur: Wahrheit oder Radikalität? (Architecture: Truth or Radicalism?)" includes examples from many fields of photography, fashion, politics, challenging whether architecture has a truth and future or not by various discourses and objects created as a result of the production of architecture, such as; Pompidou Center, World Trade Center, Biosphere 2. Baudrillard, in his interrogations by asking questions, actually says that the architecture serves today is an "Anti-Architektur (Anti-Architecture)".

In the study, the words often used to describe the concept of "Anti-Arkitektur (Anti-Architecture)" as a result of the cloud analyses carried out are; "architektur", "nicht", "raum", "kann" "kultur", "objekt", "wahrheit", "welt", "ende", "endes", "virtuellen". When we look at the meanings of the words respectively; the words are; "architecture", "none", "space", "box", "culture", "object", "truth", "world", "end", "shaping", " virtual" (Table 3).

When we look at the frequently used words, the discourses that it produces about whether there is a future and a truth of architecture, are based on the shape of architecture with culture and society; moreover, the space and reality that is the object of architecture is based on the virtuality of architecture.

Table 3. English equivalents of German concepts

architektur		architecture
nicht		none
raum		space
kann		box
kultur		culture
objekt	→	object
wahrheit		truth
welt		world
ende		end
endes		shaping
virtuellen		virtual

Baudrillard defines architecture as the kind that covers over its own tracks, architecture in which the space is the thought itself. Architecture without radicalism, it would be unbearable. The radicalism of architecture makes the design process of architectural objects attractive to architects. It is understood that the spontaneous objects that do not have radicalism or truths have no architectural value. An architectural scene in which radicalism does not exist allows us to return to the primitive period of space. In this sense, architecture now serves as an "Anti-Arkitektur" (Anti-Architecture)". Architecture is largely doomed today merely to serve culture and communication. In other words, it is doomed to serve the virtual aestheticisation of the whole of society.

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DARWINIAN APPROACH AND MUTATIONS: BJARKE INGELS (BIG)

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ABSTRACT

Bjarke Ingels (BIG), one of the architects who proposes new insights, suggestions, and manifestos about contemporary architecture and its problems, has used mountain metaphor through conscious inspiration strategy and has favored positivist and pragmatic thinking and utilitarian architecture by saying 'Yes is more'. BIG, with its discourse of 'think big', has taken the stance against the conventional box forms and the facades that surround them, and has brought architecture to different dimensions. BIG has defined the project process that evolved through adaptation and improvisation, intending to focus on life rather than aim in architecture.

While Ingels' design philosophy constitutes the conceptual approach of the study, this study is prepared by using the architect's discourse, oral and written interviews, videos, digital written texts and literature studies. In this context, the repetitive examples that the architect defines as mutation and adaptation are classified as diagonals, stepped pixels, bending of the mass, shifting of the plaques, breakage of the form, holes and slit opening to the mass, helical ramps and spiral tendencies. The stepped pixels in this classification are the main subject of this study.

In this study, it has been researched how allow to dialogue in urban stairs of the pixelated structures designed by the architect with his passion for lego. Ingels' pixel or lego attitude; areas of socialization in his topography; Approaching to human scale, the language of mass and form, relationship between human and space, the suggestion of space for experience, public space concept, dialogue spaces were discussed based on architect's approach, repetition of his design and mutations. These parameters were evaluated under four examples (Lego Tower, Mountain Dwellings, King Street West, 79 & Park).

Ingels, who was influenced by Darwin, interpreted the tree of evolution as a diagram of the way he works. He explained the unification and selection of the design ideas that emerged in the architectural process as the

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evolution of the idea. BIG designs new mutants by developing prototypes. In the case of the BIG, these mutations occur when the concept and form are designed independently of context. BIG which creates its context and organizes its own space, went to the way of dividing the object through pixels when designing macro-scale structures. Thus, he made the big picture more understandable and perceptible. He tried to achieve the human scale with the gradual pixels rising from the ground level. In this way, Ingels' pixels buildings has transformed itself into an experiential part of urban.

Keywords: Bjarke Ingels (BIG), Evolution, Mutation, Repetition, Residential buildings, Stepped pixels.

The full version of this paper is selected to be published in the special issue of International Journal of Architecture and Planning (ICONARP) after the peer review process.

EVALUATION OF THE 1939 ZONING REGULATIONS PROPOSAL BY INVESTIGATING CHANGES OF THE BOSPHORUS COASTAL ROAD BETWEEN BEŞİKTAŞ AND BEBEK WITH ITS NEARBY SURROUNDINGS

Sezgi Giray KÜÇÜK*

ABSTRACT

Due to events such as fire and earthquakes over the years, Istanbul's plan has been in a constant change and the organic plan of the traditional Ottoman city has been partly transformed into a grid system in the 19th century. The city's first post-Republic master plan was drawn in 1937 by Henri Prost, a French urbanist and architect invited by President Mustafa Kemal Atatürk. Prost who made suggestions for various parts of Istanbul, has proposed three staged road system for the Bosphorus. These are the coastal road on the Bosphorus, the roads on the hills between Taksim and Büyükdere and the roads on the slopes in the middle of these two roads. In this study, it is aimed to reveal the change of the Bosphorus coastal road and its nearby surroundings between Beşiktaş and Bebek, and the coastal districts located here (Beşiktaş, Ortaköy, Kuruçeşme, Arnavutköy, Bebek) through the maps and aerial photos dated to different periods. At the same time, whether the 1939 zoning regulation proposal, which is the starting point of this work, is implemented or not, will be compared with the current situation of the region. Mentioned drawing showing the arrangements offered on the coastal road between Beşiktaş and Bebek and its nearby surroundings, approved by Henri Prost in 1939. In this 1/2000 scale plan, road widening and new road opening suggestions were made by preserving historical buildings and the regions having been arranged as building blocks and green area are indicated. It was proposed to extend the coastal road towards the land side or to the sea side by piles and the recommendations were expressed in 1/200 scale sections. This detailed plan proposal was approved with the exception of the parts for Ortaköy and Beşiktaş, and it is partially implemented at the present time.

Keywords: Bosphorus, Coastal road, Urban texture, Menderes, Beşiktaş.

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MIRROR MIRROR ON THE WALL: REFLECTIONS ON THE 19TH CENTURY-PARIS THROUGH MANET'S "BAR AT THE FOLIES-BERGÈRE"

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ABSTRACT

19th century-Paris is the scene of a vast urban change both physically and socio-culturally. The massive Haussmann plan rapidly transforms the city scape which is to design a network of boulevards combines many different activities such as arcades, public gardens, operas, cafes and bars. In this system, people who stroll by the boulevard look around, visit cafés and shops keep avenues alive. This is so new for that epoch and changed the citizens' attitude and leads the birth of the *flâneur* who leisurely strolls around for amusement. The *flâneurs* occupy the boulevards while they are viewing the scenes, viewing the crowd and also being viewed by the people. So, Paris becomes a scene of this mesmerizing spectacle. Beside these new buildings and glittering boulevards the ones can also see the demolished structures yet the city is still underconstruction. The old quarters vanish rapidly but the poor, fallen, regretted people live in there become visible on the new streets. So the "modern" Parisians confront the "other" side of the city. In that point, however Paris is regarded as a fairy tale city with all these modern aspects, it actually is the space of confrontation and distinction. There are several intellectuals observe this situation and represent the physical and social stratification in their works; such as Baudelaire, Flaubert, Balzac, Renoir and Manet. This study basically focuses on Edouard Manet (1832-1883) and his painting called "Bar at the Folies-Bergère" to read the socio-cultural and socio-spatial condition of the 19th century-Paris. And in this reading the mirror on the wall which dominates the painting stands as a reference to decipher Manet's critique of the society. In order to conduct the study thinkers such as Walter Benjamin and Marshall Berman will be references to read the dilemmas of internalizing modernity in the 19th century; art historians T.J. Clark and Jonathan Crary will broaden the view to understand the change of the object of the gaze in that epoch and to reflect on the questions who is the viewer, what is to be viewed and how it is represented; and the philosopher

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Michael Foucault who reads Manet's work as a field of discourse will expand the critique of society beyond the canvas.

Keywords: 19th Century-Paris, modernity, flâneur, Manet, "Bar at the Folies-Bergère"

At the beginning of the 19th century the image of Paris is not nice. There is poverty; the epidemics are all around, the streets are congested and dirty (Hall, 1999, pg. 81, 265). In order to put an end to this problematic situation Napoleon and Eugéne Haussmann decide to renovate Paris. Their plan is to design a network of boulevards which combines many different activities such as arcades, public gardens, operas, cafes and bars (Choay, 1969; Panerai & Castex, 2004; Benjamin, 1985). In this system, people who stroll by the boulevard look around, visit cafés and shops keep avenues alive. This was so new for that epoch and changed the citizens' attitude. The well-known thinker of the period Charles Baudelaire who witnessed the change of life the modern city called Parisians "who practiced leisurely strolling as a form of entertainment" les *flâneurs* (Forgione, 2005, p. 664). The *flâneurs* occupied the boulevards while they were viewing the scenes, viewing the crowd and also being viewed by the other people. The boulevards become a place where people like to boast and spend most of their time. On the other side there is another *flâneur* who "goes botanizing on the asphalt" (Benjamin, 1985, p. 37). This one looks like a scientist who is investigating the unnatural environment which was effected by modernism. This *flâneur* is also strolling around, viewing the crowd but not being viewed by them. This is the artist who is observing the 19th century Paris (Benjamin, 1985; Berman, 1988).

Paris in the 19th century is very valuable scenery for the artists of that epoch. There are lots of writers such as Balzac, Flaubert and Zola, painters such as Renoir, Cezanne, Degas and Manet. This study basically focuses on the Impressionist painter Edouard Manet (1832-1883) and his work called "Bar at the Folies-Bergère".

According to T. J. Clark (1999, p. 3) Impressionists "broke things up into finely discriminated points of color, as well as in the 'accidental' momentary vision." Representing the "moment" becomes important for Impressionists in parallel to the invention of photograph in 1830 (Krausse, 2005, p. 72). Snapshot catches any moment in life and represents it on a piece of paper. This feature of photography fascinated the Impressionist painter "who endeavors to express the general impression produced by a scene or object, to the exclusion of minute details or elaborate finish" (Oxford English Dictionary, 1989). Hence, the technique and the

idea of their paintings are different from their formers. The contours are sketchy to catch the moments. Behind this they "had a fondness for their own time haunted the territory of the *nouvelles couches sociales*" (Clark, 1999, p. xxx). So the experiences of newly emerging social classes are the sceneries. Therefore the traditionalists refuse Impressionists works, and blame them for not using divine symbols or heroes (Krausse, 2005, p. 72). In the 19th century it was generally believed that "art should teach a moral lesson," like holy symbolism, or "evoke a powerful sentiment," like the stories of heroes, so the subject of the artwork, in other words the theme, should be worth to represent (Chu, 2006, p. 388). Instead of this the impressionists "depicted the life of the contemporary urban middle class, and were emphatically modern" (Chu, 2006, p. 390). Therefore, the traditionalists are against the changing idea of reflection of the world; the mimesis is no more the same.

Mimesis means "imitation" especially "the representation or imitation of the real world in (a work of) art, literature, etc" (Oxford English Dictionary, 1989). So the work of art is approved as the "mimetic mirror" throughout the centuries (Şengel, 2002, p. 12). In that point the Impressionists differ, they "wanted somehow to suggest the constantly changing aspect of reality" (Chu, 2006, p. 390). So they observe, reflect and criticize the changing conditions of the modern time with their "*flâneur*/artist" gaze (Pollock, 2008, p.218). It can be said that with the new mimetic approach, they propose a critical relation with social reality. So, what are the social realities of that epoch? To answer this question Manet's "Bar at the Folies-Bergère" (Figure 1) stands as a reference.

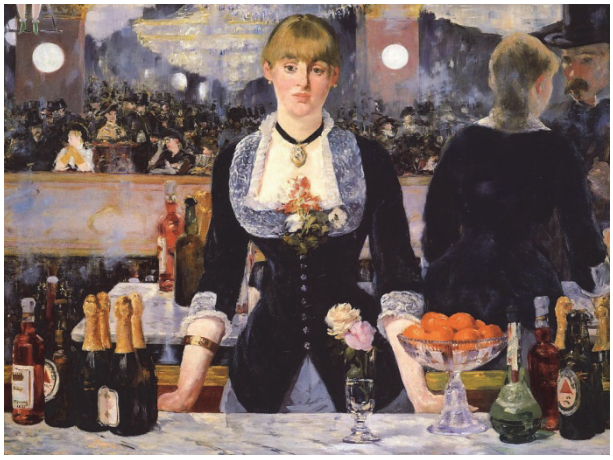

Figure 1. "Bar at the Folies-Bergère" (1882), Edouard Manet.
(Source: Foucault, M. (2009). Manet and the Object of Painting. London: Tate, p. 72.)

In this painting, firstly the woman figure occupies the center (Figure 2, 3). The whole painting is based on her position and she directly looks at the spectator. She is in front of a bar and on the bar there are several bottles of beverages. Then the images behind her catch the eye. These are sketchy representations of a crowd (Figure 4). But this is not the room when people enjoy the bar, this is a reflection on a mirror and we understand it when we see the reflection of the woman and the man in front of her (Figure 5). So she is in between with the bar and the mirror. In other words, she is behind a bar and the main room of the Folies-Bergère extends before her. Therefore we understand that she is a barmaid ready to serve the crowd depicted on the mirror.



Figure 2.

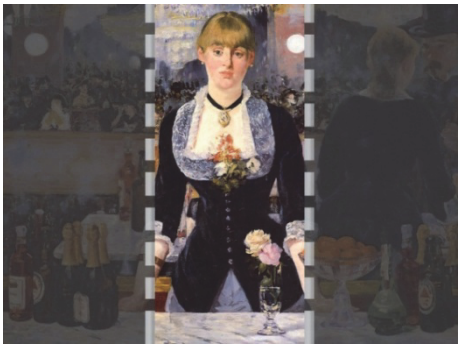

Figure 3.

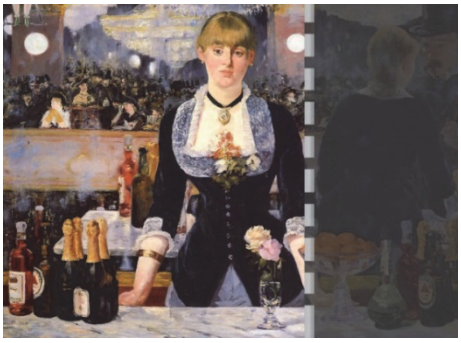

Figure 4.

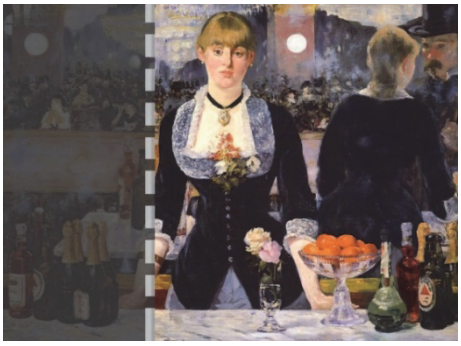

Figure 5.

With the help of the mirror we just understand the space, the position of the woman and her occupation. It is also important to recognize the crowd, because here we can only see the people's reflection on it. This is a crowd of bourgeois who entertain by watching the spectacle at the bar. At the same time through the reflection on the mirror they turn themselves into a spectacle. The mirror

shows that, the bourgeoisie culture is a "culture of display" in the 19th-century Paris (Iskin, 1995, p. 25). Every moment is like a spectacle. While wandering on the streets or in a bar, the crowd composes a spectacle; while the one is in that crowd she or he also turns out to be a spectacle. The commodities displayed in shop windows of stores and in arcades are spectacles, while viewing these goods one becomes a part of the spectacle. The basic interaction is based on to view and to be viewed. In that point the mirror in the painting shows us the effect of the gaze and how the direction of the gaze focused on the women.

Jonathan Crary (1999, p. 1) states that "western modernity since the 19th century has demanded that individuals define and shape themselves in terms of 'paying attention,' that is […] for the sake of isolating or focusing on a reduced number of stimuli." Then, here it is possible to interpret that the stimuli is the image of women. According to Griselda Pollock sexual policy of the gaze determines the borders of social organizations (Pollock, 2008, p. 211). In other words the male gaze determines the position of women. In the case of "Bar at the Folies-Bergère" we see the reflection of a man on the mirror. His attention is towards the barmaid and his gaze is on her. It is not clear that he is ordering something to drink or in the middle of an indecent proposal to her. Petra ten-Doesschate Chu (2006, p. 388) interprets that "the barmaid's face is aloof and emotionless, showing only boredom and indifference to the customer—one of countless men who, night after night, ask for drinks or the price of her after-hour services." When we read Pollock's article this comment becomes more meaningful. According to Pollock (2008, pg. 215, 249) there is a relation between immorality and being a working-woman. This also shows a differentiation between the working-woman and a bourgeois lady which we clearly see in the painting. The bourgeois ladies are on the mirror, depicted as watching the spectacle; and the barmaid is behind the bar serving for the bourgeoisie. According to Ruth Iskin (1995, p. 26) the bar is also the symbol of the class difference; being behind the bar means being in the service sector. However she mentions that there is a difference working in a stylish place. For instance, in Manet's painting the barmaid is wearing a fashionable dress and she looks like a bourgeois lady in that garment, even though she is not. She is "something between a work-girl and a middle-class lady," in other words she is in a "new class of the petite bourgeoisie" (Iskin, 1995, p. 26). Because it is a necessity for "the day-to-day discourse of selling and consumption at the time required saleswomen's dress code to be pleasing to a bourgeoisie clientele" (Iskin, 1995, p. 26). Therefore, the appearance of her becomes important for the commerce. So, as Iskin (1995, p. 27) asks "what was it she was selling, after all?" The goods or her image? In other words the image of her forms a display for the goods, and makes them more attractive to the

customers. It reminds the function of shop windows where the goods are displayed behind a large plate of glass.

As it is mentioned before this is the age of "display" so it is related with "to exhibit". Yet, the 19th century is the age of world exhibitions, and according to Walter Benjamin (1985, p. 165) these were "places of pilgrimage to the fetish Commodity." The bourgeois fascinated by the luxury goods displayed in the world exhibitions dwell in the "universe of commodities" (Benjamin, 1985, p. 166). This universe of commodities is comprised of not only world exhibitions, but also the arcades and department stores, the "recent invention[s] of industrial luxury" (Benjamin, 1985, p. 36). And to commodify these objects advertisement becomes important. In that point shop windows are absolutely needed in order to exhibit and advertise commodities. As Benjamin (1985, p. 37) states these places are the houses of *flâneurs*. Hence the bourgeois spend most of their time in these spaces by leisurely wandering and looking around. The first things that catch their eyes are the shop windows. They are fascinated by the shimmer of luxuries goods; though they cannot reach or have the product they are looking at without paying its price. So the desire of obtaining this good, displayed in the shop windows, turns it into fetishism. Iskin (1995, p. 42) quotes Baudelaire about viewing an object with a woman who he did not know:

> I catch myself thinking as I look at some handsome object or beautiful scenery or anything at all agreeable. 'Why isn't she with me, why isn't she here to admire that with me or to buy that with me?'

Iskin (1995, p. 42) interprets that "in this discourse of romance in the age of consumption, Baudelaire's fantasy suggests that both he and she enjoy being seduced together by 'some handsome object' in a shop window." Iskin's interpretation is meaningful in terms of commodity fetishism. The gaze of the spectator makes the product a desire object. In this regard, Baudelaire is both seduced by the object and the image of the woman. Baudelaire's solicitous gaze turns the woman into a fetishized object like the luxuries displayed on shop windows. Iskin (1995, p. 27) also quotes Henri Houssaye who describes the barmaid in Manet's "Bar at the Folies-Bergère" as "vaguely shaped mannequin". If the expressionless woman is like a mannequin, the man is the spectator and then the mirror turns into a shop window; because we can just see the man's gaze through it (Figure 6). The man is standing her very closely and his attention is on her.



Figure 6. Detail from "Bar at the Folies-Bergère".

The mirror reflects not only this customer's gaze; Manet also reflects the focus of male gaze in the bourgeoisie society. Another detail from the painting shows us how the male gaze towards the woman (Figure 7). In this sketchy crowd one can hardly see faces but the gestures of the man and woman tell the direction of the attention. The crowd is in the second storey, which we can only understand from the reflection, and they are probably watching a show. Especially the women are depicted in the moment of viewing the show. There is a woman with binoculars in her hands, and another woman near her is looking to the same direction. Nevertheless, there are several men in this section whose gestures are towards these women watching the spectacle. It is an interesting detail that we see a pair of legs on the left corner on top. This is probably a performer's image and it seems that the performer is a woman. Unsurprisingly, the spectacle is a woman; the spectators are also women and the men around them look at those women. In this painting the male gaze dominates the scenery. In other words, through the mirror Manet reflects the reality of gendered look and the condition of women as a spectacle. The hegemony of the look is masculine; even if the woman preserves her subjectivity with her own gaze, the male gaze turns her into a spectacle, to a desire object.



Figure 7. Detail from "Bar at the Folies-Bergère".

The mirror is also a shop window of the display of the bourgeoisie society. Manet reflects their luxury consumption habits and entertainment based on a consumption product, the mirror (Melchior-Bonnet, 2001, pg. 9-98). As mentioned above Impressionists reflect the daily life of the 19th-century Paris, and the bourgeoisie. Clark (1999, p. 3) states that, "the actual bourgeois's being brought on to enjoy Impressionist painting," and they are the "first purchasers and enthusiasts" of these paintings. It is remarkable that bourgeoisie sees those works and desires to buy their own paintings. Manet criticizes the reality of his epoch and reflects the bourgeoisie life, then the bourgeoisie society's solicitous gaze towards this mirror with the intention to purchase; so there is an irony here. It is interesting that how the bourgeoisie people, who see their own reflection on the mirror, identify themselves; whether they question the subject/object, or spectacle/spectator position of themselves. Additionally, their desire to buy the painting reminds the myth of Narcissus that the bourgeoisies see their reflection, amazed by it and want to have it. In that point they turn themselves into a desire object, a spectacle. Thus, the mirror is "making spectacle of everything" (Melchior-Bonnet, 2001, p. 98). So, the bourgeoisies identify themselves through the "culture of display," with viewing the crowd which they also belong to and

being viewed by the others. Therefore, the function of the mirror is not just reflection; it draws the borders of identity, criticism of subject and object, spectator and spectacle, consumption and luxurious life of the 19th century.



Figure 8. "Bar at the Folies-Bergère", edited by the author.

What if there is no mirror in that painting? In Figure 8 the mirror is erased, and the texture of the wall is applied to the mirror surface. This stroke changes the whole scene. Now there is no clue about the space, we cannot understand the ones to whom the barmaid serve for, or her position in the society. It is clear that the mirror is a key element in that painting and Manet's criticism. Without that mirror we may say that Manet painted this beautiful woman for the pleasure of the bourgeoisie men. However with the mirror it turns into a critique of the society, the bourgeoisie habits and the place of woman in that society. Manet's mirror is the "mimetic mirror" which does not only show the world; but instead reflects the social reality and invite people to reflect on it from an intellectual distance and criticize it. As last words Bonnet's quotation from David Hockney is remarkable that, "If we consider life without the mirror, we are only considering it half-way" (Melchior-Bonnet, 2001, p. 98).

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SESSION 2B

Theme: Conservation and Regeneration

13 October 2020 Tuesday, 14.30 – 16.00

Chairperson: Prof. Dr. Mehmet KÜÇÜKMEHMETOĞLU

Ali YILDIZ, Ayşe Gülçin KÜÇÜKKAYA
Conservation of Superimposed Historical Constructions

Gülşen DİŞLİ
Historic Buildings that Have Combined Functions: Cases from Ankara, Turkey

Betül GELENGÜL EKİMCİ
Industrial Ruins: Conservation Experiences in Vacant Heritage Buildings

H. İlke ALATLI, Demet BİNAN
The Original Architect's Role in Conservation of the Recent Architectural Heritage

CONSERVATION OF SUPERIMPOSED HISTORICAL CONSTRUCTIONS

Ali YILDIZ*, Ayşe Gülçin KÜÇÜKKAYA*

ABSTRACT

Human beings have continuously built new structures for their basic needs. In some cases, resettlement activities were carried out using structures built by ancient civilizations. In Anatolia, which has cradled different civilizations, it is almost impossible to find the designs and techniques of a single civilization in a building when we examine the architectural heritage from Ancient Age, Roman, Byzantine, Anatolian Seljuk, Anatolian Principalities and Ottoman Empire. It is a common method to repair and use buildings that have been left out of use due to various reasons such as wars, migration and natural disasters in the history. As a result, the interventions in the historical buildings, which are constantly changing, have created an indelible layer and gave the monuments a superimposed feature.

As the living witnesses of the old superimposed periods, monuments are also important, with their evidence reflecting information such as life stylise, architectural concept, construction techniques and materials belong to previous time. This study will help not only to illustrate the identification, documentation and conservation problems of historical monuments that includes superimposed periods, but also to learn and to integrate the results to build new tools and methodologies for documenting, managing and communicating of the conservation.

Keywords: Superimpose, Manisa Grand Mosque, Sultan Ahmet Complex, Roman Forum, Anastylosis.

1. INTRODUCTION

As a design term in architecture, "superimposition" provides buildings a method for the examination in different theoretical and practical terms all at the same time. For example; Bernard Tschumi provides a series of planning sketches for his Parc de la Villette project (Fig. 1). In these sketches, Tschumi actions and structures

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are mapped on top of each other, with multiple patterns occupying the same space. In this way, Tschumi argues, the architecture and its eventual use by people are held open simultaneously to many interpretations (URL-1).

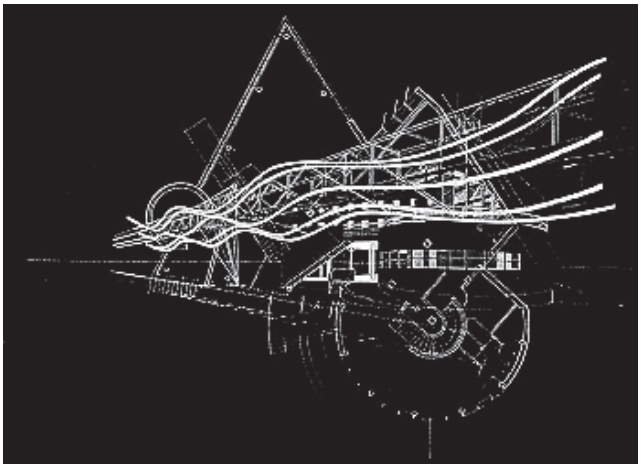

Figure 1. The superimpose sketches of Tschumi, in the studies of Parc de la Villette (URL-1)

As a technical term in Archaeology, "superposition" is fundamental to the study of the stratigraphy of archaeological sites, in many settlements. Human occupation of any site results in the accumulation of all kinds of fillings. Objects are lost and become embedded in the ground. Buildings fall into disrepair and are leaved to make way for new ones. A flood may wipe out a village and deposit a thick layer of silt. A new village may rise on the same spot years later. The sequence of natural and humanly accumulated layers on an archaeological site is the basis for all stratigraphic observations in archaeology. But as Figure 2 shows, it is not only the carefully observed layers but their detailed contents as well that provide us with relative cultural chronologies, objects that the archaeologist uses as indicators of technological, economic, social, or even religious change (Fagan & Durrani, 2012).

The determination of superpositional relationships is of first importance in archaeological stratigraphy as defining the interfacial relationships between the features deposits of a site. The stratigraphic sequences of archaeological sites are made analysis of the interfaces between strata, not from a study of the soil composition strata. Without a stratigraphic sequence, the cultural remains of the strata contrasted except in a general typological context. The role of superposition in archaeological stratigraphy is a series of layers and interfacial features as

originally created. The upper units of stratification are younger and the lower are older, for each have been deposited on, or created by the removal of, a pre-existing mass of archaeological stratification (Harris, 1979).

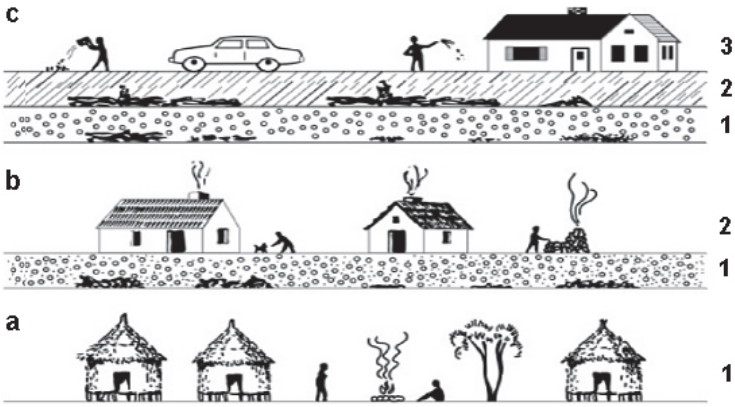

Figure 2. The principle story of a superposition; (a) A flourishing farming village 5,000 years ago. After a time, the village is abandoned and the huts fall into disrepair. Accumulating earth and vegetation cover the ruins. (b) After an interval, a second village is built on the same site, with different architectural styles. This village in turn is abandoned; the houses collapse into piles of rubble and are covered by accumulating earth (Fagan & Durrani, 2012).

"Superimpose" term in the conservation world is to place one building on another building as an addition, in such a way that old ones are preserved knowingly or unknowingly. In the conservation of heritage issues, "superimpose" term had been mentioned the first at Venice Charter Article 11th "*The valid contributions of all periods to the building of a monument must be respected, since unity of style is not the aim of a restoration. When a building includes the superimposed work of different periods, the revealing of the underlying state can only be justified in exceptional circumstances and when what is removed is of little interest and the material which is brought to light is of great historical, archaeological or aesthetic value, and its state of preservation good enough to justify the action. Evaluation of the importance of the elements involved and the decision as to what may be destroyed cannot rest solely on the individual in charge of the work.*" (URL-2).

2. TYPOLOGIES OF SUPERIMPOSED HISTORICAL CONSTRUCTIONS

Many settlements, especially old cities, which have remained important throughout the historical process, have hosted many civilizations. Cities such as Jerusalem, Jericho, Plovdiv, Athens, Rome, Istanbul transport a rich accumulation to the present day as settlements that do not lose their importance in the historical

process. While determining the settlement areas, factors such as transportation, topography, security, climate, economic activities, proximity to agricultural lands and water resources were taken into consideration. Due to these features, a region used in the past for settlement purposes was used in different periods in the same way. The old city centre of Rome, the Historic Peninsula in Istanbul, Serdica Ancient City in Sofia and Philippopolis Ancient City in Plovdiv show an multilayer urbanization feature dating back to more than one period in layers.

In order to talk about superposition, there should be old settlements in the same location where a new settlement was placed. Depending on the time between two different periods, the scope of the new construction varies. Especially when it comes to recent times, it is generally seen to be used with small interventions in proportion to the robustness of the existing constructions. However, as the period between different periods increases, the constructions are damaged and even demolished for various reasons. Accordingly, new buildings are built on existing ruins. Constructions that overlap each other are often built with a complex construction method. In a construction built on existing building ruins, applications such as the use of building elements and materials brought from different structures and adaptation of the solid parts of the building to new use can be seen together.

2.1. Superimposed Constructions Independent from Previous Periods

Comprehensive archaeological studies are necessary to determine whether there was any previous building in the area where the building was built. It is impossible to perceive from the surface due to the fact that the residues of the previous periods remain in the depths of the ground, especially in areas where major destructions are experienced. In the absence of any records or documents belonging to the relevant settlement, the structures built in such an area were unannounced placed on the lower layers. Consequently, the structures belonging to different periods have the feature of overlapping independently, and the residues in the lower layer can only be identified by archaeological studies. It is difficult to detect all layers in areas where many settlements of different periods are stacked, and in cases where there is overlapping of recent periods, detailed studies are required due to the interlocking construction.

The Roman Forum was the centre of Ancient Rome; it is located in the heart of Rome between the Palatine, Capitol and Esquiline hills in an area that was once marshland. The Forum served as the political centre of Rome. It contains the Senate in a building known as the Curia and the palaces of the early kings of Rome. The Forum also was the central marketplace and civic centre of the city. In addition, the Roman Forum served as the religious epicentre for the Empire,

housing a number of important temples dedicated to various Roman gods. Some of these temples were later converted into churches and remain in fairly good condition. Successful military commanders had triumphs which also took place at the Roman Forum (Fig. 3) (Gargiulo, 2009).

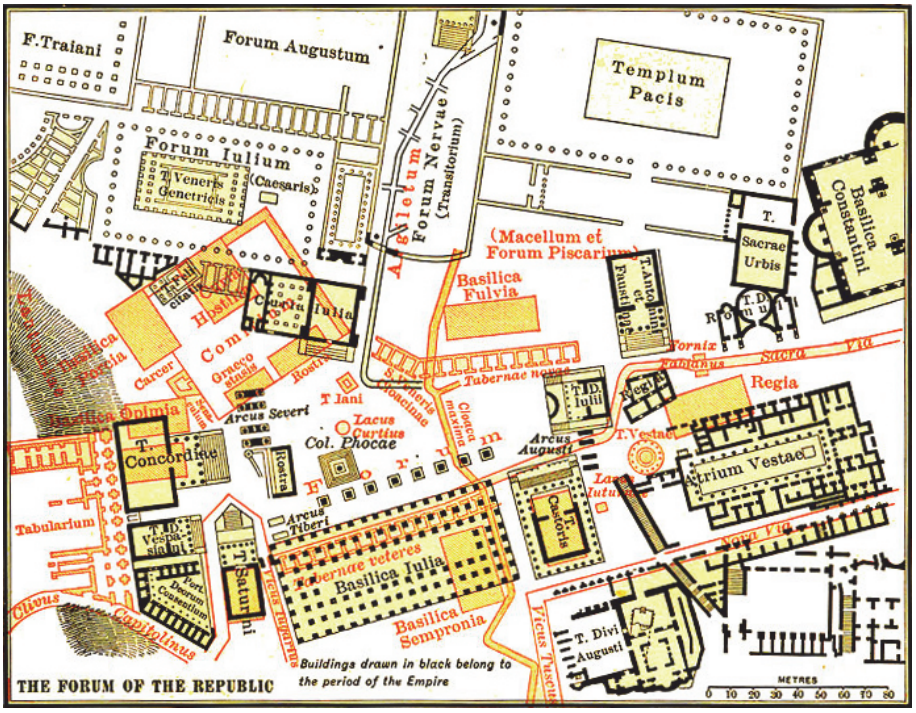

Figure 3. Superposed Constructions of the Roman Forum (Gargiulo, 2009)

Istanbul, formerly called Constantinople, was the capital of the Byzantine Empire, from 476 AD until the capital fell to the Ottomans in 1453. Constantinople was devastated by fires in the 12th century and then plundered by Crusaders in 1204. After the Turks took control, the Ottoman sultans decorated the city by Ottoman buildings, palaces and mosques. When Constantinople became the capital of the Eastern Roman Empire following the division of the Roman Empire in the 4th century, there was a huge palace of over 100,000 square meters extending from the Sultan Ahmet Mosque to the sea in front of Hagia Sophia. Today Ottoman and Byzantine structures are all in the same area in a superposition. The whole area under the ground is full of the residues of different buildings belong to the populations of different periods (Fig. 4). An important conservation study of the Great Palace of the Byzantine Empire is of the large mosaic decorated floor, lying under the shops of the 'arasta', which is located behind the Sultan Ahmet

Mosque. These mosaics, uncovered by the English Academician, Talbot Rice in 1936. Area, under the four shops of the Arasta, where the mosaics located, are preserved as the Great Palace Mosaics Museum, today (Kucukkaya, 2003).

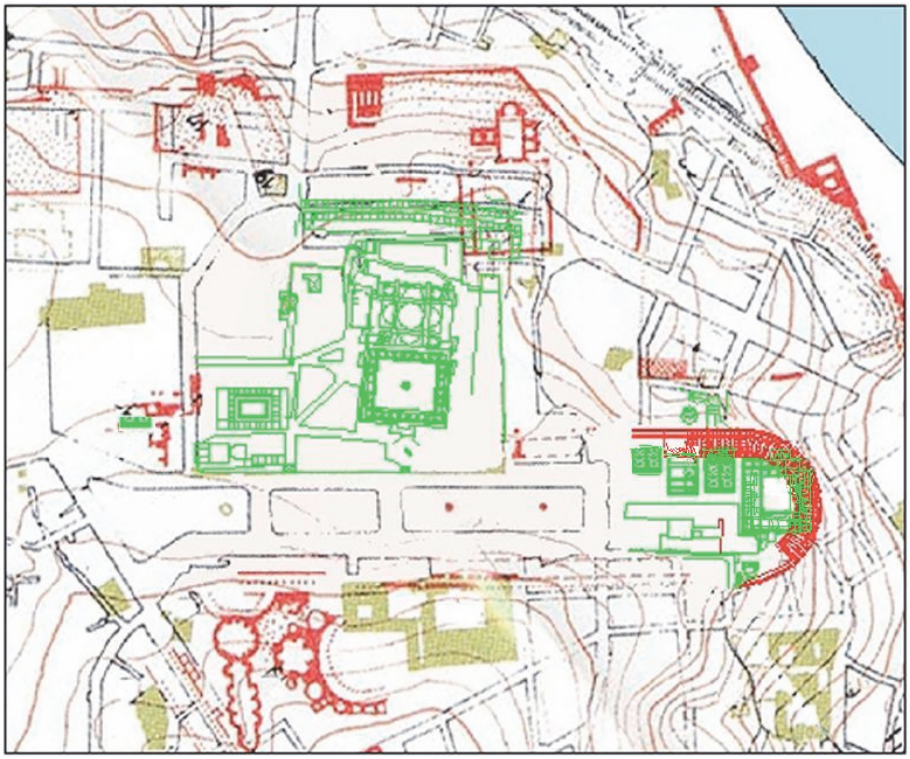

Figure 4. Superimposed constructions in the Sultan Ahmet Area; Ottoman Empire Period (Green), Roman and Byzantine Empire Periods (Red) (Kucukkaya, 2003)

Serdica is among the important Roman cities in province of Thrace. Serdica Antique City is located just below the current Sofia city center (Fig. 5). A central part of the ancient city of Serdica was unearthed during the excavation carried out in a large area in the city center of Sofia between 2010-2012 (Ivanov, 2017). Within the scope of the works carried out in this direction, some parts of the area where the ruins of the Antique Serdica City were covered were converted to Nezavisimost Square and some parts were designed as an open air museum (Fig. 6-7).

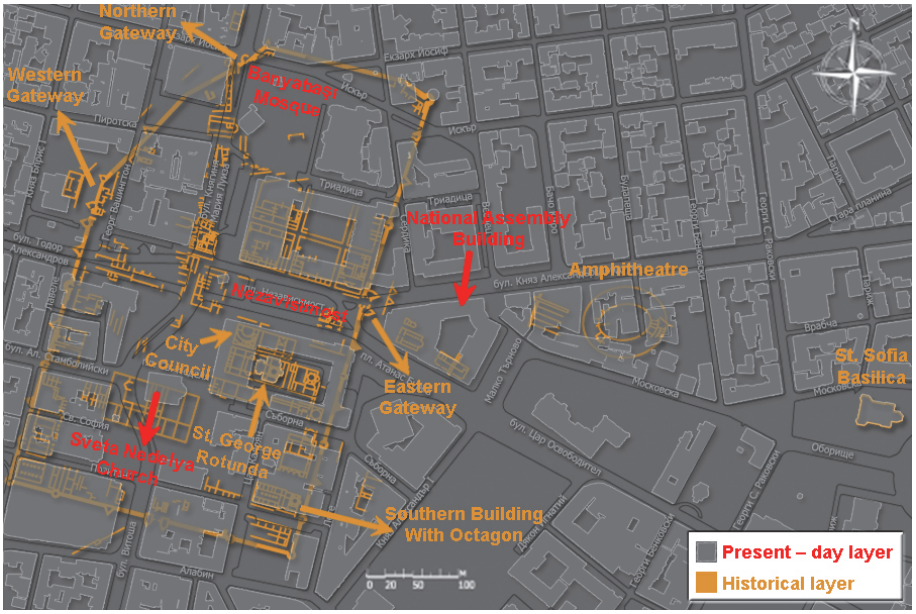

Figure 5. Settlements of Different Periods in the Serdica Ancient City (URL-3)



Figure 6. Banyabaşı Mosque (Left) (URL-4) and Sveta Nedelya Church (URL-5) and Residues of the Serdica Ancient City (Right)



Figure 7. Serdica Ancient City Ruins Under the Nezavisimost Square in Sofia (URL-6)

Plovdiv, the second largest city in Bulgaria, is one of the oldest cities in Europe. The development of the city is associated with the period of Philip II of Macedon King. This development took place at the highest level during the Roman and Byzantine Empires, and was preserved for years during the Ottoman Empire, and increased during the Renaissance Period (URL-7). The city was named Plovdiv when the Ottoman Empire was conquered and many buildings were built during this period. The city remains today from the Ancient City of Philippopolis, the ancient ruins such as Ancient Theatre, Ancient Stadium, Odeon, Forum, Roman Thermae, Great Basilica, fortification walls, are intertwined with the constructions built in the next period (Fig. 8-9).

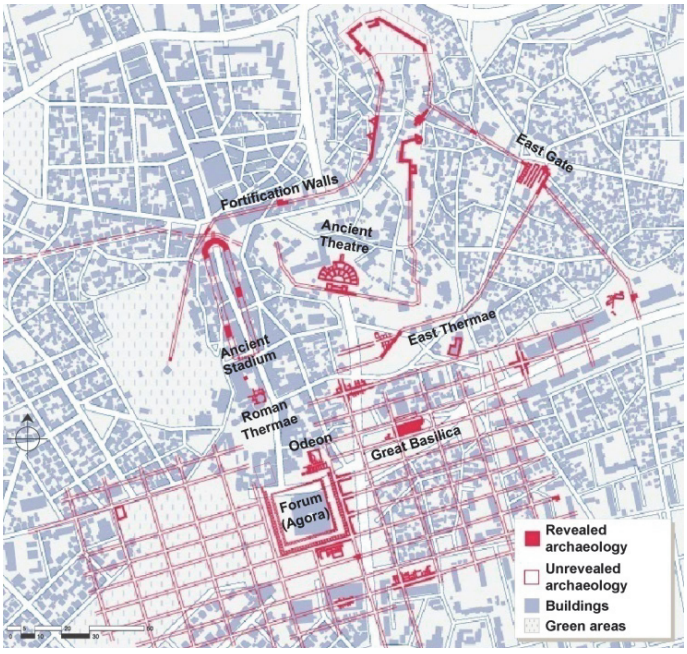

Figure 8. Settlements of Different Periods in the Ancient City of Philippopolis (URL-8)



Figure 9. Ancient Stadium (Left) and (URL-6) Ancient Theatre (Right) of Philippopolis

2.2. Superimposed Constructions Associated with Previous Periods

In cases where buildings or building remnants belonging to previous periods are clearly evident, it is frequently preferred to create new buildings using existing ruins or constructions. With the method of building a new construction by adding on the body or foundation walls of existing building superposed constructions that are dated to different periods were created like a method of building a new construction. Thus, while the construction process was shortened, economic benefits were also provided. Most of the time, it was not possible to remove the building residues from the previous period, and the location of the area made it necessary to build the new building on the existing ruins. In some cases, the existing building residues are the determinant of the newly built construction form and dimensions, while in other cases the residues are used only as foundation walls or fillings. While a building constructed in this way gains importance due to the fact that it belongs to different periods of history, it also gains value with the application of different construction techniques.

As a result of the association of the construction with the buildings or building residues of the previous period, it was possible to keep different structures within the same building. In addition, it can be said that with such a method, the residues of buildings from previous periods were partially preserved.

The greatest complex of 7th century is the Sultan Ahmet Complex, built by Chief Architect Sedefkar Mehmet Aga, is opposite the Hagia Sophia. This Ottoman-building complex consists of a mosque, an university (madrasah), a primary school (sibyan mektebi), a hospital (darussifa), three buildings belong to the public kitchen (imaret) and the tomb of Sultan Ahmet. The Sultan Ahmet Complex, which spread on the remnants of Byzantine Great Palace and Hippodrome, is located on an artificial hill in an un-methodical position. Hospital including a bath and

three buildings, which were used as the public kitchen (imaret), are located just over the hippodrome walls (Fig. 10-11) (Kucukkaya, 2003).

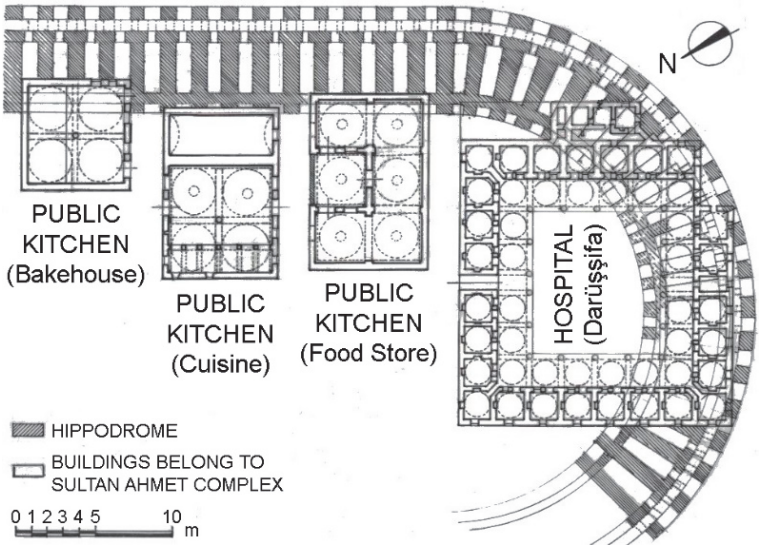

Figure 10. Superposed Constructions; Hippodrome and The Sultan Ahmet Complex (Kucukkaya, 2003)



Figure 11. Hippodrome and the Hospital of Sultan Ahmet Complex (URL-9)

2.3. Superimposed Constructions Disguised of Previous Periods Traces

Existing buildings in cities, which have been dominated by different civilizations for reasons such as conquests, wars, invasions, are quickly adapted to new uses to respond to needs. When it comes to changing the architectural character of the building, some additions were made and the identity of the building was changed. This formation is especially evident in religious buildings. It is a common practice to use churches by converting them into mosques or mosques into churches. For such a use, the character of the buildings has been changed by closing the additions made to the outer and inner parts of the building and the previous period traces. The frescoes and mosaics inside the churches converted into mosques are covered with plaster, and minarets are added to the exterior, giving a new identity. Such an application has also contributed to the conservation of the original status of the buildings from the previous period. While the additions made depending on the new usage cause overlapping, they also show a feature that different functions overlap in terms of usage.

When Hagia Sophia is analysed from this aspect, it stands out as an important construction example where different uses overlap. The building, which is used as a museum today, was built in the place of two churches that were previously built and demolished, and was converted into a mosque after the conquest of Istanbul. Within the scope of restoration works, the mosaics on the inner surfaces of the building were partially exposed and layers of different periods were displayed together (Fig. 12).



Figure 12. External and Internal Views of Hagia Sophia

2.4. Coexisting – Superimposed Constructions Using Materials of the Previous Buildings

It is frequently encountered to use the building elements and materials obtained from the buildings of the previous periods that were destroyed due to natural

disasters, wars, abandonment of use or to destroy the traces of the past. With this use, traces of constructions from different periods can be seen in a building. Depending on the size and importance of the newly built construction, materials from previous period structures were obtained from one or more buildings. For this purpose, while the materials taken from the structures near the constructed building are used, it is also possible to bring some structural elements such as columns and pediments from different buildings in the distance to be used in a prominent part of the structure such as the entrance. Particularly, emphasis was placed on the use of building elements that have symbolic significance in the construction of buildings that the empire attaches to, such as palaces, churches and mosques, and to be used in a significant part of the construction to be built.

By using structure elements and materials taken from previous period buildings within a newly built construction, it was ensured that different period constructions were kept alive in the same building. When examining a structure constructed in this way, the elements and materials of the previous period can be easily distinguished, but it is impossible to obtain information about the construction from which the elements were taken without document or record. Therefore, a nested overlap is emerging where the building elements and materials of the previous period were used almost everywhere in the newly built construction.

The Manisa Grand Mosque Complex is an important construction where columns taken from different structures, column heads, decorative stone elements and stone blocks used in masonry are used extensively. The madrasah, which was built adjacent to the building in the next period, is thought to have risen on the ruins of an ancient building or Byzantine building, which is thought to be located in the area where the construction was built (Fig. 13-14).



Figure 13. North and East Façades of the Manisa Grand Mosque



Figure 14. Bilateral Twisted Columns at Entrance of Tomb (Left) and Reused Columns-Columns Heads (Right)

As a matter of fact, Evliya Chelebi says that "*this mosque was a church in the past*". According to Acun, "*The Byzantine Emperor Yuanni or Jan Ducas is said to have built a church in 1222 in place of the present mosque. The use of reused material in the building suggests that there may be a church or an ancient building before the mosque.*" (Dağlı, Kahraman, & Dankoff, 2005; Acun, 1999). Uluçay and Gökçen point out the marble elements and columns and column heads used in the building and indicate that the temple was built with an old church wreck (Uluçay, & Gökçen, 1939). Although it is obvious that most of the materials used in the building complex were taken from another Byzantine building, there is no clear evidence that the complex was built on a church wreck. However, different size and thickness of the madrasa rooms gives ancient smells of the previous structure (see plan of the madrasah - Fig. 15).

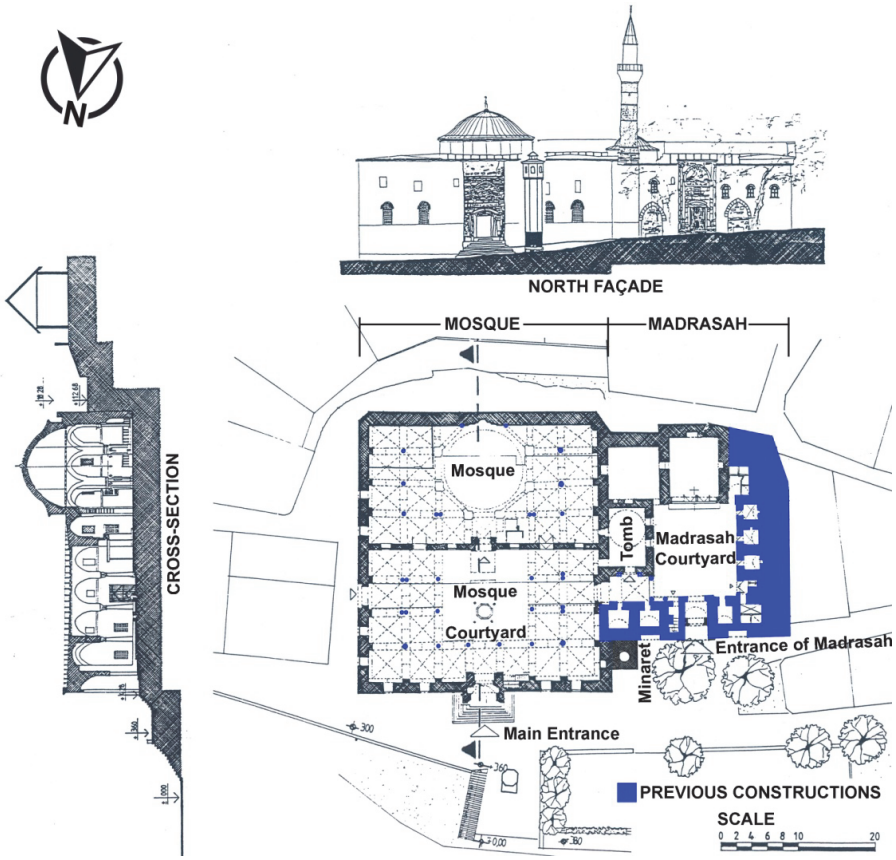

Figure 15. Plan, Cross-section and Façade of the Manisa Grand Mosque Complex (D.E.U., 1996)

3. CONCEPTS FOR THE CONSERVATION OF SUPERPOSED CONSTRUCTIONS

Conservation studies to be carried out in the areas where there is superposed should be handled at different levels as city and building scale. Factors such as the type of superposed constructions, the level of conservation of the building residues in different layers. The depth of the layers, how many different periods of construction are found, the importance of the construction in the upper layers, refer the method of the conservation studies. Addition, the use of the construction at the top level also guides the conservation efforts. The methods to be applied for revealing and preserving overlapping in abandoned areas are mostly shaped by the findings obtained from archaeological and geological studies. In this case, it is a preferred method to protect the uncovered building residues or buildings with the application of anastylosis (Fig. 16). However, due to the anastylosis application to be applied in wide and open areas, the necessary measures should

be taken considering that the residues of the past periods will be exposed to the alteration effects of the atmosphere.



Figure 16. Application of Anastylosis at the Roman Forum (URL-10)

The approach in relation to excavations and the preservation of the residues in these areas stated in the Venice Charter Article 15th shows that; "Excavations should be carried out in accordance with scientific standards and the recommendation defining international principles to be applied in the case of archaeological excavation adopted by UNESCO in 1956. Ruins must be maintained and measures necessary for the permanent conservation and protection of architectural features and of objects discovered must be taken. Furthermore, every means must be taken to facilitate the understanding of the monument and to reveal it without ever distorting its meaning. All reconstruction work should however be ruled out "a priori". Only anastylosis, that is to say, the reassembling of existing but dismembered parts can be permitted. The material used for integration should always be recognizable and its use should be the least that will ensure the conservation of a monument and the reinstatement of its form." (URL-2).

In cases where upper layer constructions are used, even if the buildings in the upper layer do not have architectural or historical value, it is not easy to remove the lower layers by removing them due to social needs, economic factors, technological and industrial developments. In such cases, it is very important to conduct surface surveys with geological methods and to investigate whether there is an important construction in the lower layers. When the existence of a historically important building is determined, it should be ensured that the local excavations will be unearthed and the existing constructions integrated into these ruins. Ancient Apollon temple in Didim, Aydin Province, Turkey, partly, and related Ancient Greek sanctuary buildings all, were covered by Byzantine Buildings and late Greek Yoran Village buildings in 19th century. The conservation decisions of Turkish Ministry of Culture for the conservation of historical centre

including uncovering project of Ancient Temple and Old Sanctuary activated in 2002 (Fig. 17).



Figure 17. Greek Yoran Village Buildings and Apollon Temple are in Superimposition (URL-11)

If the additions from different periods contributed to the conservation process of the building, details should be developed in order to reveal periodic interventions with detailed analysis studies and to display overlapping structuring in certain parts of the building. Article 9th of the Nara Document on Authenticity explains the approach in this regard as *"Conservation of cultural heritage in all its forms and historical periods is rooted in the values attributed to the heritage. Our ability to understand these values depends, in part, on the degree to which information sources about these values may be understood as credible or truthful. Knowledge and understanding of these sources of information, in relation to original and subsequent characteristics of the cultural heritage, and their meaning, is a requisite basis for assessing all aspects of authenticity."* (URL-12).

5. CONCLUSION

The use of buildings that were out of use for various reasons by different civilizations has been a method that has been used frequently throughout history. While the buildings are used as they are according to their robustness, they are sometimes used with additions on the existing residues. It is also common practice to build a new construction using building materials of existing structures or old building residues. While such practices contributed to the preservation of the buildings of the old period, in many cases, it also caused the disappearance of the previous period traces. Unfortunately for the construction of a new building, the use of materials obtained by looting the previous period structures led to the deliberate destruction of the previous period structures.

Interventions on the buildings adapted to new usage made a great contribution to the protection of the structure as in Hagia Sophia. While the supporting walls

added to the outer of the building by Architect Sinan strengthened the structure against to the expansions caused by the dome stress, and the plaster coverings of the mosaic and frescoes on the inner walls also protected the deteriorations of these elements in the lower layers by slowing down the decay process. Also, additions such as minarets and tombs integrated into the construction, creating a layer that cannot be erased. Thus, unlike the period when it was first built, a living structure that has changed and developed continuously has emerged. There is a similar situation in the Manisa Grand Mosque. The presence of different buildings intertwined within the same structure causes the construction of all periods to be important, not the structure of any period. Therefore, interventions made to buildings in different periods should be evaluated as a continuous construction process and conservation works should be carried out with a holistic approach.

The conservation methods to be applied in areas where there is overlapping of different periods differ according to the state of stratification. Accordingly, methods such as Istanbul Historical Peninsula, Serdica Ancient City, Philippopolis Ancient City are special decisions. Especially in cases where monumental buildings at different levels overlap, information about the structures of the previous periods and the process of the conservation can be reflected by partial archaeological excavations in a suitable section of the upper structure. In the Manisa Grand Mosque Complex, a similar approach can be applied to a very limited level. First of all, archaeological studies in the area where the complex is located are of great importance. According to the data to be obtained and the information on the existing structure, the status of the previous building should be determined, these parts should be separated from the upper structure and reconstructed in the virtual environment of the previous structure and displayed to the visitors with the virtual reality studio to be created in an appropriate part of the structure. Today these previous buildings are surviving at the bottom of the complex. With an interdisciplinary research, using non-destructive methods, the ancient periods could be brought to light and declared with the support of scientific analyses and documentation.

The historic monuments of generations of people remain to the present day as living witnesses of their age-old traditions. People are becoming more and more conscious of the unity of human values and regard ancient monuments as a common heritage. The common responsibility to safeguard them for future generations is recognized. It is our duty to hand them on in the full richness of their authenticity.

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HISTORIC BUILDINGS THAT HAVE COMBINED FUNCTIONS: CASES FROM ANKARA, TURKEY

Gülşen DİŞLİ*

ABSTRACT

Ankara is a historic city, hosted many civilizations succeeded one another including Hittites, Frigs, Lydian, Persians, Galatians, Romans, Seljuk, and Ottomans, all affecting social, cultural, and religious institutions in the city, thereby altering the architectural evolution in the region. The city with its long history in central Anatolia has rich historic monuments and cultural landscape including Islamic religious architecture. Among them, historic mosques of Ankara, as a single building type, have been the research area of many scholars, but the ones, with two different functions either integrated into a single building or integrally related with each other in two different buildings, have not been evaluated in detail in terms of their spatial organizations, developments, and typologies. Different from the terms "külliye" or "manzume" buildings that have combined functions include different functions that are solved in one building or buildings that are integrally related with one another. Hence, considering the general absence of published material on those monuments, this research analyses the formal developments and transitions in historic mosque architecture that have combined functions in Ankara rooted from Seljuk period to early twentieth century. It is aimed to provide a broader perspective in religious architecture of the region in the historic process of time by forming its relation with Anatolian counterparts. In Anatolia as well, there are similar design arrangements, such as mosque-hospital, mosque-madrasah, mosque-zaviye combinations especially from Seljuk period, and evolved in later periods. The architectural styles of historic combined buildings in Ankara are classified into two types based on their spatial scheme determined by means of in situ analysis, archival and historic research, as well as comparative studies. They are mosque-tomb combination and mosque-lodge/house combination, constructed either at the same time or attached in later periods. In addition to these two types, there is also a tomb-dervish lodge combination. The study on historic mosques of Ankara that have combined functions not only illustrates undiscovered information about their typologies with regard to formal changes that can

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be used to explore the others in Anatolia, they also display historic phases in the region, which can inform conservation efforts.

Keywords: Ankara, Combined Functions, Mosque, Spatial Configuration, Typology

1. INTRODUCTION

Historic buildings were either constructed as a single building scale, or as part of a building complex, at same time or at different periods with the rest of the buildings in the complex. Among them, there is also a third group called as "buildings that have combined functions" referring the buildings with various functions either incorporated into a single building or integrally related with each other in two different buildings (Acar İpekoğlu, 1993a; İpekoğlu, 1993b: 53-65). This research examines this third group of combined buildings observed in eight case study historic buildings in Ankara. They provide examples of mosque-tomb, mosque-tomb-madrasah, mosque-tomb-*çilehane*, mosque-house, and tomb-dervish lodge combinations, all maintaining their original character defining features to a great extent. Main objectives of the study are first to question various design arrangements via different combinations in historic buildings, to investigate their built dates and original functions. It begins with a literature review on general historiography and development of the term "buildings that have combined functions, followed by a brief description of case study buildings and their various combination typologies, and continued with the findings of study and evaluation of different combination examples.

Ankara, located on the northwestern part of Central Anatolian Region, was an important center for various civilizations since the history, not only because of its witnessing significant historical events, but also because of its geographical location. Thanks to the archaeological investigations in and around the city, it is understood that, the city has been settled since the Paleolithic period (Kırpık, et. al., 2015: 15, 31). There is a vast amount of literature on architectural development and historic buildings of city of Ankara, including Roman, Seljuk, Ottoman, and Republican buildings (Kırpık et. al., 2015a; Kırpık et. al. 2015b; Konyalı, 1978; Öz, 2008; Günel ve Kılcı, 2015: 78-104; Erdoğan et. al., 2007a; Öney, 1971).

Although, all those existing literature tend to focus on architecture and history of old city of Ankara, and mention about the case study buildings of this research, they rarely address the issue of their combined functions and their contributions to various design developments in the area. Acar İpekoğlu (1993a), İpekoğlu (1993b: 53-65), Katoğlu (1967: 335-344), and Demir (2019: 143-166) made important contributions on buildings that have combined functions in Anatolia built in Seljuk period. Hence, the purpose of this article is to further extend past

researches on architecture and historic buildings in Anatolia, and focus on their "combined functions" by reporting results of design principles in case study buildings in Ankara, dated both Seljuk and Ottoman periods. In addition, it is aimed to investigate whether they still preserve their original combined functions or not. The significance of this research in the literature is obvious, insofar as it makes an important contribution to historiography of development of combined building design via case studies from Ankara.

2. BACKGROUND OF CONTEXTUAL FRAMEWORK

2.1. General Historiography and Development of the Term "Buildings That Have Combined Functions"

The term "buildings that have combined functions" was first developed and used by an eminent researcher, Başak İpekoğlu during her dissertation studies in 1993. In her research, Acar İpekoğlu (1993a), İpekoğlu (1993b: 53-65) conducted an in-depth analyses on groups of buildings constructed in Anatolian Seljuk period, which have various combinations of architectural design principles. Throughout the research she gives detailed information not only on typological classification of those buildings in Anatolia, but also on their current uses. Ürey (2010: 67), in his study, dates the beginning of constructing complex buildings to Anatolian Seljuk period, and gives the example of Hunad Hatun Complex (built date: 1237-46) in Kayseri as the oldest Seljuk period building, with a mosque, mausoleum, madrasa, and hamam combination built in subsequent dates upon the decision of the State. He uses the terms "adjacent buildings" and "complexes" in the same meaning, and points out the close relation of those formations with the development of Ottoman mosque complexes/külliye (Ürey, 2010: 67). Similarly, Demir (2019: 143-166) states that "külliye" in Anatolia was first observed in the 13th century, in Seljuk period, and mostly consisted of a mosque and madrasah, designed either freely or combined. In order to fully understand the meaning of the term "buildings that have combined functions," which is the primary research problem of this study, one must first look at the meaning of similar building entities in the history, such as "mosque complexes/külliye," and "adjacent buildings/manzume." Among them külliye is also named as manzume, imaret, site, hey'et, and complex, and is generally developed around a mosque, and sometimes around a madrasa, tomb, or commercial building in order to provide social facilities, and thus serve for the people (Katoğlu, 1967: 335-344). The earliest examples of külliye in Anatolia, dates back to Artukid period and increased in number in Ottoman period with growing number of functional spaces (Çobanoğlu, 2004, 542-44). Hasol (1998: 287), similarly defines külliye as a religious and social center consisted of various buildings, such as madrasa, tomb,

hospital, imaret/soup kitchen, hamam, fountain, muvakkithane (timing room), and shops set up with a mosque. According to Turani (1975:76) all those buildings are to build around a mosque and at the same time with it. Sözen and Tanyeli (2001: 144), clarify the issue more, by stating that the functions of all those buildings should complete each other and they should have the same stylistic characteristics. Andrew (1996: 157) name the term as "kuliyye" and ascribes it to Ottomans. To him, it is a large complex including various buildings located around a mosque.

Manzume, on the other hand, is defined as a building complex, but smaller in size and number of buildings combined, compared to a külliye (Sözen and Tanyeli, 2001: 154). In his research entitled "Hacıbektaşi Veli Mimari Manzumesi," Akok (1968: 27-57), defines the mentioned manzume as a collective facility building, developed around the tomb of a "veli" responding various needs as of the establishment (Acar İpekoğlu, 1993a:4). In his another research on Diyarbakır Great Mosque Manzume, this time, he recounts the manzume to be developed around a mosque, which was the first building in the complex with its portico and courtyard, and enlarged in time with the addition of various building units (Akok, 1969: 113-139; Acar İpekoğlu, 1993a: 4). Karamağaralı (1976: 199-200), similarly distinguishes the term manzume from külliye by giving the example of Hunad Hatun Manzume, stating that at the beginning, in Hunad Hatun Manzume, the buildings were not arranged at the same time as a whole, but rather, they were planned and added each other at different times. In addition, during the planning of each building unit, they had to conform to the siting and layout of the existing buildings and the environment as well.

As to the "buildings that have combined functions," different from külliye and manzume, Acar İpekoğlu (1993a: 4) defines the term as "buildings including different functions were arranged in one single unit(s) or brought together, but wholly connected to each other." To her, those buildings, were the initiators of "külliye" emerged in later periods (Acar İpekoğlu, 1993a: 1). Though it is not the research question of this paper, manzume/adjacent historic buildings, mosque complexes/külliye, and buildings that have combined functions even might have an effect on the development of buildings with complex functions and/or hybrid buildings of the 21st century. It is also possible to establish a close relationship with those mentioned groups of buildings in history and today's "mixed-use buildings". Researchers also support this hypothesis. For instance, in a recent study, Holl (2014:70-77) defines hybrid buildings as "the buildings with mixed functions, combined separate uses, and collected structures." To him (Holl, 2014: 70), the term "hybrid buildings" originated in the 20th century, but has its roots going back to historic buildings with combined functions such as the house and

shop combinations in history. Jia et. al. (2010:358) defines the term "mixed-use buildings" as the ones that include spaces allocated for different uses into one structure, and Wei et. al. (2016) describes the term as buildings with shared infrastructures, and common energy supplies. In another recent study, mixed-use buildings are claimed to have similarities with their ancient counterparts, such as the interconnection of old markets, apartment blocks, libraries, shops, and offices in one mixed-area or structure in Roman times.[1] Mosques of Islamic world, in the same way, were the places of multi-functions including daily prayer, political speeches, education, accommodation, justice, military purposes, and social gathering, as well (Önkal and Bozkurt, 1993: 46-56).

3. MATERIAL AND METHODS

This research adopted a case study approach. In total eight historic buildings that have combined functions in Ankara have been chosen as case studies. First, all cases were briefly described, and then they were grouped according to their various combination types, and types of buildings in those combinations. After establishing different groups of functions, their built dates were investigated in order to locate the question of whether they were built at the same date or not. Finally, their current functions and eligibility of those functions if changed with the original usage were discussed. Drawings and old photos of the buildings were mostly provided from the archives of Directorate General of Foundations (DGF).

3.1. Sarac Sinan Masjid-Tomb and Madrasah

Sarac Sinan Masjid-Tomb is located in Ulus, Altindag at the intersection of Atpazari and Berberler Streets. The mosque was built during the realm of Seljuk Sultan Giyaseddin II, by El Haç Siraceddin in 1288 M., and according to its inscription panel, the tomb was built in the same year by Hasanoğlu Yusuf (Canlı & Erdemli, 2016: 76-77).[2] As stated in its foundation deed of Hasan Çelebioğlu Hacı Sinanüddin Yusuf dated 687 H./1288 M., the complex had a masjid and a madrasah constructed adjacent to each other (Kırpık, et. al., 2015: 275-6; Erdoğan et. al. 2007b: 141-3). Konyalı (1978: 85) confirms the existence of a madrasah in 1970s, by stating that "there was a madrasah at the back side of the masjid and the tomb, which was sold eleven years ago". Today, only the masjid, its central iwan, and tomb sections are available. The original madrasah of the complex is

[1] https://www.urban-hub.com/buildings/mixed-use-buildings-for-diversified-sustainable-sites/. Mixed-use Buildings: Make The Most Of Your Building. Buildings, Published on 20.06.2018.

[2] Türkiye'de Vakıf Abideler ve Eski Eserler I.1983. İlaveli İkinci Baskı. Ankara, Vakıflar Genel Müdürlüğü Yayınları, 341-342.

no more existent (Figure 1, Figure 2). Instead, a later addition building with five-room lying through a row was constructed with timber structure and mud-brick infill, on the west side of the masjid (Figure 2). In 2004, in order to find the foundation traces of the original madrasah, this later addition building, reconstructed approximately 100-150 years ago, was demolished, and traces of rubble stone foundation walls belonging to the original one were unearthed (Kılcı, 2011: 319-326). But those traces were not enough to reconstruct the original madrasah, so it was not reconstructed during the latest restorations in 2008. Instead, only the masjid and tomb sections were restored (Figure 1). Masjid-tomb combination has a rectangular plan type with the dimensions of 16,50*7,05 m. The combined building is entered via a vaulted iwan raised with cut stone stairs on the east side. Cut stone and rubble stone are the main construction materials used on the main body walls. The masjid (4,50*5,60 m) is covered with an inner dome and is entered via a door on the northwest side of the iwan (3,60*4,50 m), and the tomb (3,60*4,50 m), including eight gravestones, is entered with a separate door on the southeast side of the iwan. Tomb and iwan are both covered with barrel vaults. It is claimed that originally there was another door on the east wall of the iwan opening to madrasah (Kılcı, 2011: 319-326). Considering the architectural design arrangements of masjid, madrasah and tomb; the complex exemplifies the combination of three different functions in the same plan built at the same date, and arranged as separate spaces combined via a central iwan.

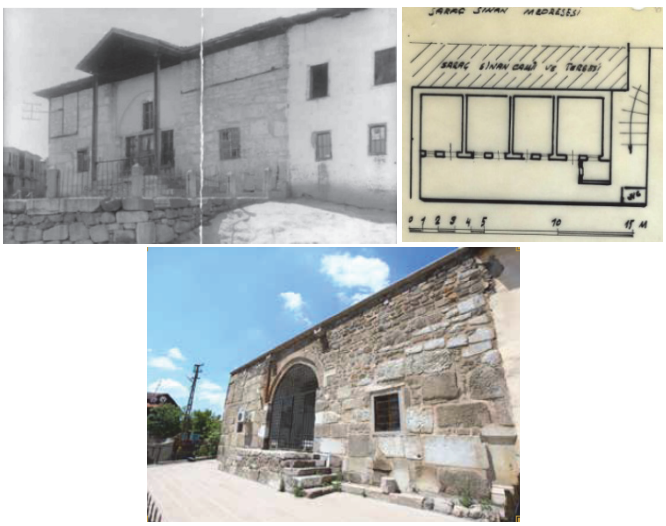

Figure 1. East façade of Sarac Sinan masjid-tomb combination in 1960s (left), possible plan drawing of the madrasah (middle), and current condition of the complex (right) (Source: Archives of Gökçe Günel and Ali Kılcı, Canlı & Erdemli, 2016: 76)

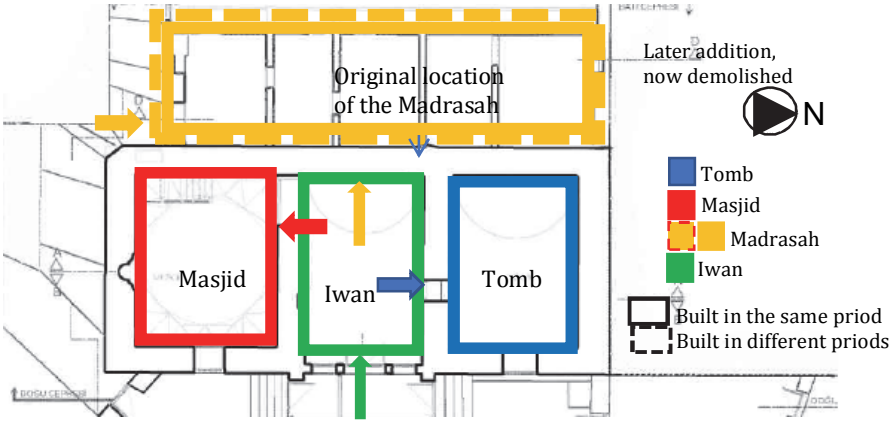

Figure 2. Survey drawing of the complex in 2007, before the destruction of the madrasah on the west (Source: Archives of the Directorate General of Foundations).

3.2. Hacı Bayram-ı Veli Mosque and Tomb

Hacı Bayram-ı Veli Mosque and Tomb is located in Ulus, Hukumet Street. The mosque was constructed in 1427-8, and the tomb, adjacent to the south mihrab wall of the mosque, was built in 1429, upon the death of Hacı Bayram-ı Veli (Öney, 1971: 66-9, 114-6; Konyalı, 1978: 42). There is also August Temple of Roman Period touching to the mosque on the southeast corner. The mosque has a rectangular plan type constructed with stone foundation and brick main body walls covered with a hipped roof. The *çilheane* section, built at the same date with the mosque, has rather a low ceiling, located on the basement floor of the north side of the mosque, and today is entered via a separate door and steps (Figure 3-4). At this section, there are four private prayer rooms and two larger ones. The tomb has a square plan covered with a dome, rising on an octagonal drum. It has cut stone and marble main body walls, and alternate bonds of stone and brick rows at the drum level. The brick minaret of the mosque lies along the south east corner of the tomb. The mosque underwent serious repairs by Sultan Ahmet III, Sultan Mustafa III, in 1941, 1970, 2011, with new additions/ alterations (Disli, 2019:12-3). This complex exemplifies the combination of two different functions, mosque and tomb, juxtaposed. Yet, mosque and *çilehane* are arranged in the same plan.

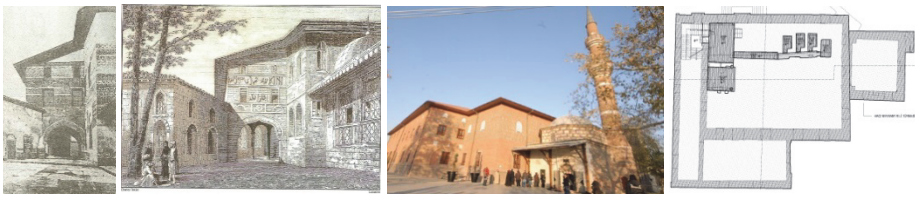

Figure 3. An old photo of the complex (left), its gravur by C. Texier (middle-left), its current photo (middle-right), and cilehane drawing (right) (Source: Türkiye'de Vakıf Abideler ve Eski Eserler I, 1983:365, Oney, 1971: 270, Archives of DGF, 2018).

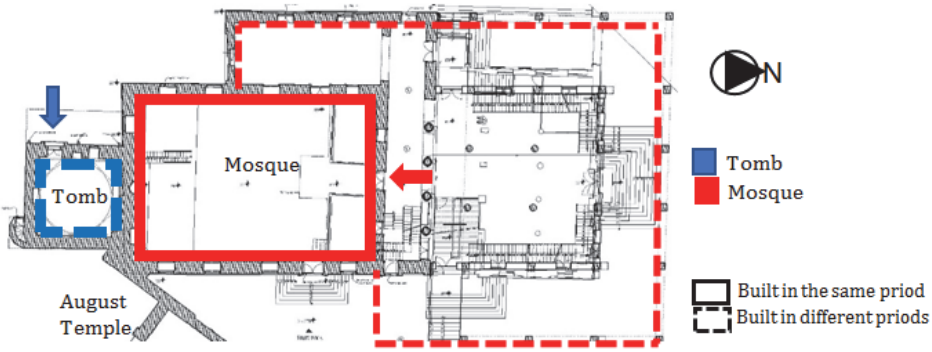

Figure 4. Ground Floor plan drawing of Hacı Bayram-ı Veli Mosque with new additions shown in different colors (Source: rearranged from Archives of Directorate General of

3.3. Bunyamin Mosque and Tomb

Bunyamin Mosque and Tomb Complex are located in Dervish Imam District, Bunyamin Street, in Ayas, Ankara. Though its exact construction date is unknown, according to the monument and antiquity record of the complex in DGF, the mosque and tomb are dated to the 16th century.[3] Yet, considering the life cycle of Seyh Bunyamin, for whom the tomb was constructed, and the timber structure (timber ceiling and wooden posts) of the mosque, researchers also date the mosque and the tomb to late 15th or early 16th century (Canlı & Erdemli, 2016: 105; Erdoğan et. al., 2007a: 198-199), by adding that its interior character resembles more to the 16th century examples.[4] It has a vertically aligned rectangular plan type covered with a hipped roof, and is entered via door on the east façade. The mosque was built with rubble stone main body walls, which are currently plastered above the foundation level (Figure 5). Its brick minaret, on the

[3] Monument an Antiquity record of the Mosque and the tomb prepared by Sabih Erken and Zafer Bayburtoglu, retrieved from the Archives of Directorate General of Foundations,

[4] Türkiye'de Vakıf Abideler ve Eski Eserler I, 1983, 481.

northwest corner, has a stone footing. Tomb section is attached to the mosque entered via a door on the northeast side of the mosque and has a square plan with a dome covering (Figure 5). Pandantives are used for the transition to the dome. According to the inscription panel above the hacet window of the tomb, it is understood that the tomb belongs to Seyh Bunyamin Ayasi, but its exact built date is unknown.[5] Similarly, the tomb has bare rubble stone main body walls, but without any plasters. The complex was restored by DGF in 2010. Bunyamin Mosque and Tomb Complex exemplify the combination of two buildings, namely mosque and tomb, with different functions juxtaposed, with the building groups formed at the same date.

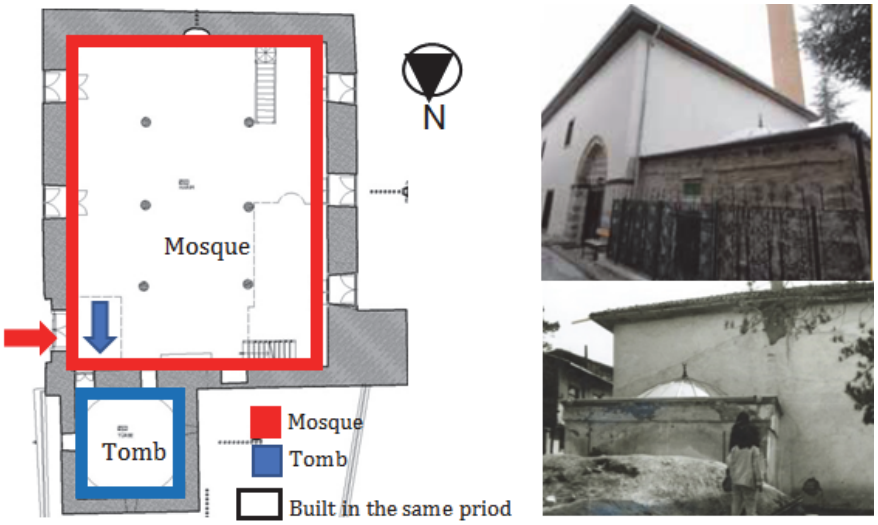

Figure 5. Restitution drawing of the complex in 2008 (left), and exteriors views from the north & east facades. (Source: Archives of DGF, and Canlı and Erdemli, 2016: 105).

3.4. Zeynel Abidin Mosque and Tomb

Zeynel Abidin Mosque and Tomb complex is located in Sakarya District, Kumbet Street, in Altindag, Ankara. The complex does not have an inscription panel, but according to the mihrab and architectural style of the mosque, Öney (1971: 83, 121) and Canlı & Erdemli (2016: 96) date it to late 17th –early 18th century, and similarly dates the adjacent tomb, to the same period with the mosque itself. There was also a five-cell madrasah called Hacı Hasan Efendi inside the courtyard of the complex dated 19th century (Erdoğan et. al. 2007a, 90). The mosque has a rectangular plan covered with a hipped roof, and the tomb is adjacent to it at the south, and has an irregular rectangular form (Figure 6). They exemplify the

[5] Türkiye'de Vakıf Abideler ve Eski Eserler I, 1983, 481.

combination of two buildings with different functions juxtaposed at the same date, and both have timber structure main body walls with mud-brick infill (Figure 6). The mosque has a basement floor beneath the main floor area. There are three coffins in the tomb belonging to Zeynel Abidin, his wife and son (Öney, 1971: 121; Konyalı, 1978: 104). The complex was restored in 2005, by DGF.

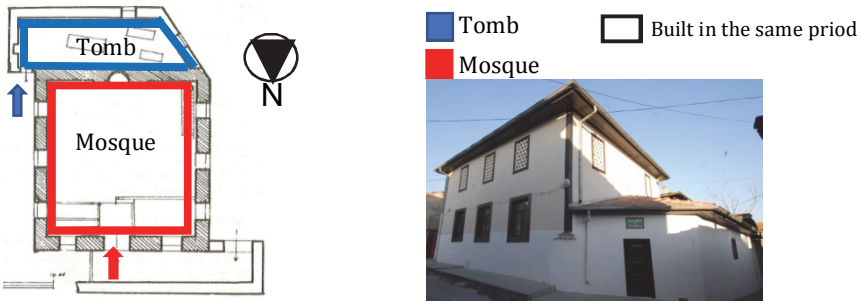

Figure 6. Plan drawing of the complex (left) and exterior view after the restoration in 2005 (Source: Türkiye'de Vakıf Abideler ve Eski Eserler I, 1983, 444, Archives of DGF)

3.5. Kagnipazari (Kağnıcıoğlu/Gani Ağa) Mosque and Waqf Houses

Kagnipazari Mosque and Waqf Houses are located in Ulus, Altindag, Denizciler District, and Yenice Street. The mosque has a horizontally aligned rectangular plan type. It has a wooden mahfil on the north side and a wooden ceiling covered with a hipped roof at the top (Figure 7). Its wooden shorty minaret on the northwest corner is a 1965 addition, and its wooden minbar is a later addition, as well (Erdoğan et. al, 2007a: 204; Canlı & Erdemli, 2016: 57). The mosque does not have an inscription panel, but according to its typology, material and technique, it was dated to late the 17th, early 18th century (Öney, 1971: 74). Its main body walls, rising above rubble stone foundations, were constructed with mud-brick material with wooden beams, and mud plaster coating. It has wall paintings and decorations at the interior wall surfaces. According to its waqf deed dated 1870, the mosque was renewed by Azime Hanım and on the south side of the mosque, an adjacent madrasah with six cells and a teaching room was built (Canlı and Erdemli, 2016: 57; Erdoğan et. al, 2007a: 204). Today, the madrasah is not existent, instead, at the same location, there are two-story seven waqf houses constructed with stone foundation walls and timber frame main body walls with brick infill (Konyalı, 1978: 58) (Figure 7). The complex was restored in 2007-2008 by DGF. It exemplifies the building groups formed in the course of time with the construction of madrasah and later waqf houses adjacent to the existing mosque.

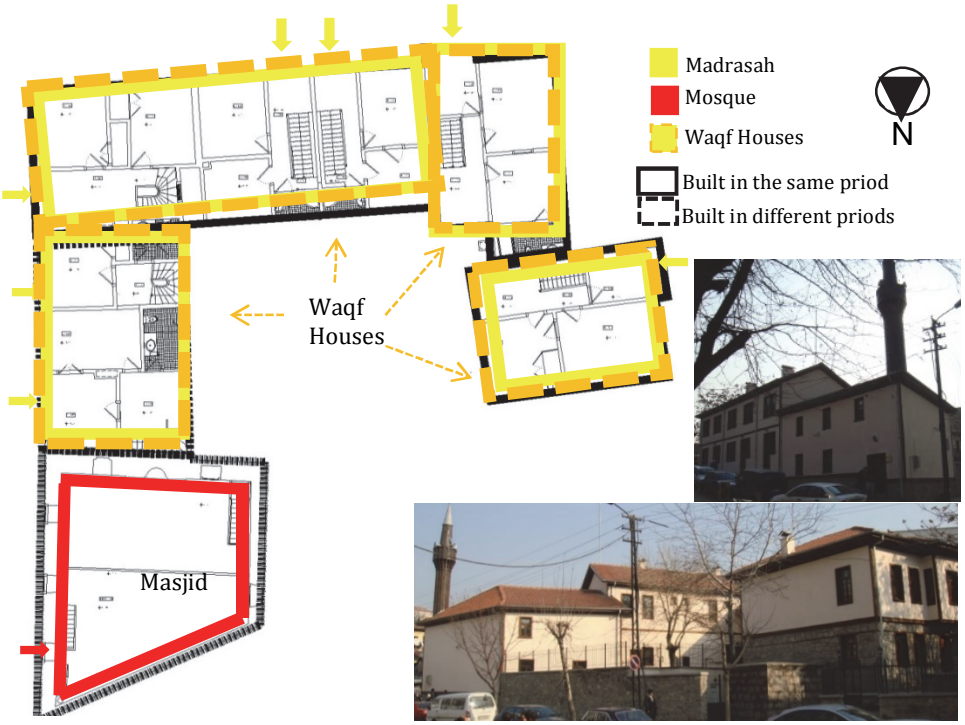

Figure 7. Restoration project of the complex in 2006, madrasah is not existent; instead waqf house additions are shown, & exterior photos, 2008 (Source: Archives of DGF)

3.6. Seyh Ali/Ali Şeyhoğlu/Alişoğlu/Alıçoğlu Tomb and the Dervish Lodge

Alisoglu Tomb and Dervish Lodge are located in Kale district, camialtı quarter, in Kalecik, Ankara. The tomb, in which Alişoğlu Ali Efendi, his mother, and daughter are buried, is mostly visited in order to get rid of all kind of illnesses, especially stutter disease (Ölçer Özünel, et. al. 2018: 267). The tomb does not have an inscription panel, so its exact built date is unknown. Yet, thanks to the comparative studies with similar buildings in Kalecik and immediate surroundings, it is dated to the first half of the 19th century (Canlı and Erdemli, 2016: 134; Çağlar, 2010: 55). Canlı and Erdemli (2016:134) date the one-room building in front of the tomb, as a 20th century addition. But, the tomb and the dervish lodge/*tekke odası* were both registered as the property of Seyh Ali Manevi Sahsiyeti Waqf,[6] hence, they must have been built at the same date. Kalafat (1999: 512-3) dates the tomb to 1231, without any supportive documents, and claims that it was built by Alişoğlu Ali Efendi, a Khorasan Private, with a room for accommodation, a fountain,

[6] Decision of Ankara Conservation Board dated 10.08.2011, with the number of 6273.

courtyard and a toilet. The tomb is constructed with mud brick material with timber beams, above the rubble stone foundation walls, and is covered with a gable roof (Figure 8). The dervish lodge has a pitched roof. The complex exemplifies the combination of two different functions, the tomb and dervish lodge, arranged as separate spaces in the same plan, formed at the same date. Its restoration projects were prepared by DGF and approved by the related Conservation Board.

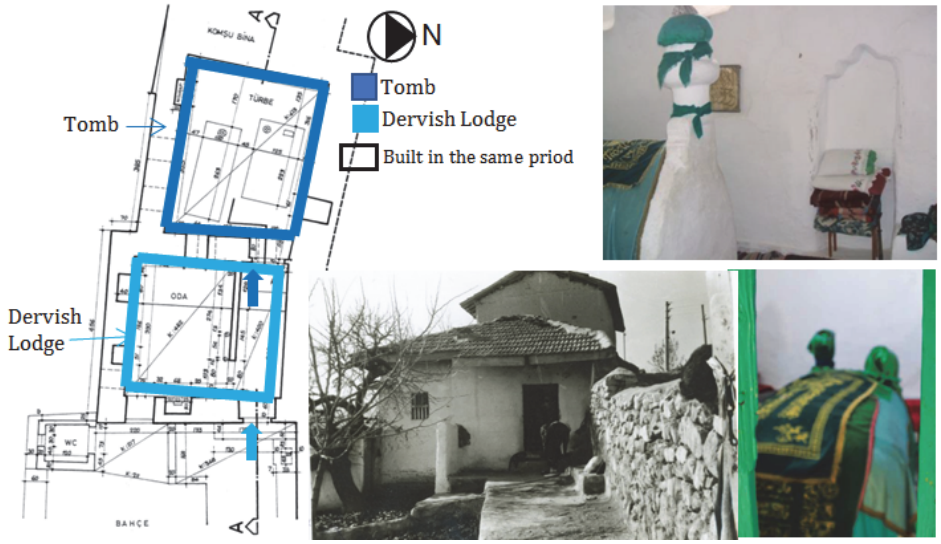

Figure 8. Survey drawing of the complex (left), and its exterior & interior views (right)(Source: Archives of DGF, Ölçer Özünel, et. al. 2018: 267; Çağlar, 2010)

3.7. Misafir/Musafir Fakih Masjid and Tomb

Misafir Fakih Masjid and Tomb are located inside the Ankara Castle in Alitas Street, Altindag. It has stone foundation walls, and timber structure main body walls with mud-brick infill. The masjid has a rectangular plan type with the interior dimensions of 6,40*11,33 m, covered with a hipped roof, and has a timber minaret on the northeast corner (Figure 9). It does not have an inscription panel, but according to Oney (1971: 87) it is dated to 19th century. Similarly, Canlı & Erdemli (2016: 69) date it to the 19th century considering its original plaster mihrab and architectural style. On the other, in a waqf document dated 1571, the masjid was registered to be built by Mehmet oğlu Mevlana Misafir, who devoted his houses and stalls as the income of that waqf (Erdoğan et. al. 2007a: 145). Thus, it can be inferred that, the complex was reconstructed at a later period and took its current condition. Today, it has a closed late comers' portico with two sections

with interior dimensions of 6,70*9,85 m on the north side, including a gravestone on the second section, which is believed to belong to Misafir Fakih, who gave the masjid its name (Figure 10).[7] The second section has a separate door on the east wall. Today, the second floor of the late comers' portico is used as the house of the imam (Boran, 2001: 2002-203). According to old photos in DGF, the second part of late comers' portico including the gravestone, was a part of the courtyard entered via a wooden door on the east side (Figure 9). Hence, this part might have been closed and added to the late comers' portico before 1970s, and took its current condition. In the same way, Canlı & Erdemli (2016: 69) claim that the mosque had an open late comers' portico on the north side, but, Konyalı (1978:77-78), describes the late comers' portico as a closed two story space built with stone material at the ground level, and with mud-brick walls at the first floor. The complex is in bad condition and in need of repair in short term, research excavations are also suggested to find the foundation traces of the tomb. The complex exemplifies the building groups formed in the course of time.

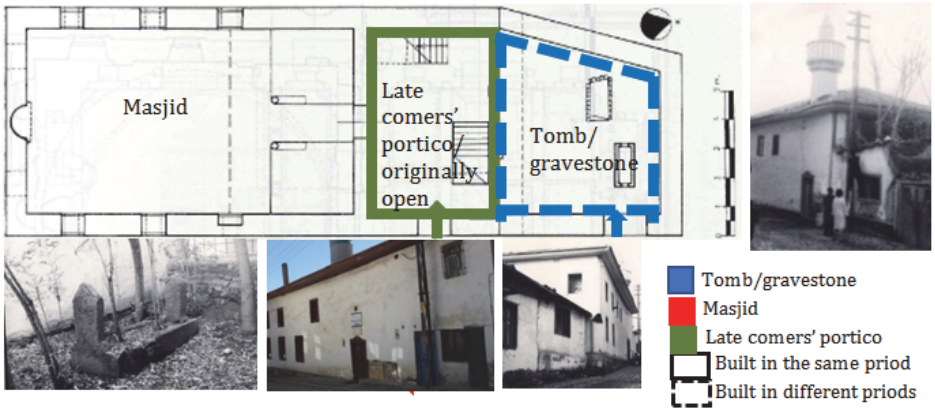

Figure 10. Survey drawing of the complex, gravestone is located inside the late comers' portico on north side of the masjid. (Source: Boran, 2001, Archives of DGF & Author).

3.8. Tacettin Sultan Mosque and Tomb

Tacettin Sultan Mosque and Tomb are located in Hamamonu District, Hacettepe quarter, in Altindag, Ankara. The mosque has a vertically aligned rectangular plan type built with cut stone main body walls and a wooden ceiling covered with a hipped roof at the top. It has a wooden mahfil on the north side and a stone minaret on the northeast corner. The complex was first constructed as a dervish

[7] Türkiye'de Vakıf Abideler ve Eski Eserler I.1983, p. 481.

lodge for Celveti tariqa during the realm of Suleiman the Magnificent, and reconstructed as a mosque dated to late 19th- early 20th century considering its workmanship and construction technique. [8] But, according to its inscription panel, the tomb was built during the realm of Sultan Abdulhamid II, in 1319 H./1901-02 M. (Oney, 1971: 88-89, 122). The tomb and mosque are adjacent to each other on the east wall of the tomb and have visual connections via window openings (Figure 11). They have separate entrance doors on the north façade. The tomb has also an entrance hall on the north side, and a crypt section for the graves of Taceddin Sultan and his son, beneath the timber coffins above. There is also a fountain dated to 1897, House of Mehmet Akif Ersoy (formerly the dervish lodge/*dergah-tekke* of the complex) and a graveyard in the courtyard of the complex. Konyalı (1978: 90) states that some of the deaths were reburied in its graveyard during the demolishment of Hacı Bayram-ı Veli graveyard. The complex restored in 2008, exemplifies the combination of two different functions in same plan.

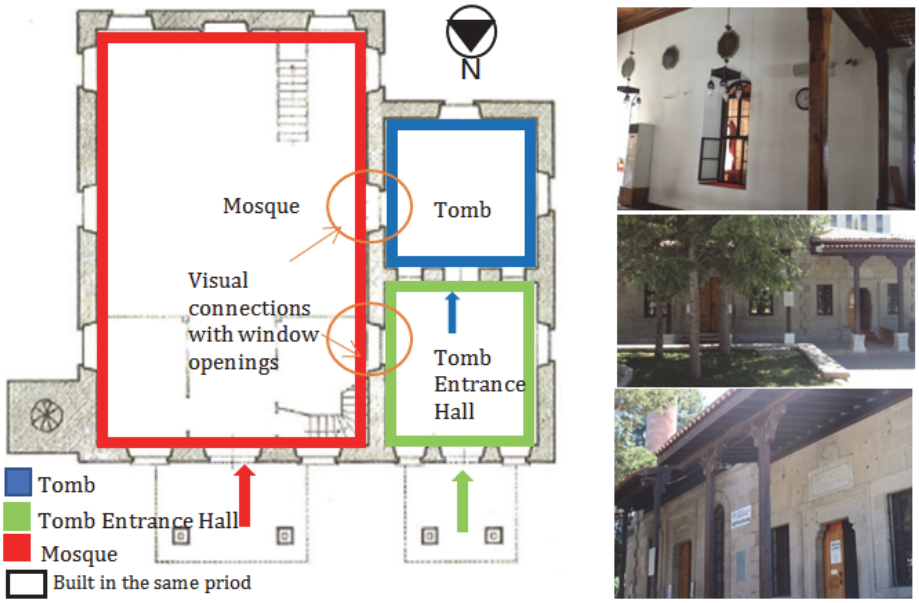

Figure 11. Restitution drawing of Tacettin Mosque and Tomb (left), and its exterior and interior views (right) (Source: Oney, 1971: 379; Photo archives of the author, 2018).

[8] Türkiye'de Vakıf Abideler ve Eski Eserler I.1983, p. 397.

4. RESULTS AND DISCUSSION

The main objective of this study was to identify different and primary types of combined buildings in Ankara, located both in city center and in its provinces, as well. In total eight combined buildings were determined in Ulus, Altindag, Kalecik, and Ayaş provinces of Ankara from late 13th to early 20th centuries and were evaluated in terms of their different types of combinations, combined building types, built dates of combined buildings to determine whether constructed at the same date or built in the course of time, and in terms of their original and current functions (Table 1). As shown in Table 2, the initials (Mosque/Masjid-M, Tomb/grave area-T, Madrasah-Ma, Waqf House-WH, Cilehane-C, and Dervish Lodge- DL) of combined building types were used for coding of different combinations. In Table 1, they were listed chronologically according to their built date. Case study buildings are first classified into five groups according to their combined functions, both originally and currently: Mosque-Tomb-Madrasah (M-T-Ma), Mosque-Madrasah (M-Ma) (currently Mosque-Waqf House-M-WH), Mosque-Tomb (M-T), Tomb- Dervish Lodge (T-DL), Mosque-Tomb- Cilehane (M-T-C). As seen, there are either dual or triple combinations, namely, two or three buildings with different functions are combined with each other in the same plan (Saraç Sinan M-T- Ma, Seyh Ali T-DL, Tacettin M-T) or juxtaposed (Hacı Bayram-ı Veli M-T-C, Bunyamin M-T, Zeynel Abidin M-T) with or without a connection space such as an iwan, late comers' portico, or entrance hall, built at the same date or formed in the course of time (Kagnicioglu M-Ma/WH, Misafir Fakih M-T). In combined buildings with two/three different functions juxtaposed, the mosque exemplifies the primary function and the tomb exemplifies the secondary function. It can also be inferred that, iwan combination in Seljuk period cases, turned into late comers' portico or entrance hall in later periods. All case study combined buildings include a tomb as part of the combination, except for Kagnicioğlu M-WH. Among them Tacettin Sultan M-T, Misafir Fakih M-T, Bunyamin M-T, and Zeynel Abidin M-T exemplify the just dual combinations of mosque/masjid and tomb combinations. Others exemplify triple combinations including one more function such as madrasah and *cilehane* or tomb is combined with dervish lodge instead of a mosque/masjid as in Seyh Ali T-DL combination. Among the triple combined buildings, Saraç Sinan Masjid and Tomb had a madrasah originally; yet, the madrasah section is no more existent today, and Kagnicioğlu Complex had a madrasah originally, too, instead of waqf houses.

For the non-existent madrasahs (Kagnicioglu and Sarac Sinan Complexes) and for the ones, whose combinations were totally reconstructed in a new style (Misafir Fakif M-T) or with different materials during the restorations/interventions, their original style was detected from archival and historic sources and used for the

typology study. According to their type of connections, case study buildings can be divided into four main groups; combined buildings with different functions are adjacent at one wall with separate entrances, combined via a central iwan, combined via a late comers' portico, and adjacent at one wall with intertwined entrances. In addition to these four main arrangements, are there also eight sub-categories. Saraç Sinan M-T-Ma is the only example for the category of central iwan combination, and Misafir Fakih M-T exemplify the only unique example of combination via a late comers' portico. Of the eight combined buildings being studied, the ones adjacent at one wall with separate entrances have four sub-categories including a visual connection such as windows or not. They are adjacent to each other mostly on the south wall of the mosque, or on the west wall, such as in Tacettin M-T. Among the type of connections, the ones adjacent at one wall with intertwined entrances, have two sub-categories, such as tomb (T)-dervish lodge (DL) combination or tomb (T)-mosque (M) combination, combined either on the south or east wall of the tomb. (Table 2). Data on case study combined buildings are presented in Table 2 and Table 1. Saraç Sinan Masjid-Tomb-madrasah combination is the oldest surviving combined building from the 13th century in Ankara, and according to its waqf deed all three buildings were constructed at the same date. Yet, the madrasah had many interventions in time, and demolished during the latest restoration works in 2008. Similarly, according to archival and historic records, reviewing Table 1 and Table 2, it becomes clear that, Hacı Bayram-ı Veli M-T-C, Bünyamin M-T, Zeynel Abidin M-T, Seyh Ali T-DL, Tacettin M-T and Kagnicioglu Mosque M-Ma were built at the same or at quite near dates. On the other hand, Kagnicioglu M-WH, and Misafir Fakih M-T have different construction dates. Of the eight case study combined buildings in Ankara, most of them are used in their original function, madrasah sections of two of them are not existent (Saraç Sinan Complex and Kagnicioglu Complex) and two of them have later additions (Misafir Fakif Complex grave area and Kagnicioglu Complex WH). In Seyh Ali Complex, the original dervish lodge is currently used as a guest house for the visitors of the tomb, which is evaluated to be an eligible use, considering the original function of the building, and the *cilehane* section of Hacı Bayram-ı Veli Mosque is no more used in its original function and does not have a defined function today, but it is open to visitors at certain religious days of the year.

Table 1. Data on Case Study Combined Buildings

Name	**Location**	**Period/ built date**	**Combined building types**	**Original & current function**
Saraç Sinan Masjid-Tomb-madrasah combination	Altındag, plate # 6, lot # 379, parcel # 23-24	1288 M./ Seljuk, originally all built at the same date	**Originally:** Masjid-iwan-Tomb-Madrasah **Current:**Masjid-iwan-tomb	**Originally:** Tomb, masjid, madrasah **Current:** Tomb, masjid,
Hacı Bayram-ı Veli Mosque and Tomb	Ulus, Lot # 51, parcel # 3	Mosque: 1427 Tomb: 1429	Mosque, Tomb, and *çilehane*	**Current:** Mosque, tomb
Bunyamin Mosque and Tomb	Ayas, center, plate # 2, lot # 193, parcel # 4	Late 15th or early 16th cc., built at the same date	Mosque and Tomb	**Current:** Mosque and tomb
Zeynel Abidin Mosque and Tomb	Altindag, Lot # 418, parcel # 11-12	Late 17th –early 18th cc., built together	Mosque and Tomb	**Current:** Mosque and tomb
Kağnı Pazari (Kağnıcioğlu/ Gani Ağa) Mosque and Waqf Houses	Altindağ, plate # 35, lot # 210, parcel # 5	Late 17th –early 18th cc., built in the course of time	**Originally:** Mosque & madrasah **Current:** Mosque & Waqf houses	**Originally:** mosque & madrasah **Current:** Mosque, and waqf houses
Alisoglu Tomb and Dervish Lodge	Kalecik, Lot # 108, parcel # 17-18	First half of the 19th cc., built at the same date	Tomb and dervish lodge	**Original:** Tomb-DL **Current:** Tomb and guesthouse
Misafir Fakih Masjid and Tomb	Alt,ndag, İckale District, Alitas Street, Lot # 375, parcel # 9	Late Ottoman, 19th cc., built in the course of time	**Originally:** Mosque and grave area, **Current:** Mosque and Tomb	**Originally:** Mosque and grave area **Current:** Mosque Tomb and House
Tacettin Sultan Mosque and Tomb	Altindag, lot # 275, parcel # 6	1901-2, built at same date	Mosque and Tomb	**Originally/current:** Mosque and tomb

Table 2. Type of Combinations in case study buildings: combination of two/three different functions in the same plan (S), juxtaposed (J), built in the course of time (CT)

Adjacent at one wall with separate entrances	Kağnıcıoğlu Mosque (M) and Waqf Houses (WH): M is adjacent to WH on its south wall, originally there was a madrasah instead of WH **(CT)**	Zeynel Abidin Mosque (M) and Tomb (T): T is adjacent to M, on the south wall of the M without visual connection **(J)**	Tacettin Mosque (M) & Tomb (T): T is adjacent to M on the west wall of the M, with window openings **(S)**	Hacı Bayram-ı Veli Mosque (M), Tomb (T), & Cilehane (C): T is combined to M, on the south wall of the M without any visual connection **(J)**, C is located on the basement floor of M, & originally connected with M via stairs **(S)**
Combined via a central iwan	Saraç Sinan Masjid (M), Tomb (T), and Madrasah (Ma): M, T, Ma were originally combined via a central iwan, today Ma is not existent, yet M and T are still combined via an iwan with separate entrances **(S)**			
Combined via a late comers' portico	Misafir Fakih Mosque (M) and Tomb/grave area (T): T is located on the north side of M and combined with M via a central late comers' portico **(CT)**			
Adjacent at one wall with intertwined entrances	Şeyh Ali Efendi Tomb (T) and Dervish Lodge (DL): T is adjacent to the DL at the east wall of T and entered from the east façade of DL **(S)**	Bünyamin Mosque (M) and Tomb (T): T is adjacent to M at the south wall of the T, and T is entered from M **(J)**		

5. CONCLUSION

Ankara, located in central Anatolia, had an important geopolitical location and hosted many civilizations since the antiquity. The city has rich historic architecture including buildings that have combined functions, belonging to Seljuk and Ottoman periods. There is a vast amount of literature on historic monuments of Ankara that helps us understand their art and architecture, founder, benefactor, typology, date, and history (Kırpık et. al., 2015a; Kırpık et. al. 2015b; Konyalı, 1978; Öz, 2008; Günel ve Kılcı, 2015: 78-104; Erdoğan et. al., 2007a; Öney, 1971). Yet, studies and examinations exclusively on the combined functions of their architecture are rather limited. Hence, this study, aimed to provide a broader perspective in historic monuments of the region focusing on their combined building formations, and their original and current use. First, the study briefly outlined the historiography and the development of the term "buildings that have combined functions, examined primary studies on the subject, explaining the very difference between the terms manzume, kulliye,

combined buildings, hybrid buildings, mixed use buildings, and complex buildings. The study, then, examined case study buildings located in city center of Ankara, in Kalecik, and Ayas provinces, in detail, identifying types of combinations, various functions of combined buildings, and their original and current functions and conditions. This research, which summarizes four major combined building types and eight sub categories with three basic classifications (combination of two/three different functions in the same plan (S), juxtaposed (J), built in the course of time (CT)) (Table 2), gives practical and detailed information on their development in the region between the late 13th –early 20th centuries. Among the combined buildings, mosque/masjid-tomb combination with or without a third function such as madrasah is the most common combination observed in different periods. Of the eight cases, one is from the late 13th century, Seljuk period, and the rest are from 15th to 20th centuries, and most of them are used in their original functions and restored in last years. Thanks to the case studies, it became possible to discover data on different typologies of architectural design characteristics that have combined functions in Ankara, either still existent or totally demolished, or have minor changes due to interventions. For further studies it is suggested that the effect and relation of historic buildings that have combined functions on the development of today's buildings with complex functions, mixed-use and hybrid building designs is to be investigated, insofar as it might be possible to find out their very relations.

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INDUSTRIAL RUINS: CONSERVATION EXPERIENCES IN VACANT HERITAGE BUILDINGS

Betül GELENGÜL EKİMCİ*

ABSTRACT

Industrial heritage conveys archaeological evidence of past industrial technologies and processes, engineering, architecture and town-planning. Due to the fast development in technology, many former industrial structures and premises have been abandoned.

The research topic is chosen from Eskişehir. Eskişehir is one of the leading cities in Turkey's industrialization. This study focuses on historic zone of factories in Eskişehir, which is known for its urban problems. One of the central problems in the preservation of industrial heritage is the lack of effective dialogue between institutions and stakeholders regarding private property rights; urban land development and the demand for new construction, legal and administrative processes; increase in public demands; shortage of economic resources; etc. In the solution of such problems, the appropriate conditions are not always realized, and thus structuring channels of communication between stakeholders and decision-makers may fail. At this stage, industrial assets lose their valuable constituent parts rapidly.

The study examines the effects of transformation of industrial heritage into empty spaces in the context of urban memory, and questions these spaces that have gained value over time as interest of the contemporary art and architecture. The aim is to analyze the diversity of abandoned industrial buildings and to understand the qualities that need to be protected by revealing the connections of these buildings and spaces with the old industrial processes in the context of spatial experience, application, representation and identity.

Keywords: Industrial Heritage, Architectural Conservation, Abandoned industrial buildings, Eskişehir-Turkey

1. INTRODUCTION

Wars and associated migrations, natural disasters, technological, economic and political developments have been determinants in shaping the physical and

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social structure of the city of Eskişehir since the 19th century. "Factories" zone were developed as a result of expansion of production structures on the banks of Porsuk River within the process starting with the passage of Berlin-Baghdad railway through the city.

This area defined as industrial site not only incorporates production structures but also education, culture, health and social facilities. Social facilities, established within the boundaries of the factory, such as housing, farm, sports, hospital, theatre, walking paths, green areas served as vanguards for change in the city. These developments are milestones that not only transform socio-cultural dimensions of production-consumption relations and daily living practices of the community but also physical structure of the city in a deep manner. In the years following, while technological developments impacting all parts of the life, vanguard locations and facilities of industrial process began losing their efficiency and some of them were left to their destiny by becoming dysfunctional for a long time. Today these deserted structures gaining importance as multi layered industrial heritage offer a wide framework for research activities (Riegl, 2005).

Currently, there are 155 inventoried industrial and commercial buildings in Eskisehir (Url-1). Many industrial buildings, which were previously located at the "edge" (or even suburban) of the city, remained in the center of the increasingly expanding city. When the current status of the Industrial Heritage and its areas are analyzed, it is seen that the registered samples in Eskişehir are re-functionalized as entertainment centers, shopping malls or hotels etc. However, samples that remain in the usage areas of public enterprises such as TCDD, TÜLOMSAŞ, Sugar Factory, which continue their activities, are either evaluated within their own corporate structures, filled with new equipment brought by new production technologies or kept empty and lose their connection with urban life. On the other hand, most of these factories are private property that are kept vacant. Industrial structures belong to private sectors in the area were registered according to the 1/5000 Master Plan, approved in 26 July 2002 and revised in 20 October 2003 and 1/1000 Development Plan for the factory area approved in 11 December 2003.

Under the threats such as lack of effective dialogue between institutions and stakeholders on private asset rights, urban land development and new demands for profitable construction, halting of legal and administrative processes, and lack of economic resources, decision-making mechanisms did not operate and these structures turned into abandoned areas. At this stage, indeed the most losing is the cultural asset that is desired to be saved. While the decision-making mechanisms for the preservation of the dysfunctional industrial heritage are expected to act, unfortunately the unique characteristic elements of this heritage

are rapidly disappearing. It is observed that over time the vacant industrial buildings and its areas have turned into unqualified urban areas, which lack of urban services and maintenance. The industrial heritage areas that have lost their functions, turning into abandoned unsafe areas exposed to vandalism, cause environmental concerns. On the other hand, legal and administrative arrangements for the cultural heritage management are inadequate to establish a collaborative relationship between stakeholders for the joint decisions on resolution plans.

In this study, which focuses on this uncertain interim period in which industrial heritage is under threat, we question how dialogue channels can be created between different stakeholders. When the lack of dialogue between stakeholders becomes a growing problem starting from individuals, local, small-scale, short-term, multi-functional activities can help achieving long-term sustainable conservation goals.

In recent years, idle industrial buildings, not used anymore, have gained supra-time and supra-location validity of aesthetic value as an interest area of modern art approaches. Industrial heritage buildings and sites, establishment and development phases determined within the context of production relations, after losing their function and significance and being deserted, inspires transformational power of art by gaining aesthetic / cultural / historical / social values in an area outside of profit-seeking market relations. At this point, art can become an open-ended instrument of expressing cultural heritage, cultural history and socialites (Corredor, Montaner, 1984). In this context, in the last decade, the potential of deserted industrial buildings in Europe and the USA to be transformed into modern art projects with new and creative solutions have been put forward (Sobrino, 1996). These type of art works are very new to our country. Generally speaking the outcome of these works is the re-invention of idle industrial buildings and sites by making them visible and up-to-date and meeting them with the community. This way, both sharing of common feeling that can result in public interest regarding their protection is captured and diversity in cultural experience can be ensured.

2. MATERIALS AND METHODS

Contemporary art or architecture practices, which initiate "public communication" about cultural assets as an object of instant or ongoing practices, regardless of conditions and content, are emphasized. For this purpose, the inactive industrial facilities in Eskişehir were investigated in terms of their relationship with the physical environment, architectural features, spatial features, and construction techniques through analyses and surveys. Then, it is aimed to develop a

temporary utilization model that will represent the industrial heritage for the prolonged period until the most convenient form of conservation is decided. The temporary utilization is not limited to the understanding of their cultural assets but also covers initiating dialogue between stakeholders and actors and sharing information in an interdisciplinary way between the actors of the whole conservation project (condition state, diagnostic and appropriate conservation proposals). The temporary utilization model would also increase awareness on the importance of vacant industrial facilities pose for communities. Moreover, the challenges and opportunities in revealing the potential of local actors to participate in the endangered cultural heritage have been also evaluated in this research.

2.1. Definition of Research Area and Analytic Assessment

As the sampling area suitable for the purpose of the study, two derelict industrial campus were selected (**Hata! Başvuru kaynağı bulunamadı.**). The two areas designated as research focus are industrial settlements of both public and private property, developed in Eskişehir. These are, the former industrial region extending from Station Building to the north and south factories area, TÜLOMSAŞ and TCDD Terminal Areas.

Factories Area



TÜLOMSAŞ and TCDD Terminal Area



Figure 1: Research Areas (processed from Google Maps, 2020).

Within the scope of the stated aim, first information about the study field was presented. Following that, within the Eskisehir Technical University Conservation Project -I class of 2018-2019 Fall Season, this research under question were given due attention in terms of analytic and visual examinations evaluating the history of the buildings that remained idle after their functional validity, their relationship with the physical and social structure of the city, architectural features, spatial features and construction technique by post graduate students.

Primarily, dynamics effecting the change and transformation processes in the city are investigated for identification and general assessment of industrial sites.

Industrial sites accepted as "empty" are identified with regards to ownership and registration. The changes of industrial sites from past to present are described with city plans, maps and photos. In order to solve problems of protecting industrial heritage, by analysis of city plans regarding inter-action with close vicinity, changing socio-cultural relation is assessed. These analyses form the basis for the planning of temporary utilization model of industrial heritage and its vicinity. Following that, for each area temporary usage models were produced.

3. RESULTS

3.1. Spatial Differentiation Periods in Eskisehir

Eskişehir is an important Anatolian settlement in which state-centric industrialization movement affected demographic structure. When rapid change of socio-economic structure of Eskişehir is examined due to industrial investments three determinant phenomena are observed:

a. The place of the city in transportation network: Eskisehir, located in the northeast part of Internal Anatolian Region, became a town where commerce improved owing to its location at land routed in Anatolia in the Antique Age. The city, belonging to the geography where Ottoman State had been established, by being on the route of pilgrimage and army convoys kept its strategic importance. The town's geopolitical importance increased by passage of Anatolia-Hicâz railroad through Eskisehir in the 19th century. The first industrial institution established by Germans to repair vagon sand steam locomotives in the pre-republican era, "Cer Atölyesi", with the start of the Republic, was nationalized and developed into a structure that avails employment and qualified employee training.

b. Population movement due to migrants: Waves of migration affected Eskişehir after the 1853-1856 Crimean War and1877-1878 Russian War called as War of 93. With the agricultural, handcraft and business cultures of incoming migrants from Rumeli, Crimea and Caucasia, the city's commercial institutions were diversified. The map dated 1896 is intriguing to notice spatial break-up that social impacts had caused (Figure 2). Pre-industrial town shape that roughly consist of two separate centers underwent serious transformations. While traditional residential area on the southern outskirts and bazaar in the center existed, new neighbors developed along the northern part of Porsuk River. Together with these settlements, the first linear amendments on the parcelisation arrangements and road widths were observed in Eskişehir (Ekimci, 2016:34). On the map, the start of a structural development in the the vicinity of the station established on the northern skirts of the city center is observed.



Figure 2: 1/10.000 scaled Eskişehir Map (1896).
Harita Genel Komutanlığı, Ankara.

c. Choosing location for Republican Period industrial settlement: Within the context of development initiative started after the proclamation of the Republic, among Turkey's first industrial investments are Roundhouse Workshop (Cer Atölyesi-1926), Plane Maintenance Center (1933), Eskişehir Sugar Factory (Ertin, 1994). For the public investments requiring large fields choices within the tissue of the city were made by buildings were constructed in accordance with functional principles with a modernist manner. Promotion and representation of industrial and public investments that began to determine the quality of construction in the city carry significant meanings. In addition to the housings established together with new facilities in the first years of the Republic, residential design in the neighborhood scale was realized in factory areas and their near vicinity. After 1950, with housing cooperatives established by workers new settlement areas emerged (Figure 3, Figure 4).

1896	1923-1950	1950-1960
		

Figure 3: Development of Eskişehir Industrial Areas (Ertin:1994: Annex-1).

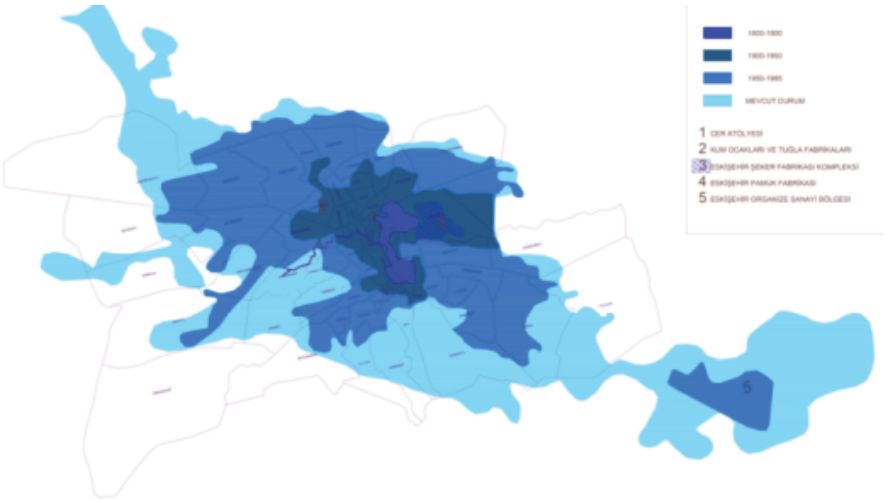


Figure 4: Development of Industrial Areas in Eskişehir 1800-1985.

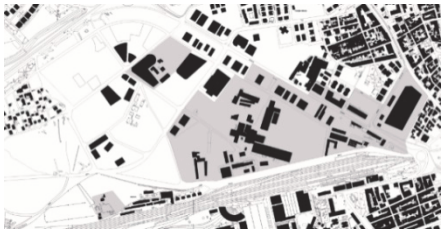
3.2. RESEARCH AREAS

- Factories Region: The factories region developed over time, after the opening of Station Building connected to the 1896 Anatolia-Hicâz railroad, with addition of new factories manufacturing in various kinds, is today a urban conservation site (Table 1). Part of the buildings in the areas limited by the railroad are either destructed or re-functioned in the form of entertainment, catering, and shopping mall. Kartal Tile and Bricket Factory, Doğan Tile Factory, Kılıçoğlu Tile and Bricket Factory and Çiftkurt Tile Factory belonging to private property lost their functions and are deserted. Among them Çiftkurt Tile Factory was recently destructed due to neglect (Table 2).

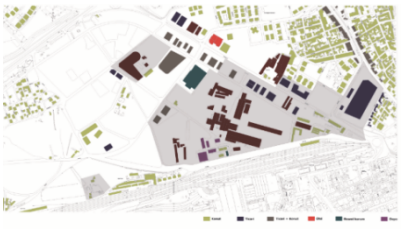
Table 1: Deserted Buildings of the Former Industrial Region

KARTAL TİLE AND BRİCK FACTORY			
	Regıstered– Prıvate Property	39°46'47.00"K, 30°30'0.52"D	RUINED(Const. Date 1944)
DOĞAN TİLE FACTORY			
	Regıstered– Prıvate Property	39°46'57.76"K, 30°30'7.45"D	RUINED (Const. Date 1946)
KILIÇOĞLU TİLE AND BRİCK FACTORY			
	Regıstered– Prıvate Property	39°46'53.56"K, 30°30'9.21"D	RUINED (Const. Date: 1949)
ÇİFTKURT TİLE AND BRİCK FACTORY			x
	Regıstered- Prıvate Property	39°46'53.56"K, 30°30'9.21"D	DEMOLISHED (Const. Date 1949)

Table 2: Factories Region 1. occupancy-vacancy 2. Close vicinity-function



1



2

The first of the factories located in the factories region, Kartal Tile and Bricket Factory is registered with its two tile kilns and chimneys. Consisted of two parts, the factory's roofs are collapsed and surrounding area is filled with debris piles. Front and rear facade shave 15 kiln entrances. The frames and wings of windows is disappeared.

Doğan Tile Factory is registered with its stile kilns, tile depot, two chimneys as well as factory buildings on the west of them. Inside there exist 13 kilns connected to each other and in front of kilns are located circulation spaces top of which covered with sheds. Masonry buildings made of tiles are covered with roofs on the top. The roof built for drying the tiles between the two factory buildings is collapsed. Inside it, homeless people reside in and a part of the factory entrance is used as parking lot.

The Kılıçoğlu Bricket and Tile Factory (1927-1949) located on a wide area was expanded with addition of annexes in different periods. It consists of Bricket Cotta manufacturing main building, factory structures, water towers and chimneys. 1 and 2 store masonry-built structures possess wooden roofs. Inside the factory exist tunnel kiln, presses and drying chambers together with production line, zigzag kilns and mud machine.

These structures, stayed out of residential areas in the period of their construction, are now distinguished from the general texture of the city due to their scale, structures and functions and are under pressure of demand because of the rising price of land in the city. The transformation of these industrial structures in vicinity of the city into cultural, art and entertainments center, is important from the aspect of revitalizing and protection of the deserted structures by giving new functions.

-TÜLOMSAŞ and TCDD Terminal Area: Traction Workship together with the lodge and administrative buildings found in the TCDD Terminal area are located close to the factories region at the northwest. The Workshop, founded in 1894 for maintenance and revision of steamed locomotives, experienced many firsts and

has been unforgettable since national liberation years in the history of the Republic. With the closure of steamed locomotive period, the Workshop, undergoing changes of names and manufacturing, became a forefront institution serving as foundry, turnery levelling, carpentry, project drawing, forging, boiler house, power station as well as school of apprenticeship training. Part of the facility which was recently evacuated and its equipment dismantled has started to be used as part of control /simulation center of the high speed train system (YHT). The traces that can enable us to understand the production past reaching back to the steamed locomotive period within and around the structure are being eradicated by dismantling (Table 3, 4).

At the northeast of the railroad, 5 single store masonry housings with gardens where employees of the factory reside were built in the same period with the Traction Workshop. Two of these buildings, which carry plain and simple features both with their architecture and landscape, are still in use today. These registered housing buildings are becoming ruined from day to day due to negligence.

As a result of analyses in the area it is observed that a dense housing area was developed around the factory. New housings were constructed via cooperatives towards south after the first railroad housings between the Traction Workshop and Station building, at the south of the railroad line. Parallel to this development, other structures consisting education, commerce, social and cultural sites, also emerged. However, due to increased traffic load, deficiencies in infrastructure, changing social structure and likes, the vicinity of the settlement lost its former value.

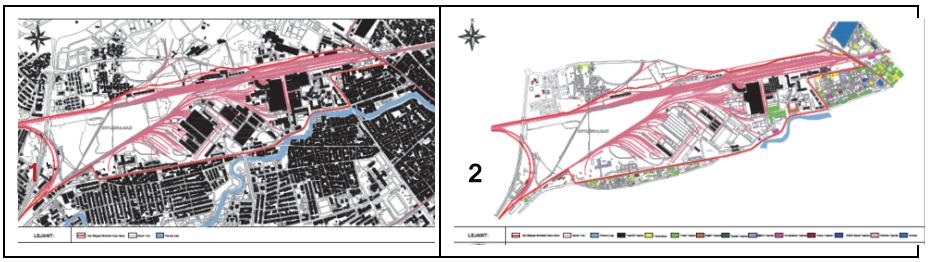
Although areas such as museum, wedding saloon, hospital, cafeteria, and walking paths are open to public, these registered facilities still are not known and are not noticed sufficiently.

The local product sale tents, installed by the local municipality involve programs colored with concerts and exhibitions, provide liveliness by increasing visitor numbers even temporarily.

Table 3: TÜLOMSAŞ and TCDD Terminal Field: Vacant Structures.

ROUNDHOUSE WORKSHOP			
	Regıstered- Publıc	39°46'42.45"K, 30°30'6.84"D	RUINED (YT: 1896)
VAGON MAINTENANCE WORKSHOP			
	Not Registers- Publıc	39°46'44.79"K, 30°29'55.90"D	RUINED (YT: 20. YY)
TCDD HOUSING BUILDINGS			
	Regıstered- Publıc	39°46'44.51"K, 30°29'59.05"D	RUINED (YT: 1896)
TCDD ADMINISTRATIVE BUIKDING			
	Regıstered - Publıc	39°46'50.03"K, 30°30'27.46"D	GOOD (YT: 1896)

Table 4: TÜLOMSAŞ and TCDD Terminal Field 1. occupancy-vacancy 2. Close proximity -functional



3.3. Temporary Utilization Proposals

Proposals have been developed that will exhibit the traces of the past, by examining the industrial structures in changing environment with regards to their representation in the city, location and organization interaction with the environment within physical and social dimensions and contribute into cultural importance of the each region.

-Factories Region: Factories region is located in the center of a dynamic tourism area with focus on entertainment, catering, shopping, culture and art. Since they are private properties the factory buildings under conservation areas are closed to visitors. Because the factory structures are not used anymore, the streets in the sections merging with railroads are very quiet in evening hours. For this reason, a orienteering game, informing about the structures by monitoring them from outside is configured (Figure 5). This game is developed in order to introduce the structures and offer the users different spatial experiences.

In the game, there exists a route to follow and targets to reach. The aim of the game for the players is to act according to the instructions, realize the given details and act in coordination with their teammates. Target points are those viewpoints in which elements of heritage located in the factories zone can be monitored from the outside. Each gamer is given a route and a map on which targets are marked at the start line. Short info packages with symbols are provided in order to introduce and explore industrial heritage. On the route of the activity, symbols collected from target points are marked on the maps. The game ends with collection of all symbols. With this, configuration of the game elements of the heritage are conveyed to the participant without limitations of private property.

- TÜLOMSAŞ and TCDD Terminal Area: When surveys are analyzed, it became clear that components of the heritage are not known by the people. In order to revive the railway social venues where public concerts were held in the past, it was envisaged that alternative units open to public use can be created which would attract people to that region (Figure 6).

It is proposed to introduce the industrial heritage via opening cafes and a concert platform around walking path which is out of the restricted area of TÜLOMSAŞ and the Railway Station. In this way, it is aimed to raise awareness about the promotion and preservation of the industrial heritage through a cultural element existing in the city's memory.

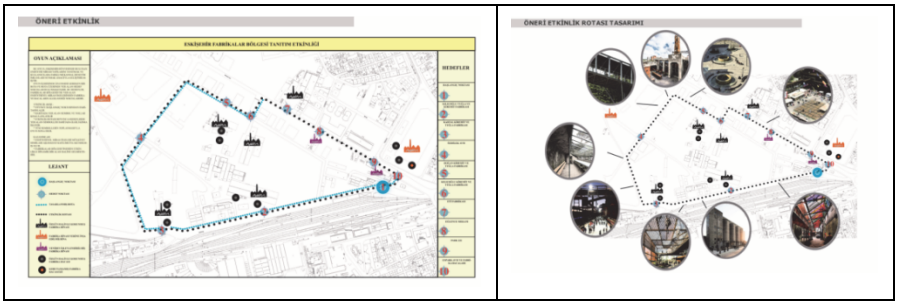


Figure 5: Factory Region orienteering game activity

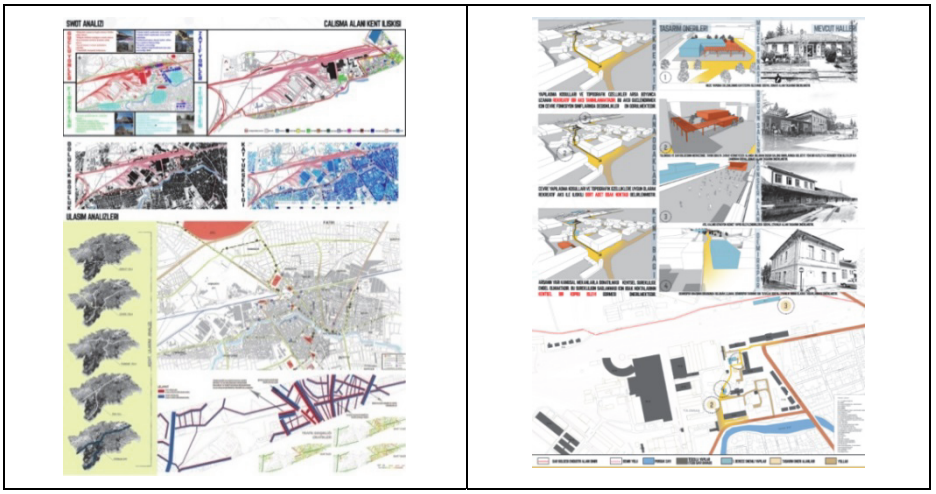


Figure 6: TÜLOMSAŞ and TCDD Terminal Area: Temporary utilization proposal for idle industrial buildings

3. DISCUSSION

Transformation of former industrial sites in cities for reutilization is among the current topics of architectural conservation. However, the obstacles in front of these structures, which are intended to be used for a new purpose, arise from the fact that actors cannot establish a collaborative relationship for the joint decisions on their protection principles.

When industrial heritage is endangered, what needs to be done to ensure the protection of cultural heritage and to act decision-making mechanisms is to present it to the public with all its features that prove its authenticity, value and integrity.

This basic objects of these temporary utilization plans are; reduction of urban pressure over deserted industrial areas, increase of awareness regarding importance of the structures for the city memory and enabling dialogue between stakeholder by raising public awareness on their protection in the long term.

4. CONCLUSION

While the number of industrial heritage that needs protection in Eskişehir was 175 in 2014, it fell to 155 in 2017. When the speed of losing industrial heritage is considered, this research displays that as soon as these facilities were deserted, though registered, their inside was vacated or "still working" elements were dismantled. A detailed inventory of memorials in question have not been prepared. There are some issues that distinguish industrial heritage from other heritage kinds (ICOMOS_TICCIH). Before the integrity of settlement is destroyed, portable mechanical equipment disappears for some reason, printed and visual documents are scraped to junk, a cultural inventory needs to be prepared and a road map should be drawn in order to protect the cultural heritage.

Multi-cultural practices that will represent industrial heritage will help remind and question them in cultural memory in abandonment stages that isolate industrial buildings from urban life. It is the common responsibility of all institutions and sectors to protect not only the structures but also its cultural meaning in the public memory in an industrial area where the primary reason for protection is to give information about the old industrial processes.

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THE ORIGINAL ARCHITECT'S ROLE IN CONSERVATION OF THE RECENT ARCHITECTURAL HERITAGE

H. İlke ALATLI [*], Demet BİNAN [**]

ABSTRACT

The scope of heritage conservation, as well as the definition of cultural heritage is inevitably broadening. Starting from 1960's, conservation experts conducted studies for early modernist buildings to be listed as heritage. Over time, similar studies were made for many Modern, Brutalist, even Postmodern buildings claiming that some of them are cultural heritage. Recently, buildings such as Heydar Aliyev Centre in Azerbaijan by Zaha Hadid (2012), Museum Liaunig in Austria by Querkraft (2008) and B2 House in Turkey by Han Tümertekin (2001) are listed as cultural heritage.

In this regard, adoption of heritage status when a building is relatively young can mean that the original architect is still alive, and even continues professional life. From the perspective of conservation practice this can be a very favorable situation. Madrid – New Delhi Document (ICOMOS-ISC20C, 2017) suggests the importance of gathering information from primary sources in order to apply an appropriate conservation planning and management method. Undoubtedly, the original architect is the main resource to understand a design's essence.

In the late 1990's, like most of the performance spaces, Sydney Opera House needed improvements. However, the Opera House being a national heritage in Australia, a Conservation Management Plan was to be made before any intervention. For this purpose, the experts first contacted the original architect, Jørn Utzon, and with an exemplarily collaboration the Utzon Design Principles, which constitute a framework to the Conservation Management Plans, were created.

However, as much as this single example seems ideal, the original architect's involvement to the conservation processes has many paradoxical sides such as legal, theoretical, practical and ethical. In some cases, conservation experts are obliged to obtain the consent of the original architect for any intervention according to the Intellectual Property Rights Act. On the other hand, sometimes this encourages the architect to make material, even design

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alterations that may damage the authenticity in the first place. In other cases, the original architects oppose to the heritage status of their design.

This paper aims to discuss these paradoxical issues from an architectural conservation perspective. Overall, as conservation of the architectural heritage of recent past is a dynamically evolving subject, it seems possible to state that, as conservation experts, we will be encountering many more similar cases.

Keywords: Heritage Conservation, Recent Architectural Heritage, Conservation Of Modern Architecture

1. INTRODUCTION

In the 21st century, number of the architecture, that accepted as cultural heritage has increased. With this increase, relatively young structures are subjected to conservation. Consequently, we began to encounter several paradoxical issues during the conservation processes as conservation experts and architects. An important example to these issues is the role of the original architect in conservation of the recent architectural heritage.

The original architect's contribution to the conservation process can be inspiring, as well as challenging for the experts. There are still some undefined gaps in current legal and theoretical frameworks that form paradoxical issues with the original architect's involvement. These paradoxical issues have legal, theoretical, practical and ethical sides. Moreover, the causes of these issues have not been systematically defined.

Although the subject of original architect's involvement in conservation was not specifically researched, there have been studies that expressed views and experiences on the topic. "Re-engaging with Original Designers" theme in Australia ICOMOS Conference "(Un)Loved Modern" can be an example of such. With this regard, an evaluation was made by interpretation and assessments of publications by the conservation experts who previously had such experiences.

In this study, an overview of the challenges and opportunities that architectural conservation experts encounter with the involvement of the original architect, as well as the legal, theoretical and practical issues were presented. Furthermore, it is aimed to discuss the role of the original architect when his/her building subjected to any conservation process, such as cultural heritage listing, conservation planning or restoration, from the perspective of architectural conservation.

2. LITERATURE REVIEW

At the beginning of the 20th century, the scope of conservation slowly slipped away from the influence of archaeology and the first steps of systematic

approaches to conservation were taken. By the mid-20th century, Venice Charter drew the first frame of today's understanding of conservation. Since the second half of the 20th century, the number and effectiveness of international organizations in conservation have increased, ICOMOS was established in 1965, UNESCO's World Heritage Convention was established in 1972, and DOCOMOMO[1], an international non-profit organization which played an important role in the conservation of modern architectural heritage, was established in 1988. By the end of the 20th century, there were over 900 artefacts in the World Heritage List, dozens of ICOMOS scientific committees and dozens of statutes. In such an environment, the scope of the conservation of cultural heritage has expanded. The impact of the international organizations and publications have contributed to the conservation laws in many countries, including Turkey.

By the 21st century, cultural heritage definitions, heritage values and the architecture that subjected to conservation have evolved; inevitably this caused an evolution in the conservation approaches as well. The most tangible case of this evolution can be seen with the conservation of recent architectural heritage.

2.1. Recent Architectural Heritage

The term "Recent Architectural Heritage" began to be used in the field of conservation in the last quarter of the 20th century. Terms such as Heritage of Recent Past, Recent Heritage or Buildings From the Recent Past area also commonly used in order to address recent architectural heritage. Today, the scope of the recent architectural heritage is not defined by strict date boundaries, but each study has developed a perspective of its own and created a framework that draws the boundaries. In this study, it is preferred to be associated with the living memory. By doing so, it is aimed to set a broader range, including all kinds of architecture created under the influence of modern movement, as well as relatively young structures, which claimed to have any cultural significance.

Starting with the early 20th century, heritage conservation often related with the age value, which identified by Alois Riegl (Riegl, 2015). But conservation itself being a modern concept, the values that emphasize the significance of an asset have evolved with the architectural heritage subjected to conservation. Today, newness value, use value or reference values are often substantial in order to determine heritage significance (Omay Polat, 2018).

Prudon (2008) states that "the change is fundamental to the preservation of modern architecture… As the …places of the 20th century increasingly become

[1] DOCOMOMO International's full title is International Committee for Documentation and Conservation of Buildings, Sites and Neighbourhoods of the Modern Movement.

the focus of preservation efforts, traditional preservation values will have to shift" (Prudon 2008, pp: 53-75). Indeed we are able to observe this change through the documents and charters on conservation of architectural heritage.

Burra Charter (1979-last version adapted in 2013), adopted by ICOMOS National Committee of Australia, established criteria for the evaluation of the significance of a place. It proposes value-based strategies for the preservation of culturally significant places in Australia. The Nara Document of Authenticity (1994) explains the relativity of authenticity and expands the concept beyond material notions. Eindhoven Statement (1990) by DOCOMOMO, was the first international statement specific to the architecture of modern movement. The statement was revised in 2014 as Eindhoven-Seoul Statement, focusing on the theme of sustainability and reuse. ICOMOS International Scientific Committee of 20th Century Heritage developed the Madrid Document (2011, Second edition in 2014) "Approaches for the conservation of 20th century architectural heritage", aiming to provide an international benchmark (ICOMOS-ISC20C, 2017). With the participation of many international members, third edition of the document was adopted as Madrid-New Delhi in 2017, which offers principles for the management of 20th century heritage.

2.2. Theory Against Legal Structure

Despite the many national and international theoretical guidelines to address the recent architectural heritage, there are still many problems we encounter because of the legal frameworks. It wouldn't be fair to say that legal frameworks are out-dated. However, it is possible to state that legal frameworks sometimes fail to catch up with the theory.

First example on this topic is the time frames of heritage listing. Although it could be stated that architecture of recent past is recognised internationally by conservation experts, the legal frameworks can stand in the way of heritage listing. In many countries, the legal framework limits the age of the cultural assets to be listed. These legal time limits differ across the world.

In some countries, these limits are set by the time passed since the creation or construction of the cultural asset. In England the limit is 30 years, in Russia 40 years, in the United States of America 50 years, in Italy 70 years, in Iceland 100 years. In some countries, a certain date is considered as the limit, such as 1899 in Turkey, 1960 in Romania, 1990 in Bosnia and Herzegovina. In many countries, there are no time limits between the creation and heritage listing dates of the works. For example, The Christus Hoffnung der Welt Church (architect Heinz Tesar), of which the construction was completed in 2000 in Austria, has been listed as a monument,

being an outstanding example of the contemporary architecture built in a suburban area in Vienna. Similarly, Baku Crystal Hall, of which construction was completed in 2011, was added to the national registration list shortly after hosting the Eurovision Song Contest in 2012. Carughi (2017) studies the relativity in time limits in comparatively in a synoptic table (***Table 1***) (Carughi, 2017).

Table 1 Synoptic Table on Time Frames by Carughi (2017)

Synoptic table

	100 years	75 years	70 years	50 years	40 years	30 years	25 year	Date	No limit
Africa								Ghana (1900)	Algeria, Angola, Democratic Republic of the Congo, Egypt, Eritrea, Ethiopia, Kenya, Morocco, Mozambique, Nigeria, Senegal, South Africa, Tanzania, Tunisia
Americas				United States of America				Ecuador (1940)	Argentina, Brazil, Canada, Chile, Colombia, Costa Rica, Cuba, Ecuador (1940) in Americas/Datc, Mexico, Peru, Uruguay, Venezuela
Asia	Bangladesh	Pakistan		Bahrain, Philippines, South Korea	United Arab Emirates	Singapore	Macau	Oman (1920) Qatar (1940) Hong Kong (1960s)	China, India, Indonesia, Iran, Israel, Japan, Jordan, Kazakhstan, Lebanon, Malaysia, Thailand, Vietnam
Australasia									Australia, New Zealand
Europe	Iceland		Italy	Italy, Latvia, Lithuania, Moldova, San Marino	Belarus, Russia	United Kingdom (England, Northern Ireland, Scotland, Wales)		Turkey (1899) Romania (1960) Bosnia and Herzegovina (1990)	Albania, Andorra, Armenia, Austria, Azerbaijan, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Georgia, Germany, Greece, Hungary, Ireland, Kosovo, Liechtenstein, Luxembourg, Macedonia, Malta, Montenegro, Netherlands, Norway, Poland, Portugal, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Ukraine, Vatican City State

Despite this, the legal frameworks do not completely stand in the way of the theory. Although the time limit is 1899 in Turkey, B2 House by Han Tümertekin (2001), which was the winner of the Aga Khan Award for Architecture in 2004, is listed as cultural heritage in 2017. Similarly, despite a building must be at least 30 years old to be listed in England, The Alexandra Road Estate in London England was listed in 1993, 15 years after its construction in 1978. Croft (1996) states that this is only possible "if the building met two criteria, it had to be of outstanding national interest, and had to be shown to be at risk of demolition or damaging or alteration" (Croft 1996).



Figure 1 B2 House in Çanakkale Turkey, by Han Tümertekin.
(Photo taken by Koray Güler, 2019)

With the changes, which came with the modern lifestyles, daily needs and necessities have changed as well. Expectations from new buildings changed with new demands. Consequently, many new and ever-changing standards are constantly evolving, such as life safety, health codes, electrical and mechanical systems. Paradoxically, sometimes loss of authenticity is accepted by the stakeholders, in order to follow the legal standards and regulations. In a much dramatic example, reconstructions of the modern architectural heritage are justified by the regulations. For instance, the Building Earthquake Regulations in Turkey, are commonly pointed for justifying the reconstruction of recent architectural heritage which have reinforced concrete structures.

It is ethical to ask for consent from the original architect for any intervention to his/her initial design. However, it can also be a legal obligation according to the Copyright Laws. Madrid – New Delhi Document (ICOMOS-ISC20C, 2017) suggests the importance of gathering information from primary source s in order to apply an appropriate conservation planning and management method. Overall, original architect's involvement in the conservation process is not only theoretically, but also legally possible. A problematic situation is created when the relations with conservation law and copyright law are not clearly described. In Turkey, Law of

Intellectual Property Rights (Law Nr. 5846) states "without the consent of the owner, any deductions, additions or alterations cannot be made". For instance, the architect of the Inonu Stadium in Istanbul, Fazıl Aysu opposed the additions to his designed structure as project owner (Omay Polat, 2018) during the restoration of the stadium. On the other hand, one of the paradoxes with the copyright laws is that architect's legal right to change his/her initial design, which is one of the most important part of its significance. According to conservation laws in Italy, a creation, whether art or architecture, cannot be listed as heritage as long as its creator is alive. The Copyrights Act reserves the creators right to change the work in his/her lifetime.

3. DISCUSSION

It is possible to say that conservation of "modern" architectural heritage is almost simultaneous with the international recognition of conservation as science. Prudon (2008) states that "in large panorama …, the preservation of modern architecture began in Europe, where the style developed, with the icons of the movement" and gives the example of conservation efforts for Bauhaus in 1960s (Prudon, 2008, p:7). A highly mentioned fact about the first efforts in the conservation of modern architectural heritage is that the creator taking the first steps for the conservation of his/her own building. Murphy (2002) claims that "Le Corbusier himself was instrumental in advocating for the preservation of the house in Poissy (Villa Savoye), though the building was not designated a national historic monument by the French Ministry of Culture until after the architect's death" (Murphy, 2002).



Figure 2 Villa Savoye in Poissy, France by Le Corbusier. (URL 2)

In the early examples of conservation of recent heritage, or modern architectural heritage in this context, original architect's active involvement is understandable. Since the older buildings outnumbered the modern buildings, first conservation efforts were for the iconic buildings, which had architectural, aesthetic and scientific significance. Most of the conservation attempts were taken by the architects and intellectuals of the period, as conservation was not an internationally recognized scientific specialty yet.

For a long period, design intent has been a very hot topic in philosophical debates about conservation of modern architecture. In Prudon's (2008) words "it is the visual and conceptual expression of the designer's creativity". In this regard, it could be said that the original architect's interpretation of his/her building's design intent is, in a way, interpretation of his/her own creativity. Therefore, it is a great opportunity for the conservation experts to consult the original designer, if possible.

Undoubtedly, the original architect is an invaluable source of information; as he/she can give insight about the original ideas, design process, technical and material decisions.

One of the most significant national heritages in Australia Sydney Opera House sets an outstanding example of collaboration between the conservation experts and the original architect. Being a highly active performance space, the opera house needed improvements in the late 1990's. James Semple Kerr, the expert assigned for conservation management planning of the building, contacted the original architect, Jørn Utzon. With an exemplarily collaboration the Utzon Design Principles, which constitutes a framework to the Conservation Management Plans, were created. During this process, Utzon was the key contributor to the planning. He strongly argued that as a performance place, "as time passes and needs change, it is natural to modify the building ..." (Crocker, 2017).

Alexandra Road Estate at the time of its listing (1993), was the youngest building ever listed in United Kingdom (Croft, 1996). It was designed by architect Neave Brown, the only architect in United Kingdom, of whom all buildings are listed as heritage. Although the estate's need for urgent repair first triggered conservation efforts, such as heritage listing, proper restorations weren't held until 2005. The architecture firm Levitt Bernstein, with Neave Brown as consultant, worked on the restoration projects (URL 1). Brown shared his vision and design decisions, and together with the experts, architects created repair solutions for the details of the building. The restoration project was a good example of an original designer, conservation expert and architect's collaboration.

Contacting the original architect for information can sometimes offer unexpected insights about the design influences. Reeves (2009) states that even an architect's

own library is a great source of information about the influences she/he had during the design process (Reeves, 2009).

As stated previously, it is mostly favourable for conservation experts to consult the original architect for a better understanding of the design. In addition to being recommended by the ICOMOS ISC20C in Madrid-New Delhi Document (2017), in some countries it is also a legal obligation to take consent from the project owner. Nevertheless, responsible authorities can find it very practical to consult the original architect for improvements of the structure.

Churchill Gardens Estate in London is one of the first post-war social housing projects in United Kingdom. In the late 1980's and 1990's, many of the structures needed improvements according to the new housing standards and regulations. Although buildings in the estate were not listed, the site was designated a conservation area. During the planning and implementation of restoration projects significance and heritage values were considered. English Heritage contacted the original architect Sir Philip Powell. The local authority responsible for the Churchill Gardens Estate included the architect to the conservation process. After considering the residents demand, the architect designed new window frames, which were not contradicting the original design and suitable for the housing standards. (Harwood, 1996)

Collaboration with the original architect can be an opportunity for the conservation experts. However in some situations, original architect can interpret the restoration project as a design challenge and make changes in the original design (Prudon, 2008, p:37), which contradicts with the integrity of the building. In some cases, the original architect embraces the role of conservator and can take over the process from the conservation experts.

Mehmet Konuralp was one of the key figures during the heritage registration campaign of his renowned Istanbul Regional Dictorate of Highways building (Karayollari Genel Mudurgulu). Being one of the first high-rise buildings with a curtain wall facade in Turkey, the architect fully supported the cultural heritage registration process, which conducted by conservation experts. After the registration, he was eager to contribute to the conservation processes of his building. But him being the original architect, in legal terms the project owner, he volunteered to restore his own building. (Aygen, 2012) He proposed a restoration project according to the original design intent, but with a different curtain-wall facade. He claimed that his original design was created with the materials and facade systems available in the 1970's and he would have naturally chosen different materials if they would have been available back then. An argument that contradicted the registration document in the first place, which pointed out the

buildings technical value. Finally the process ended being on hold with the buildings demolition for reconstruction.

A very common challenge of recent architectural heritage is the public opinion. The age value and lack of usual patina, which is almost ordinary on a traditional architectural heritage, can be unconvincing for the public and sometimes even the professional. Reeves (2009) state that "places associated with the recent past, so often untested by scholarly attention and comparative analysis, invariably provoke public (or even professional) apathy" (Reeves 2009). There are times, which the original architect objects to his buildings heritage status. In one case, a retired Australian architect strongly opposes the heritage status of his building stating that it does not have any cultural significance (Reeves, 2009).

Although the adaptive re-use is an outstanding topic in terms of sustainability for todays field of architectural conservation, as well as architecture, it could be argued that it is contradicting to the acknowledged principle of modernism "form follows function". Modern buildings are often designed for a specific function. One of the main philosophical issues in the conservation of modern architecture has been the temporality of the buildings, which argues that modern buildings were designed for the time required by its function. How can we conserve a building, which was not built to last?

Some architects claim that with the loss of original function, design intent is lost as well. Thereby they may oppose the heritage status, or even any conservation attempt. In an interesting case, the original architect Peter Muller gives permission to demolition of his building Lance House (1962). He claims that the original user, his clients, is an important part of the design integrity. Without the original users, the buildings sense of place is lost; therefore the integrity is lost (Jones, 2009).

In must be stated that, in this paper only a few cases were exemplified in order to argue the mentioned paradoxical issues. But an important fact is that there are many more structures of recent heritage, which haven't been subjected to any conservation process. Therefore, these structures' original architect's views on the process have not been discussed yet. It is possible to indicate that with future studies, more data on the role of the original architect gained for further evaluations.

4. CONCLUSION

As conservation of the architectural heritage of recent past is a dynamically evolving subject, it seems possible to state that as conservation experts we will be encountering many more cases that involve the original architect. In time, we will also encounter issues different from those discussed here. Overall, the above-

mentioned issues are evaluated in the context of present legal and theoretical frameworks.

It can be stated that collaboration with the original architect can be very beneficial in terms of conservation. Yet, how this collaboration will take place is an important matter. Burke (2013) states that the experiences she previously had with the original architects "was largely driven by the personality of the individual architect and his sympathy or lack of sympathy for the conservation process and philosophy" (Burke, 2013). In this regard, the conservation experts' stance plays a significant role.

The original architect is undoubtedly an invaluable source of information in the conservation process. In addition, it is also ethical to consult the original architect (project owner) for conservation implementations such as renovations or restorations, even without any legal obligations. However, the responsible conservation experts should determine the limits of the architect's involvement.

It could be very beneficial to consult the original architect for specific design solutions during the conservation process. Nevertheless, according to Croft (1996), it shouldn't be suggested that the architect should be responsible for any of the shortcomings of his design, and states that "refurbishment of post-war buildings, just like the conservation of buildings of any period, is a very different specialization to designing new buildings" (Croft, 1996, p:54).

Overtime, with the accumulation of new conservation experiences that involve the original architect, there will be more research attempts for a systematic approach to the matter. Any future studies are important for raising awareness among conservation experts and architects who continue their professional life. There are over 1000 heritage of the recent past in the inventory of DOCOMOMO Turkey National Committee (DOCOMOMO_Turkey, 2019). In this regard, it's possible to state that there is a major potential for future studies.

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SESSION 3A

Theme: Resilience, Sustainability and Quality & Economy, Geography and Region

13 October 2020 Tuesday, 16.15 – 17.45

Chairperson: Assoc. Prof. Dr. Olgu ÇALIŞKAN

Didem DİZDAROĞLU

Possible Indicators for the Evaluation of the Performance of a Biophilic Urban Ecosystem

Dilara GENÇ, Sevcan ALTUNDAL, Hümeyra BİROL

The Relationship between Socio-Cultural and Environmental Development: Sustainability of Local Construction Culture and Crafts

Mehmet RONAEL, Gülden Demet ORUÇ

Analyzing Landuse Types Affecting the Spatial Distribution of Architecture Sector in İstanbul

Vesile ŞİMŞEKOĞLU, Burcu H. ÖZÜDURU

Correlation of Neighborhood Unit Design with Urban Health

POSSIBLE INDICATORS FOR THE EVALUATION OF THE PERFORMANCE OF A BIOPHILIC URBAN ECOSYSTEM

Didem DİZDAROĞLU*

ABSTRACT

As a sustainable design strategy, biophilic design incorporates natural elements into the built environment aiming to create healthy living settings. Indicators are one of the strongest communication tools in design for the provision of a resilient and sustainable human-nature relationship. They support all stages of policy-making, from designing policy frameworks, setting goals and tracking progress, to improving communication between government bodies and other actors involved in the process. Within this context, indicators function as performance measuring tools in designing and planning of biophilic cities. Despite the well-known benefits of biophilic design to human health and well-being, very few cities are systematically implementing biophilic design applications due to lack of practice, technical knowledge, established standards and procedures. This research aims to identify a set of possible indicators for the monitoring of a biophilic city by evaluating the functioning of the components of its ecosystem and the effectiveness of urban policies. The proposed indicator set targets to demonstrate how effectively a biophilic city achieves its goals and objectives as well as constitute a ground for the transformation of cities into biophilic cities by supporting the improvements for proposals of future planning. These indicators represent an initial attempt to develop a self-assessment tool for the investigation of the success of targets and goals related to the creation of a biophilic urban ecosystem. Establishing performance targets for the assessment of progress and developing these even further to test the set of indicators in a pilot study can be considered as a future research direction.

Keywords: Biophilic city, Biophilic urbanism, Urban ecosystem, Indicators, Policy-making

1. INTRODUCTION

In recent years, humans have become alienated from the natural world, and to reinforce this connection, planners, architects, designers, policy-makers and researchers have turned their focus to new approaches to environmentally-

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friendly and sustainable design. These efforts have sought to harmonise the design of the built environment with nature (from workplaces, schools and urban parks to residential gardens) to meet human needs by employing biophilic design principles (Benyus, 1997; Kellert et al., 2008; Newman and Jennings 2008; Downton, 2009; Beatley and Newman, 2009; Browning et al., 2014; Beatley, 2016; Birkeland, 2016). As a sustainable design strategy, biophilic design incorporates natural elements into the built environment aiming to create healthy living settings. A biophilic city is a biologically diverse city that picks up on the nature itself, mimics natural systems, and integrates natural forms into buildings along with cityscapes. Briefly, it is a city planned in accordance with nature's organising principles. The biophilic design of a city offers several potential benefits, including improved air quality, climate change mitigation, sustainable water-cycle management, reduced traffic congestion, enhanced food security, improved ecosystem services and urban biodiversity. Additionally, a biophilic city may produce various positive effects on human health including the reduction of stress caused by urban living, promotion of physical activities and mental health, and improvement of comfort, motivation, productivity and creativity (Berman et al., 2008; Grinde and Patil, 2009; Gray and Birrell, 2014; Söderlund and Newman, 2017).

An indicator is *"a policy-relevant variable that is specified and defined in such a way as to be measurable over time and/or space"* (Astleithner et al., 2004, p. 9). It indicates the presence of a problem or condition and helps to understand where we are, which way we are going and how far we are from where we aim to be. It helps us evaluate how well a system is functioning, alerts us when there is a problem and identifies hotspots where an action is required. In urban planning, indicators are used to support all stages of policy-making, from designing policy frameworks, setting goals and tracking progress, to improving communication between government bodies and other actors involved in the process. In addition to providing regular and systematic information on a policy or a development strategy, they provide feedback with respect to obtained results to decision-makers who can use this information to improve performance accordingly (Dizdaroglu, 2019; Yigitcanlar et al., 2015). Indicators need to be scientifically valid, based on available data, responsive to change in the issue of interest, and easily understandable and relevant to the user's needs (BIP, 2011). In the literature, there has been a considerable focus on developing indicator initiatives across multiple scales (e.g., UNSD Sustainable Development Goal Indicators, EUROSTAT Indicators, Europe 2020 Indicators, ISO 37120:2014 Standards, ARCADIS Sustainable Cities Index, WHO Environmental Health indicators, Human Development Index, Switzerland Monitoring Sustainable Development (MONET), UK Government Sustainable Development Indicators, SustainLane U.S. City

Rankings, Community Indicator Projects in the USA/Australia/Canada, London's Quality of Life Indicators, Glasgow Indicators Project, STAR Community Index, Green Star, Green Globes, LEED BREEAM, SITES, CASBEE, BASIX, DGNB, GBI, NABERS, CEPAS, HQE). Even if these initiatives are derived from different datasets and developed at different scales, their common framework is based on addressing the following questions: (1) What is happening to the state of environment and how do humans affect it? (refers to *Descriptive indicators*); (2) What is the current situation? (refers to *Performance indicators*); (3) What can be done to improve the current situation? (refers to *Policy-effectiveness indicators*), and; (4) How do these improvements contribute to our overall welfare? (refers to *Total Welfare Indicators*) (Gabrielsen and Bosch, 2003). Within this context, indicators can be used as performance measuring tools in designing and planning of biophilic cities.

Despite the well-known benefits of biophilic design to human health and well-being, very few cities are systematically implementing biophilic design applications due to lack of practice, technical knowledge, established standards and procedures. This research aims to identify a set of possible indicators for the monitoring of a biophilic city by evaluating the functioning of the components of its ecosystem and the effectiveness of urban policies. The proposed indicator set targets to demonstrate how effectively a biophilic city achieves its goals and objectives as well as constitute a ground for the transformation of cities into biophilic cities by supporting the improvements for proposals of future planning. The research aim is supported by the following research objectives: (1) defining the components of a biophilic urban ecosystem and its design principles; (2) reviewing the international biophilic city practices to develop an indicator-based monitoring system for the performance measurement, and; (3) establishing a self-assessment tool for governments and policy-makers to track their progress on the sustainability of development policies. Therefore, this paper is presented in four sections: Section 1 provides the background and introduction to the study. Section 2 describes the design of the city as a biophilic urban ecosystem by highlighting the importance of using indicators to monitor the progress and evaluating the impact of policy implementation. The potential monitoring indicators are outlined in Section 3; and finally, Section 4 provides a summary and some concluding remarks.

2. DESIGNING THE CITY AS A BIOPHILIC URBAN ECOSYSTEM

The term 'biophilia' is derived from Greek roots, meaning 'love of life and living things'. It was coined by social psychologist Erich Fromm and then popularised and defined by Edward O. Wilson as *"the innately emotional affiliation of human*

beings to other living organisms. Innate means hereditary and hence part of ultimate human nature" (Wilson, 1993, p. 31). Wilson's concept of biophilia was developed by social ecologist Stephen Kellert and served as a basis for the works of some environmental scholars who considered the application of this idea to urban planning and contributed to the creation of 'Biophilic Urbanism'. The notion of 'Biophilic City' is described by Beatley (2011, p. 17) as:

A city with abundant nature and natural systems that are visible and accessible to urbanites. It is certainly about physical conditions and urban design – parks, green features, urban wildlife, walkable environments – but it is also about the spirit of a place, its emotional commitment and concern about nature and other forms of life, its interest in and curiosity about nature, which can be expressed in the budget priorities of a local government as well as in the lifestyles and life patterns of its citizens.

At multiple scales, implementation of biophilic design may be as follows: (1) *building* – e.g., green roofs, green atriums and sky gardens, green walls, interior spaces receiving daylight; (2) *block* – e.g., green courtyards, housing clustered around green fields, yards and spaces of native species; (3) *street* – e.g., gardens around pedestrian ways, urban trees, Low Impact Development (LID), vegetated swales, and skinny streets; (4) *neighbourhood* – e.g., restoration of water streams, urban woodlands, ecological parks, community gardens, pocket and neighbourhood parks; (5) *community* - e.g., urban creeks and riparian regions, networks of urban ecology, green schools, orchards/forests for the community; and (6) *region* - e.g., estuary systems and flood plains, regional parks and greenspaces, greening of essential transportation corridors (Beatley and Newman, 2013). Beatley (2011) claims that when compared to a green city, a biophilic city is more extensive, and further suggests that a biophilic city consists of the qualities including, infrastructure and physical conditions; residents' activities, attitudes and knowledge; funding, budgeting commitments and government's priorities. More and more in recent years, cities are increasingly developing and implementing biophilic design strategies (The Biophilic Cities Project, n.d.). Table 1 presents various biophilic design strategies successfully implemented in selected cities.

Table 1. Selected Biophilic Cities and Their Design Strategies

City/Country	Implemented policies, plans and programs
Singapore	The Singapore Green Plan 2012
	National Parks Board (NParks)
	The Garden City Fund
	BIOME
	CUGE (The Centre for Urban Greenery and Ecology)
	Singapore Botanic Gardens
	Singapore Garden Photographer of the Year
	Rail Corridor
	Singapore Garden Festival
	Skyrise Greenery
	Trees.sg
	Gardens by the Bay
	The BCA Green Mark Scheme
Birmingham, United Kingdom	Birmingham's Green Commission
	Green Living Spaces Plan
	Nature Conservation Strategy
	Birmingham and Black Country Biodiversity Action Plan
	Liveable Cities Project
	Active Parks
	Green Commission's 'Making Birmingham Greener Healthier" awards
	EcoRecord
Pittsburgh, Pennsylvania, USA	Pittsburgh Parks Conservancy
	Phipps Conservatory and Botanical Gardens
	Open Space, Parks, and Recreation Plan (OpenSpacePGH)
	Tree Pittsburgh
	Sustainable Pittsburgh Initiative
	Pittsburgh Climate Action Plan
	Bike Pittsburgh Strategic Plan
	Venture Outdoors
Austin, Texas, USA	The Imagine Austin Comprehensive Plan
	Urban Forest Plan
	The Balcones Canyonlands Preserve
	NeighborWoods

	My City's Trees
	Brush Pick Up
	Connecting Children to Nature Initiative
	Watershed Protection Master Plan
Milwaukee, Wisconsin, USA	ReFresh MKE (City of Milwaukee Sustainability Plan)
	Urban Ecology Centre
	Centre for Resilient Cities
	Milwaukee County Parks Strategic Plan
	Troy Gardens
	Alice's Garden
	Cream City Gardens
	Brown Street Academy Schoolyard Greening project
	Groundwork Milwaukee
	Home Grown Milwaukee
San Francisco, California, USA	Green Connections Network
	Ecology Guides
	SF Plant Finder
	Blue Greenway
	Street Parks
	Better / Living Roofs Program
	Standards for Bird-Safe Buildings
	Urban Forest Plan
	Friends of the Urban Forest
Wellington, New Zealand	Towards 2040: Smart Capital
	Climate Change Action Plan
	Our Living City
	Biodiversity Strategy and Action Plan
	An Open Spaces and Recreation Framework for Wellington: 2013–23
	Outer Green Belt Management Plan
	Wellington's 'Blue Belt'
	Two Million Trees project
	Piloting 'Living Walls'
	ZEALANDIA urban ecosanctuary
	Otari Native Botanic Garden and Wilton's Bush Reserve
	Urban Agriculture Projects

Indicators are one of the strongest communication tools in design for the provision of a resilient and sustainable human-nature relationship, and contribute to policy development, implementation and evaluation in many ways. They: (1) assess the current state of the environment; (2) highlight emerging problems by addressing the effects of human activities on natural systems; (3) draw attention to the impact and effectiveness of current policies; and (4) support policy development for the environmental protection and sustainable management of urban ecosystems. The types of indicators and their level of detail are very important and are dependent on the context of their use (Dizdaroglu, 2016). With the help of relevant indicators, the biophilic qualities of a city can be measured, and can also be expressed as targets/goals in the design of a biophilic city. They provide information to local authorities, practitioners, communities and other relevant actors when evaluating the level of their success and progress over time. During the process of selection of biophilic urban ecosystem indicators, an extensive review of the literature on biophilic city initiatives is conducted based upon an international literature review and analysis of "grey" literature such as documents published by international organizations, governmental agencies and research institutions available on the internet. Published, peer-reviewed literature is searched using Scopus and the Web of Science databases, while Google is used to search the grey literature. The following keywords are used for searching the literature: "biophilia", "biophilic design elements", "biophilic city", "biophilic urbanism", "biophilic urban ecosystem" and "biophilic design practice".

A conceptual framework is required for the building of a coherent set of indicators that guides the indicator selection process and helps to organise indicators in a structured and meaningful way. In the present study, the city is considered as an ecosystem, and therefore the term 'Biophilic Urban Ecosystem' is used instead of 'Biophilic City'. The conceptual framework of the proposed indicator set is built on the components of an urban ecosystem, which is described as *"a dynamic complex system of biophysical and human interactions that evolve through feedback loops, non-linear dynamics and self-organisation"* (Alberti, 2008, p. 20). It consists of four components: (1) *biotic environment* – including all living organisms within an ecosystem; (2) *physical environment* – including non-living components such as water, air, soil, climate, etc.; (3) *built environment* –composed of buildings, pavements and other man-made structures; and (4) *social environment* – referring to the health and wellbeing of the residents living in the urban ecosystem. The following section provides a description of the proposed indicator set related to each component (Table 2). Each indicator will be scored by a pointing system. The scoring range will be based on one point assigned per each effort. Additionally, normalization method will be employed to the indicators with

different units (such as % or dBA) to remove the scale effects of different units by converting the original unit into a pointing system. Finally, the performance level of each city will be indicated by how many points they have earned. The data sources for indicators will include literature review, government agencies, city municipalities, NGOs, academic institutions, research groups and satellite imagery.

Table 2. Key Indicators of a Biophilic Urban Ecosystem

Components of the Urban Ecosystem	Indicator name	Description
Biotic Environment	Establishment of a resilient ecological network	The ratio of the total area of connected green spaces to the total area of green spaces in the city and multiplied by 100
	Fauna sensitive urban design	The number of implemented fauna-sensitive urban design features
	Flora sensitive urban design	The number of implemented flora-sensitive urban design features
	Governance of biodiversity conservation	- The number of biodiversity conservation-related policies, rules and regulations - The number of biodiversity research and projects employed by the local authorities
	Environmental education and public awareness	The number of existing initiatives, institutions and activities related to environmental education and public awareness
Physical Environment	Climate change mitigation	The total area of forest cover change within an urban area
	Improved air quality	The annual change in the number of local bird species
	Healthy water systems	Macroinvertebrates survey (Taxa recorded in the water)
	Soundscape quality	The quality of soundscape through measuring noise levels that are associated with various urban green spaces
	Soil quality	The number of implemented vacant land greening projects, that aims to create ecologically valuable areas

Built Environment	Climate responsive urban design	The number of projects applied for climate-responsive urban design
	Green building design	The number of green building projects
	Green transportation	The number of green transport initiatives
	Green infrastructure	The number of green infrastructure projects
	Green consumption behaviours	The implementation of strategies that encourage green consumption behaviours
Social Environment	Opportunities for physical activities	The opportunities that promote physical activity in green spaces
	Socially inclusive community	The efforts taken by the city management to create a socially inclusive community
	Access to fresh and healthy food	The accessibility to fresh and healthy food sources

3. INDICATORS OF A BIOPHILIC URBAN ECOSYSTEM

3.1. Biotic Environment

In this category, the proposed indicators are utilized to measure the progress made in reducing impacts of human activities on biodiversity; approaches to preserving and restoring ecological functions; the efficiency of available conservation policies, rules and regulations; and efforts in environmental education and in the raising of public awareness.

- *Establishment of a resilient ecological network*

To conserve the biodiversity and ecological integrity of urban areas, the connectivity of green spaces should be promoted through establishing ecological networks. Bennett and Wit (2001, p.5) defines an ecological network as *"a comprehensive system of natural and/or semi-natural landscape elements that is structured and managed with the aim of preserving or restoring ecological functions through conserving biodiversity, meanwhile delivering appropriate opportunities for the sustainable use of natural resources"*. Building a sustainable and resilient ecological network maximises ecosystem services while mitigating the habitat loss and fragmentation associated with human activities. This indicator is calculated by the ratio of the total area of connected green spaces to the total area of green spaces in the city and multiplied by 100.

- *Fauna-sensitive urban design*

Maintaining habitat corridors for the movement of wildlife across roads or other man-made infrastructures is one of the keys to the conservation of biodiversity. Wildlife crossing structures, including underpass tunnels, overpasses, canopy bridges, tunnels and culverts, are designed to reconnect habitats and to provide a safe crossing path for wildlife. Fish ladders, placed on or around such constructed barriers as dams, help in fish migration, while bird-friendly building designs are necessary to prevent bird collisions and mortality. Light pollution at night should be avoided to protect the migratory and breeding patterns of wildlife. Creating habitat steppingstones for wildlife in back yards, patios and balconies, and the use of green walls and roofs also promote ecological interactions in cities. Suggested habitat interventions include providing floral diversity for food and shelter, birth baths, fountains and pools, nesting boxes, rocks, brush/log piles, bee walls and insect hotels. This indicator measures the number of implemented fauna-sensitive urban design features.

- *Flora-sensitive urban design*

Landscaping with native plants offers many benefits. Being adapted to the local environmental conditions, they require less maintenance, while also being resistant to diseases and pests, attracting pollinators and accommodating wildlife. Sidewalk landscaping is an essential component of the urban ecosystem. Specifically, street trees not only provide a wildlife habitat, but also come with many environmental and social benefits. Residential gardens create a significant habitat for threatened and endangered native species. Tree protection policies should be developed in order to keep trees in good health through the mitigation of damage caused by construction works. As a new concept 'Urban Rewilding' helps in the creation of space for biodiversity in urban areas. Developing a network of rewilding sites within the city can allow the reintroduction of extinct species by creating an environment in which they can thrive and disperse. This indicator measures the number of implemented flora-sensitive urban design features.

- *Governance of biodiversity conservation*

Formulating and implementing effective policies, rules and regulations aimed at sustainable biodiversity is a fundamental principle of good governance. Such policies, rules and regulations should provide different levels of protection, while ensuring the long-term conservation of natural resources. For instance, a 'Biodiversity Strategy and Action Plan' is mandatory prior to setting targets and strategies for the management of protected areas and other ecologically important natural assets, as well as a Nature Conservation Strategy, Endangered

Species Protection Regulations, an Urban Forest Strategy and a Green City Plan. Furthermore, annual government budgets, public or private donations, and grants are crucial forms of financial support for biodiversity conservation research and projects. This indicator measures the number of biodiversity conservation-related policies, rules and regulations as well as the number of biodiversity research and projects employed by the local authorities.

- *Environmental education and public awareness*

Environmental education improves people's knowledge, perception and attitudes towards the creation of a resilient environment and society. It should start at an early age in schools, where curricula can be supported by biodiversity courses, workshops, nature excursions, planting programs and hands-on learning activities, such as school gardens. By connecting children with nature-based approaches, future generations will be motivated, having gained knowledge and skills in the application of conservation activities. Public awareness events need to be organised to encourage participation in conservation projects. Community involvement can be promoted through the organisation of a variety of biodiversity-based activities, such as annual festivals, exhibitions, workshops, eco-tours, environmental training programs and volunteer projects for all ages. Conservation-oriented institutions (e.g., natural history museums, seed banks, arboretums, botanical gardens, herbaria, insectaria and wildlife sanctuaries) are important for scientific research, educational practices and, most importantly, protecting biodiversity for future generations. This indicator measures the number of existing initiatives, institutions and activities related to environmental education and public awareness.

3.2. Physical Environment

Proposed indicators in this category provides assistance in measuring the physical environment's quality in terms of climate change mitigation, protection of air and water quality as well as the improvement of acoustic environment and soil productivity.

- Climate change mitigation

This indicator measures the total area of forest cover change in urban areas. Urban forest cover is widely promoted as a key indicator of climate change mitigation. Urban forests provide many advantages to communities by means of filtering air, decreasing surface temperatures, reducing energy demand, improving water quality, controlling stormwater runoff, promoting public health and creating habitats for the support of biodiversity. Measuring and studying urban tree cover functions as a key element in coping with future climate change. In

this regard, cities should adopt strategies to protect and increase the urban tree canopy so as to provide healthy and sustainable environments for present and future generations. The diversity, age and size class distribution of the tree species, regional climate, soil and other essential factors that affect tree growth and longevity also need to be considered.

- Improved air quality

Air pollution presents a serious environmental threat to the diversity of life. Not only human health but also the health of all living organisms is affected by the poor air quality. When compared to mammals, bird species are more vulnerable to high concentrations of reactive gases and aerosols in the air due to their unique respiratory systems and so they act as highly effective and sensitive inspectors of air quality (Brown et al., 1997; Sanderfoot and Holloway, 2017). This indicator, therefore, investigates the impact of air quality on bird population richness by measuring the annual change in the number of local bird species. The introduction of new policies and strategies to improve and maintain the presence and richness of bird species is also an important benchmark for the creation of a biophilic urban ecosystem.

- Healthy water systems

A healthy water is a well-balanced system that sustains functioning of the ecosystem and its services, in the meantime, accommodates the health of human beings. This indicator monitors the diversity and number of macroinvertebrates, which are widely recognised as good indicators of the impact of urban activities on water quality (McDonald et al., 1991; Sharma and Rawat, 2009; Agouridis et al., 2015). Some macroinvertebrates (e.g., caddisfly, mayfly, stonefly) are particularly sensitive to physical and chemical changes as well as biological conditions occurring in waterbodies, being less mobile and less able to tolerate contamination. Consequently, macroinvertebrate surveys can be used to determine the success of efforts to transform cities into biophilic urban ecosystems.

- Soundscape quality

As stated by Elmqvist (2013), *soundscape* refers to not only the natural acoustic environment involving sounds of nature, i.e., animal sounds, sounds made by trees, water sounds, sounds pertaining to weather but also ambient sounds made by human beings, i.e., musical composition, sound design, sounds created by various human activities such as activities creating mechanical sounds originating from the utilization of industrial technology. The evaluation of soundscape can be used to assess the biophilic quality of an urban environment. Several studies have shown that natural sounds (e.g., rustling leaves, bird song and water sounds) in urban greenery mitigate the impacts of unwanted sounds

such as road traffic or construction noise (Gidlöf-Gunnarsson and Öhrström, 2007; De Coensel et al., 2011; Jeon et al., 2012; Galbrun and Ali, 2013; Radsten-Ekman et al., 2015; Hao et al., 2016; Hedblom et al., 2017). Contact with nature also influences human's physical health and psychological wellness by promoting peacefulness and relaxation. This indicator analyzes the quality of soundscape through measuring noise levels that are associated with various urban green spaces.

- Soil quality

According to Doran and Parkin (1994), soil quality can be defined as *"a soil's capacity to function within an ecosystem, and land-use boundaries to maintain biological productivity, support environmental quality, and promote plant and animal health"*. Soil is a vital resource for healthy ecosystems, and there is an increasing need to protect soil quality to improve biodiversity and the many services provided within the ecosystem by soil biota. Soils suitable for growing native plant species need to be protected within the city. Vacant lands and other neglected spaces with good soil quality support plant growth and development, and so can be transformed into vibrant green spaces such as community gardens, urban farms or educational gardens. Therefore, this indicator measures the number of implemented vacant land greening projects, that aims to create ecologically valuable areas.

3.3. Built Environment

Indicators that are being proposed in this category measure the built environment's quality with regards to climate responsive urban design, sustainable building design, green transport, green infrastructure and green consumption.

- Climate-responsive urban design

Rapid urbanisation has a huge impact on climate, causing extreme weather events, increased surface temperatures and greenhouse gas emissions, while also threatening biodiversity. Biophilic design addresses these challenges by promoting the design of comfortable and healthy environments through the incorporation of climatic parameters into the process of urban planning. These climatic parameters which include temperature, wind, humidity, precipitation and solar radiation should be kept in mind particularly when designing the urban built environment and morphology, the building typology and green spaces (Amado et al., 2016). Among the main advantages provided by climate-responsive urban design; energy efficiency, urban heat island effect mitigation, improvements in both thermal comfort and quality of environment may be given as examples. This indicator measures the number of projects applied for climate-responsive urban design.

- Green building design

This indicator investigates the number of green building projects. Green building rating tools minimise the negative impact of buildings during the design, construction, maintenance, renovation and demolition stages. Major categories in this regard include sustainable sites, water efficiency, energy/atmosphere, materials/resources, indoor environmental quality and landscape design (Chen et al., 2015). Recently, several green building programs have started to integrate biophilic design standards into their assessment scheme, such as the Living Building Challenge, the WELL Building Standard and LEED. Furthermore, the application of biomimicry in architectural design (also applicable in various fields including; energy, transport, agriculture, medicine, etc.) is an emerging practice that refers to the emulation of an organism, along with that particular organism's behaviour or an ecosystem's aspects with regards to pattern, matter, method or process of construction or function.

- Green transportation

This indicator investigates the green transport initiatives in the city. Green transportation aims to minimise car use, and to reduce traffic congestion and the environmental damage caused by transport. Being a cost-efficient, pollution-free, land resource- and space-saving transport system, green transportation is convenient for the use of all types of travellers. Cycling and walking are both essential components of a green transport strategy. In order to provide better life quality to residents, designing highly accessible, interconnected and adequate green spaces including bike paths and pedestrian ways is crucial. Other modes of green transportation include public transport, electric vehicles, hybrid cars, biofuel-powered buses, and so on. Moreover, wind-powered cars, and solar-powered trains, boats and planes are ongoing projects that promote clean technologies for a sustainable future (García-Olivares et al., 2018).

- Green infrastructure

This indicator investigates the number of green infrastructure (GI) projects. It includes both engineered and natural environmental systems that can be implemented at various scales (Pauleit et al., 2019). On a small scale, GI reduces the pressure on buildings through green roof systems, roof gardens or living walls. GI manages stormwater runoff by using permeable hardscapes in parking lots, driveways and sidewalks. In landscape design, GI can take the form of rain gardens, bioretention systems, vegetated swales, constructed wetlands or street trees. Large-scale GI, on the other hand, such as urban parks, forests and green riverbanks, promote habitat and wildlife conservation. Grey water reuse and rainwater harvesting systems are important GI practices for the creation of a

water-sensitive city. Lastly, rehabilitating and restoring degraded landscapes, in other words, transforming brownfields into green spaces, can make a tremendous contribution to strengthening the functions and services of the ecosystem in urban areas.

- Green consumption behaviours

This indicator investigates how the city encourages its citizens to adopt greener consumption behaviours. A biophilic urban ecosystem requires the implementation of strategies that encourage green consumption behaviours (GCB), as a concept that refers to a broad range of environmentally responsible purchasing and consumption practices. Barr et al. (2005) categorise GCB into three main groups: (1) purchase decisions (e.g. buying energy efficient appliances, consuming locally produced foods, avoiding aerosol products or toxic detergents); (2) water and energy saving habits; and (3) reusing or recycling. Psychological factors such as perceived consumer effectiveness (i.e. the belief that the consumer's individual efforts can make a difference for the protection of the environment), self-efficacy, social responsibility, price, and health and safety issues influence consumption patterns (Gilg et al., 2005). Also, the environmental knowledge of consumers and green advertising stimulate their attitudes towards and intentions to buy green products.

3.4. Social Environment

In this category, the proposed indicators are utilized to measure the quality of the social environment regarding strategies that promote physical activity in green spaces, efforts to create a socially inclusive community, and access to fresh and healthy food.

- Opportunities for physical activities

This indicator examines the opportunities that promote physical activity in green spaces. Studies conducted recently demonstrated several different health benefits offered by Urban Green Spaces (UGSs) (Faber Taylor and Kuo, 2011; Beil and Hanes, 2013; Bell et al., 2014; Grazuleviciene et al., 2015; Annerstedt van den Bosch et al., 2016; Beatley et al., 2018). In a biophilic urban ecosystem, UGSs should offer opportunities for physical activities, such as multiple sports fields, outdoor courts, playgrounds for children and seniors, fitness stations, bike paths and walking/jogging circuits. Furthermore, the quality of UGSs strongly affects usage patterns. The richness of vegetation and the presence of wildlife, the existence of water bodies and diverse amenities for all social groups, easy and direct accessibility, and high levels of maintenance, safety and security influence the frequency and duration of visits and further enhance urban environment's quality.

- Socially inclusive community

This indicator examines the efforts taken by the city management to create a socially inclusive community. Social interaction is important for people of all ages and abilities (i.e., universal design). Designing accessible, inclusive and attractive UGSs enhances social networks and builds a strong sense of community (Mace et al., 1996). Some examples of community involvement efforts that UGSs offer are: (1) park activation programs, such as nature walks, outdoor exercise programs, festivals, concerts and film screenings; (2) voluntary works in which residents can participate to clean up parks and plant trees; (3) after school activities or seasonal outdoor programs for children and young people; (4) establishing safe and supervised parks for disadvantaged groups; and (5) therapeutic landscapes and healing gardens for the treatment of mentally, physically and emotionally challenged people. In addition to UGSs, a city needs to include other biophilic spaces where people with various social and ethnical origins to come together, interact with each other and build relationships accordingly. Safe and socially cohesive neighbourhoods increase the use of these spaces, resulting in lower violence and crime rates.

- Access to fresh and healthy food

This indicator measures the accessibility to fresh and healthy food sources. A biophilic urban ecosystem helps to promote access to fresh, healthy and low-cost food through creating possibilities for the local food production. As part of the local food infrastructure, urban agriculture can be encouraged through community gardens, urban orchards, city farms, institutional gardens, commercial farms, backyard gardens, and vertical and rooftop farming. The benefits of urban agriculture are numerous, from improving human nutrition and health, to supporting the local economy and biodiversity conservation. Urban agriculture also contributes to the building of social networks, as well as food education and awareness. Local governments play a crucial role in increasing community food production and creating healthy communities in terms of the development of policies and plans aimed at supporting production, processing, distribution and waste management processes.

4. CONCLUSION

As the world population continues to urbanise at unprecedented rates, health risks resulting from poor environmental quality increase, and at the same time, new hazards to health are being introduced in urban areas, such as those that are: (1) *air pollution related* – acute and chronic respiratory illness, asthma, lung cancer, cardiovascular disease, neurobehavioral effects; (2) *water pollution related*

– tropical diseases, malaria, schistosomiasis, typhoid, cholera, polio, filariasis, hepatitis A, yellow fever and other viral, bacterial and parasitic diseases, gastroenteritis, eye, ear and skin infections; (3) *soil pollution related* – cancer, nervous system damage, neuromuscular blockage and depression of the central nervous system, kidney and liver damage; and (4) *noise pollution related* – sleep disturbance, cardiovascular effects, poorer work and school performance, hearing impairment (WHO, 2002). These health problems are leading the search for nature-inspired solutions.

It is well documented that the conservation and enhancement of natural assets in urban areas is vital, for numerous reasons, involving climate change mitigation, improved air quality, energy conservation, stormwater management, reduced risk of natural hazards, biodiversity conservation, and most importantly, improved health and the quality of urban life. As stated by Beatley (2016, p. 3):

Human beings require to be in contact with the nature and the environment of nature surrounding them. Their environment needs to be flourishing, joyful, fruitful and to lead meaningful lives. Nature cannot be optional. It is a crucial qualification of the modern urban life. In cities, preservation and restoration of existing nature that already exists and discovering or creating ways to grow and introduce new nature forms are paramount challenges of the twenty-first century.

Based on this perspective, there is a need to develop and implement biophilic design strategies to promote green and healthy environments.

Indicators play an important role in informing local authorities, practitioners, communities and other relevant actors about the state of the environment, whether it is improving, worsening or being maintained without change, and in providing information of any changes. Indicators are categorised in many ways; however, it is performance indicators that play an important role in policy formulation, demonstrating how effectively a city is progressing towards an intended goal. In this regard, this study proposes a group of performance indicators for monitoring the performance to observe and assess a biophilic urban ecosystem's qualities, and functions as a series of 'design principles' for guiding future development plans. These indicators represent an initial attempt to develop a monitoring system for the investigation of the success of targets and goals related to the creation of a biophilic urban ecosystem. Establishing performance targets for the assessment of progress and developing these even further to test the set of indicators in a pilot study can be considered as a future research direction.

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THE RELATIONSHIP BETWEEN SOCIO-CULTURAL AND ENVIRONMENTAL DEVELOPMENT: SUSTAINABILITY OF LOCAL CONSTRUCTION CULTURE AND CRAFTS

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ABSTRACT

Integrative sustainability of vernacular architectural structure, which provides significant knowledges about cultural values to transfer next generations, is related with usage of natural sources, accessibility of local materials and adaptation of crafts to recent conditions. The physical conditions, existing in the nature of place, give form to socio-cultural life as well as local construction culture. Systematic preservation of local construction culture and crafts enables to observe socio-cultural and environmental values on traditional architectural pattern. The usage of the local materials, which is an important part of the natural resources, by craftsman, provides to come up with the original details in the traditional pattern. This local production style that consider to physical and social usage, diversifies the unique traditional construction details.

Materials that are formed depend on the geographical features and climatic conditions create traditional architectural patterns by being detailed with knowledge, ability and experiences of the local constructors and craftsmans. Today, to be able to comprehend these architectural patterns which are formed with local labour and sources, new methods should be developed. Solutions, which will be comprised with association of architectural preservation discipline and other disciplines that are about humans, may support the sustainability of the traditional heritage. Continuance of the field works to preserve traditional architectural pattern in selected area, reveals the usage of local materials and application style of the local construction culture in today's conditions. In this regard, a fieldwork had been done on usage of local materials and local construction culture in Birgi rural by considering its socio-cultural values and

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environmental conditions. In these fieldworks, interviews with local residents and constructors who live in Birgi rural has been done.

Since Birgi is involved within the boundary of archaeological and natural sites and accepted to the UNESCO World Heritage Candidate List, its recognition has increased throughout the country and restoration works have been accelerated. Tourism activities, developed in Birgi rural during the recent years, have enhanced efforts to return to the local culture in accordance with financial concerns. Local construction culture require to be positioned in a contemporary language to sustain socio-cultural values and physical conditions.

Keywords: Sustainability, Local construction culture, Architectural conservation, Vernacular architecture, Birgi

1. INTRODUCTION

The uniqueness of the identity is first perceived by the visual and auditory senses (Deniz, 2004). According to Birol, the identity of the city is consist of the values that makes a city different from the others (Birol, 2007). Conserving, protecting and sustaining the cultural values of societies and local identity of the built environment, while maintaining their meanings, are the main factors that reinforce the cultural identity of a given place. In order to sustain these values in a holistic perspective, it is necessary to have a well understanding of authentic sociocultural structure and environmental conditions of the place. The authentic climatic conditions, the diversity of the living creatures and the characteristics of the earth's surface are influential factors that forms the local construction culture and the social life in a given place. To protect the local values of a city or town in a sustainable way, it is crucial to determine and apply methods that consider the sociocultural identity and authentic atmosphere of the place. In accordance with this purpose, a multi-disciplinary approach with inclusion of local people in key and active roles in the process should be adopted.

Thanks to cultural cumulation, the values of the historical cities are interwoven with the existing context of the place. From past to present by existing in social life, traditions, rituals, crafts and local forms of arts underlie the main channels of this cultural background and cultural cumulation. As a form of traditional crafts, presence and maintenance of local construction culture that exists in historical texture can be considered as concrete example of this claim. The process of transformation of local materials into authentic local construction is valuable. Main factors that makes this transformation process valuable are way that craftsmen use their labor, their knowledge, their skill and experiences. Therefore, to conserve tangible and intangible cultural heritages and to carry them into future, individuals who are part of the society and built these values, and the

individuals from different disciplines who feel responsible to protect these values should take joint actions.

Examples of local construction culture, which traditional crafts practiced skillfully, reflect the traces of sociocultural life. Restoration of the constructions would not be enough to protect the authentic meaning of these traces and to carry them into future. The approach that emphasizes the inseparability of cultural practices in social live from construction culture should be adopted. Today, any conservation works should be carried out by taking this holistic approach into consideration.

Principles of sustainability based on the interaction of three different main subject, which are economic, social and environmental issues (WCED, 1987). In our country, many areas with historical texture are abandoned due to the negative effects of economic or environmental conditions. Birgi rural located in Ödemiş district of İzmir, which is determined as the example area of this study, is a historical settlement area where both the efforts to protect the historical texture are continued and the social life continues despite the immigration of the existing young population. The settlement, where conservation and planning studies started early compared to many historical textures, has been able to protect its architectural characteristics until today. In this context, local construction techniques and materials used in the past can be associated with today's techniques. Throughout the study, the sustainability of tangible and intangible cultural heritage, in terms of crafts and local construction culture, will be discussed through traditional texture of Birgi.

2. CONCEPT OF SUSTAINABILITY

2.1. Concept of Sustainability, Sociocultural Development and Architectural Conservation Relation

Quality and dimension of the production style, which performed in early history of humanity, did not have a negative impact on society as much as today. Along with the resource usage and production mechanism of the Industrial Revolution, which adopts the concept of capitalism, negative effects on natural environment and human life have caused reaction. Since 1960's, many researches have focused on these negative effects such as; "*The Limits of Growth*" (1972), United Nations Environmental Program and the World Conservation Strategy (1980), Brundtland Report titled "*Our Common Future*" (1987), the United Nations Conference on Environment and Development (1992), Fifth Environmental Action Program of the European Union (1992), International Conference on Population and Development (1995), Second United Nations Conference on Human Settlements (Habitat II-1996), Rio+5 Forum (1997) and Sustainable

Development Conference (2002). Brundtland Report and United Nations Conference on Environment and Development, which developed and presented in Rio, are both concentrated on defining the aim of "sustainability" (Tekeli, 2013). Studies which, are related with the concept of sustainability, have diversified with Brundtland Report and many definitions have been made about sustainability. Brundtland Report describes the sustainable development as; considering the needs of next generations while meeting today's needs (Şen-Kaya-Alpaslan, 2018). In the dictionary of urban science terms, the concept of sustainability described as a worldview that aims to provide economic development while taking into consideration on usage of the environmental values (Keleş, 1980). In accordance with this purpose, a practicable sustainability approach requires following a balanced process in the environmental, social and economic issues. Architectural conservation discipline also aims to produce solutions, which consider these three main issues in all cultural environments but especially, in rural heritage sites.

Developed countries pay regard to protection of intergenerational rights on issues that related to sustainable development. However, in developing countries, where the inequality between rural and urban still continues, mostly focus on the recent problems of living (Tekeli, 2013). Ovalı and Delibaş (2016), associate this problem to the rapid socio-cultural changes in developing countries. Environmental and economic problems in rural areas of Turkey make difficult to protect socio-cultural values, which are significant parts of traditional life. From this point of view, development plans that are prepared for the rural settlements should be more sophisticated in socio-cultural, economic and environmental issues (Özcan and Akci, 2016). Besides, tangible and intangible cultural heritage components that exist in inherent characteristics of traditional life and social-cultural dynamics should form the fundamental principles of conservation works. In this way, it is possible to develop sustainable conservation methods that are suitable for recent conditions and carry socio-cultural values from the past to the future.

2.2. Sustainability of Local Construction Culture and Traditional Crafts

According to Arpacıoğlu, the rural settlements have a rich local construction culture that contains the local construction materials, which reflect the physical and cultural characteristics of these settlements. Rural settlements are also a significant connection for a society between the past and today, because it shows how socio-cultural life was practiced originally in the past. Vernacular architecture is also an important part of this cultural background, which reflects the living of old people (Arpacıoğlu, 2016).

According to Kuban, local architecture is that built organically by the owners or having built by a craftsman in accordance with the understanding of local construction culture (1995). This natural process in the formation of local construction culture includes the tangible values of the region such as art, craftsmanship and architecture, as well as intangible values such as tradition and identity. Craftsmen, who play an active role in maintaining these values, are treasures in terms of transferring the traditional construction style, master-apprentice relationship, the usage of authentic materials, traditional detail technics and the characteristics of the local cultural identity. However, since recent systems give priority to global and industrial construction style, local construction culture and crafts are at risk. Thus, sustainable conservation implementations aiming to sustain the tangible and intangible values of the architectural heritage have to consider the continuity of the local construction culture and its actors.

Associated with the changing today's conditions, interests and production industry have become different with compared to the past. This rapid change, which we can observe through the consumption habit in the cities, appears as discontinuance of master-apprentice relationship and leaving craft spaces abandoned in the rural areas. In this context, the rural settlement of Birgi, which has been continued its inhabiting characteristic since the 18th century, is an important case to question the sustainability of both the local construction culture and the crafts, and their contribution to the conservation of the heritage place. Within the scope of this study, local construction culture and traditional crafts that encounter in the socio-cultural structure of Birgi will be evaluated within the context of architectural conservation.

3. BIRGI

Birgi is located on the foothill of Bozdağ, on the east side of Küçük Menderes River, in the Ödemiş district of İzmir. It is a small settlement built on a chain of valleys extending along the north-south direction. The settlement is surrounded by Bozdağ in the west, Gökcen Mountain in the east and Ödemiş settlement in the south (Gülhan, 2016). Birgi stream, which passes through the middle of Birgi, divides the valley into branches and has been effective in shaping the physical environment of the settlement. Besides, the sloping landform of Birgi, has been a determining factor in the lot organization, the formation of streets and the distribution of neighborhood. Birgi, consists of nine neighborhoods including Cami-i Kebir, Cumhuriyet, Kurt Gazi, Sasalı and Taşpazar.



Birgi Stream (Altundal, 2019)



Residantel Settlement in Birgi (Altundal, 2019)

Topography and geographic location shape the physical structure of the settlement, where Mediterranean climate characteristics are effective. The climate and mineral structure of the soil have also determined the natural vegetation of Birgi and its surroundings, and the economic structure that based on the agriculture. Olives, figs and grapes were significant agricultural products that grown in the region and played an active role in the socio-economic structure.

3.1. Birgi in History

From past to present, water resources, existence of agricultural lands, topographic structure of land and defense mechanism have been effective in the formation of settlements. The settlement of Birgi, which dates back to 3000 BC, has hosted Lydian, Persian, Hellenistic, Pergamum, Roman, Byzantine, Aydınoğlu Principality, Ottoman Empire and Republic of Turkey. In this historical process, different cultural and physical formations belonging to each community have transferred today and contributed to the tangible and intangible cultural values of Birgi.

Though it hosted many civilization since 3000B.C., the most significant historic period was the period of Aydınoğullları Beyliks. Birgi, became an administrative center during this period and many monumental structures such as were constructed. The city was an important center for economic activities, especially in the field of silk weaving which caused an important movement in its crafts and trade activities (Altınoluk, 2007). According to the tax information sources of Ottoman period, Birgi continued its development until the beginning of the 17th century, and due to the commercial interrelations the craft activities were gradually increased. During this period, great incomes have also gained from olive oil production. Until the first half of the 18th century, leather trade has also

carried out with France and Italy, and many tanneries along the Birgi stream were constructed. However, due to the social and political disorder that was effective in the whole of the Ottoman Empire in the first decade of the 17th century that called "Celali Rebellions" caused an important turning point in Birgi's spatial, economic and functional development. The income of the settlement from agricultural activities and crafts has decreased significantly. The city entered a spatial and economic restructuring process in the late 17th century. Besides, due to the construction of the Aydın-İzmir railway in the 19th century Birgi that located far from the railway line started to lose its socio-economic importance and became a settlement affiliated to Ödemiş (Gülhan, 2016).

The second historic threshold for the settlement was the war of independence happened in the country in the early 20th century that caused not only social, but also cultural, economic and physical changes and loss. In 1922, after the War of Independence, a fire outbreak in Birgi, as in many parts of İzmir. Birgi has lost many cultural heritage values in this fire. After the big fire, some neighborhoods were rebuilt based on the local characteristics. However, the flood disasters in 1939 and 1946 and the earthquake in 1944 caused important changes in the traditional fabric of Birgi. Many monuments and civil architecture samples have damaged during these disasters. Despite all these disasters, Birgi has been able to conserve its multi-layered cultural structure until today.

3.2. Demographic Structure of Birgi

Until the 19th century, Birgi's population increased in parallel with the developing industry and trade. In the beginning of this century, wars, earthquakes and flood disasters affected the population development negatively. On the other hand, the location of the settlement that is away from the İzmir-Aydın railway line, protected Birgi from an early urbanization process and immigration. Furthermore, due to the loss of its former commercial importance, the young population emigrate to the nearby cities for work and education. As a result, Birgi has become a residential area where the majority of the population is elderly.

According to the data in the public improvement report prepared inyear of, the population of Birgi was 2490 in 1935, 3235 in 1940 and 2799 in 1944 (Gülhan, 2016). In Address-based population registration system, the population of settlement was 2061 in 2011 and the average age was forty years and above due to migration of young population. According to the data of 2004, the population of the settlement was 2551 with has 950 people aged fifty and over, and 651 people aged sixty-five and over. In consideration of these datas, the eldery population is predominant in Birgi with a great percentage of 63% (Gümüşoğlu, 2008). According to the data in the Turkish Statistical Enstitute the population of

Birgi was 1894 in 2018 (URL-1). Having a stable population structure provides Birgi to conserve its local architectural fabric. On the other hand, the gradually decreasing young population caused the houses to be abandoned and neglected.

3.2. "Birgi" as a Cultural Heritage Site

Birgi has a significant architectural characteristic with its 18th-century traditional housing fabric and monumental structures belonging to the periods of Beyliks and Ottoman Empire. Moreover, it has hosted different cultural identities and this diversity has also manifested itself in the historic process. Birgi, about which planning studies have been continuously done, has preserved its cultural values since the Republican period. After the1922 fire, many examples of the vernacular architecture and many significant monumental structures were damaged in Birgi. The report that prepared in 1929 with the purpose of revealing the situation after this fire is a significant document for today. However, the primary purpose on this period was to provide new living places for the citiziens instead of conserving the local cultural values. The developing areas of Birgi were planned based on a grid plan (Özcan K. and San, Koç D., 2011). In 1944, the local government decided to organize a competition for the Ödemiş-Birgi Development Plan. Due to the result of this competition, The Urban Planning Department approved the selected development plan in 1945. In the report of the Development Plan of 1945, there is a huge data about Birgi's population, trade and agricultural production. According to the report, the main income of the settlement was based on agriculture, leather and silk production. The report was also containing data on local construction systems and material use, besides the detailed information about the availability of materials such as stone and terracotta used extensively in Birgi's local residential architecture. According to this information, there were proper sources of stones for construction in the river bottom and slate quarries in Bozdağ, besides the suitable soil sources for making bricks around Semit Village, which is 2 km away from Birgi, (Diri, 2010).

The 4th item of the report of the Birgi Develeopment Plan, contains information on the local construction systems and material specifications of the settlement. Moreover, it is stated that, the spatial dimensions should be compatible with the existing vernacular architectural characteristics in the rebuilt construction area. According to the fourth item, one of the most characteristic features of the settlement was the stone construction system of the buildings. The colour of the stone, the style of masonry, the simplicity in the form of the structures, the harmony of the masonry and the wooden parts, the narrow and cool streets that protect people from the heat, the eaves covering the streets, the fountains

placed in the corners of the streets were pointed out as the other significant features of Birgi. In addition to that, the local construction techniques especially the masonry construction techniques were proposed to be used in reconstructions with the adapted methods from the past. In this Development Plan, the street-courtyard relationship and architectural functions of vernacular Birgi houses was also mentioned. In brief, the given decisions of 1947 Development Plan ensured the sustainability of the local construction culture of Birgi.

Another important period for the preservation of Birgi was 1970's. Çakırağa Mansion was registered as a cultural entity in 1973, 136 civil architectural works and 25 monumental-public buildings were registered. After than, the historic fabric of Birgi was registered as a protected area, including urban, archaeological and natural sites in 1977 (Gülhan, 2016). Since than, the borders of the protected site have changes until 2012 and many decisions have been taken regarding its preservation.

According to "Birgi Conservation Development Plan" prepared by Türkoğlu and Uzel in 1996, not only black pine and red pine forests but also chestnut, poplar, walnut, and pistachio trees were observed in the regions of Birgi. Due to this finding, the site has declared as a 1st degree natural asset and taken into protection. Besides, to protect the construction culture of the region, it was emphasized that the traditional materials should be used in the restoration of existing pedestrian ways while the conventional materials should only be used on new constructed roads. Moreover, the restoration of registered / unregistered civil architecture samples such as garden walls, garden doors, and porches should be built with traditional materials. As a result of these statements, it was decided to rebuild the damaged areas in harmony with the local architectural character of the settlement. As a result of the characteristic heritage sites of the settlement and the efforts to conserve these values, Birgi was nominated for the UNESCO World Heritage Temporary List in 2012.

Today, according to the latest inventory records of İzmir No.2 Regional Board Directorate for the Protection of Cultural Heritage; Birgi's historic fabric consists of 50 monumental buildings and 208 civil architectural samples, where all these buildings are located as a whole and forms its fascinating urban fabric. These cultural assets contain many data in the context of local construction culture and crafts. Therefore, the continuity of Birgi's environmental and socio-cultural values can only be possible by ensuring the sustainability of local construction culture and crafts besides the sustainability of the physical features of the heritage place.

3.3. Vernacular Residential Architecture and the Construction System in Birgi

The vernacular residential fabric of Birgi has been shaped with significant features such as street-building and building-lot relations. Due to the fourth item of the 1947 Development Plan of Birgi, there are three types of building-lot relations in the settlement. These types were based on the position of the open spaces and classified as; buildings with backyard, buildings with courtyard and buildings with backyard and courtyard.

When the pattern of traditional houses and their street-garden relations are analyzed, it is observed that the main factors are climate and topography. As it was stated in the report of the 1944 Ödemiş-Birgi Development Plan Competition, the typology of the vernacular residential architecture of Birgi that based on the façade properties can be defined in four groups. Within this research, the distinct characteristics of these buildings are eaves with a width of 30-200cm and number of the stories. The distinct characteristic of the first type is eaves with a width of 100-200 cm. Most of the samples of this type, have been damaged due to natural disasters and only fourteen of these traditional houses have reached to today. The distinct characteristic of the second type are the mass of two-story constructions and the eaves with a width of 100-120 cm. The samples of the third type has eaves with a width of 60 cm and most of them were reconstructed after the natural disasters. The fourth type is differentiated due to their construction period. These residential buildings were built after the 1922 fire. These type of houses were built by brick, completely plastered and have eaves with a width of 30 cm. These houses are differentiated from the vernacular construction technique of traditional Birgi houses (Anonymous, 1944; Diri 2010). Local rubble stone, brick and small pieces of brick were used in the main walls of ground floor. The exterior surfaces of the walls were exposed masonry in the examples of vernacular architecture.

The spatial organization of the vernacular residential architecture of Birgi has also significant characteristics. The main entrance of the Birgi houses are generally provided by courtyard or taşlık and the houses are separated from the street by high courtyard walls to provide privacy. The ground floor is composed of taşlık, barn and storage, which are connected to courtyard, while the first first floor is composed of sofa and rooms. The sofa that dominates the first floor is formed in different geometries such as I, L and U shapes. There are also examples of inner sofa in the settlement. Sofa has the function of everyday activity area, which has an oven and a small washing area in itself, while providing the circulation between the rooms. The ground floors were constructed in masonry while wooden timber was the main structural material that mostly used in the first floors.

The architectural character of Birgi houses that based on the typological diversity and local construction techniques are tried to be protected by the Conservation Development Plans of, 1945 and 2012. In the 1945-Ödemiş-Birgi Conservation Development Plan, there are detailed data related to the construction materials and even the sources. According to the notes of the Plan, the stones, which are used in the walls of the houses and courtyard, are gotten from the streambeds and quarries. Stone generally were used as covering material in taşlık and it was used a basement of the timber stairs in many examples of vernacular architecture. While slate stone was used for the floor covering of streets. Muddy mortar was used as binding material in the stonewalls.

Sun and spica symbols, which were used in façades of vernacular Birgi houses and the chamfer on the corner of the exterior walls, are the common characteristics of local constructions. The chamfers ease the movement of animals in the Street. (Diri, 2010)

The usage of wooden timber material is important as much as the stone masonry in the local houses of Birgi. Wooden timber is used as a structural framing material in the first floors, while; stone, brick, straw and mud were used as filling material. Besides, timber is seen at floor beams and coverings, stairs, door and windows, hand rails, sedirs and cupboards which exist in almost every living rooms. In a local house, Baş Oda is differentiated from the other rooms with its material use such as; wood carving techniques in the cover of the ceiling. In much more qualified samples like Cakırağa Mansion, the material usage were detailed with hand-drawn ornaments on timber and plaster, unique ornamentations especially on its walls and ceilings (Gülhan, 2016).



Restoration of a local construction in Birgi (Genç, 2019)




Restoration of a traditional house in Birgi (Genç, 2019)

3.4. The Local Construction Culture and Crafts in the Context of Socio-cultural Sustainability

Besides the characteristic residential buildings of Birgi, it is known that the settlement had a significant commercial fabric with shops, production spaces and various types of crafts in the past. However, social transformations, technological innovations and new manufacturing trade branches caused the the traditional crafts weaken, and even disappeared. Stonework, saddlemaking, silkworm breeding, farriery, milling, bakery, helvacılık and, shoe manufacturing are the local crafts that used to disappear in the last decades. Silk breeding and silk weaving on handlooms were the most common manufacturing branches of Birgi. In the years of 1940's and 1950's there were 200 handlooms in Ödemiş, which were mostly in Birgi. But, due to the increase in the prices of raw material in 1970's and 1980's, a great number of hand looms were fallen into disuse. Within the thirty years, the number of handlooms decreased to 20-30 and a rapid decline in the silk production was occurred. As a result, the number of handlooms have decreased to 5 in Birgi while the number of the mechanic hand looms has decreased to 15-20 in Ödemiş and its surroundings (İmer, 2004). Because of the demandingness of hand weaving and the emergence of new manufacturing branches, silkworm breeding has decreased in time.



Demirli Mağaza (Genç, 2019)



Silk Weaving Atelier with Industrial Machines (Genç, 2019)

Mutlu Sulukan, the headman of Birgi states that, only five families are still continue to silkworm breeding in their courtyards. In addition, two families continue the silk weaving in their small atelier with industrial machines in Birgi. Silk weaving products, which were handled in Sem Silk Atelier, are presented for sale in a historic commercial place callesas called as Demircili Shop.

In the year of 1945, there was a large commercial district with, two restaurants, three butchers, seven coffeehouses, four shoemakers, six tanners, five bakeries, one vehicle atelier, two saddlemaker, two coppersmiths, one tinsmith, nine carpenters, two dressmaker and various peddlers in Birgi. In the year of 1947, placethe economic and utilization capacity of the commercial district was continuing with, five bakeries, a public bath, twenty fountain, one slaughterhouse, almost eighty local shops, fifty silk weaving handlooms and one olive oil factory (Altınoluk, 2007). In 1960's, the commercial district was separated in two with, ten coffeehouses, ten watermills, two electrical mills and an olive oil factory in total (Dural, 2004). In the year of 2008, eleven coffeehouses, a bakery, a flaky pastry, a mill, a dressmaker, five silk weaving ateliers, a shoe repairer, a hummer smith, a hardware dealer and a carpenter in Birgi (Gümüşoğlu, 2008). Due to the transformation of the commercial district of Birgi, it is observed that the variety of the branches of traditional crafts have decreased by years.

Stonemasonry and the stonemasons are among the other cultural values of Birgi that weakened in last decades. Yakup Karaca, a stonemason in Birgi states that the stone masonry was a developed working area in Birgi but it lost its significance as in all other rural settlements. Today's advancing technology and economic conditions are significant factors on the loss of its significance of the stonework in rural settlements. Ali Öksüz, a stonemason aged 57 from Tire states

that the material supply for masonry is very difficult, so it became an unaffordable construction type today. Today masonry construction is preferred by those who immigrate to the rural settlements instead of being a traditional construction culture sustained by the local people. Yakup Karaca also points out the lack of the material source. As he claims, the stone that used for the construction were gathered from the Birgi's streambed in past. But, as a result of the climate change, the stream bed is no longer a sufficient material source today. On the other hand, the stonemasons points out that the interest on masonry has increased due to the increase in the restoration works in Birgi. In addition to that, Osman Korkmaz a carpenter aged 69 states that the variety of trees has negatively affected by the climate changes. Therefore, while poplar and chestnut were common materials that used in the construction of traditional Birgi houses in the past, the affordable black pine has to be preferred as the timber material today.

4. CONCLUSION

Birgi is a heritage place with its architectural and natural assets, agricultural productions and crafts. The local construction culture, material usage, and the local crafts are important factors of this heritage. Unfortunately, the tangible and intangible cultural values of the settlement have been weakened even vanished in the past decades. Due to the observations and interviews, it is determined that the stone that obtained from the local quarries and the streambed, enabled to develop the local construction in Birgi. But, developing technologies and the increase in the mass production techniques caused a decline in local crafts and construction culture. On the other hand, as the location of the historic settlement that surrounded by the archeological and natural sites enables the protection of the local architectural texture in Birgi. In addition to that, the acceptance to UNESCO World Heritage Candidate List increased the public recognition and the restoration works in Birgi.

The interviews underlined that the demand for the use of local materials is increased in parallel to the restoration works. However, the supply of local materials has become more difficult due to the changes in natural and social dynamics. As emphasized by local construction masters; the local construction materials such as "yayla kavağı", "deli kestane" and "çay taşı", are hardly found today so they had to use alternative materials in the reconstruction and restoration works. This limited resource use has a negative effect on the transfer of knowledge between construction masters and the apprentices. Local people with low-income, who tend to work in building constructions prefer to work in sites which require less labor. In consequence, master-apprentice interaction,

which is one of the most important components of the local construction culture is weakened and sustainability of the local crafts value is at risk.

Emigration of the young population for the seek of job and education to cities has caused another important lost; the decline in local commercial life. The elderly population has become the majority and the local crafts that expected to own by the youngs, have gradually declined. On the other hand, the touristic potential of the settlement has come to the forefront and local people have started to deal with hostel, restaurant and café management. Though it may seen as an actual, a natural socio-economic change, this new economic dynamic has been one of the factors that caused the decline of local agricultural production.

Birgi, with its significant cultural values and important problems related to sustain these values is among many other rural heritage places with similar values and similar risks. To sustain these rural heritage places, not only the historical architectural assets but also the inputs that shaped this assets have to strengthened. In order to maintain the identity of these places. The local construction culture, material culture and local crafts which, have a significant role on social identity, should be interpreted contemporarily according to today's sociocultural and environmental conditions.

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ANALYZING LANDUSE TYPES AFFECTING THE SPATIAL DISTRIBUTION OF ARCHITECTURE SECTOR IN ISTANBUL

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ABSTRACT

From the beginning of the 21st century, the creative economy has arisen in European and American countries; besides, this new system started to shape the social, physical, economic, and cultural patterns of cities. In Turkey, encouraging the creative economy to participate in the global market became an important concern of policy-makers especially after the 1990s, and Istanbul has a specific role as the creative capital of Turkey in this competitive atmosphere. Also, the architecture sector that consists of the value-adding process of art and knowledge is one of the most developing creative industries in the world; moreover, this sector generally concentrates more in Istanbul compared to other cities of Turkey. When the spatial distribution of all creative industries in Istanbul is examined, it is clear that they densify in the central districts of Istanbul; however, they also started to expand towards the peripheral districts especially after 2009. This tendency shows itself also in the architecture sector. Therefore, the main motivation of this study is exploring the spatial distribution of the architecture sector in Istanbul. For this purpose, the research method contains two steps. Firstly, the map for the distribution of architecture sector in the city is produced through certain addresses of architecture, urban planning, and landscape architecture firms by using the geocoding method. Secondly, the spatial relationship between locations of firms and determined land use types that are proximity to recreation areas, transportation routes, public establishments, and universities are analyzed through the Network Analysis in ArcGIS.

Key words: Creative Industries, Architecture Sector, Location Distribution, Istanbul, Network Analysis

1. INTRODUCTION

The creative economy, which started to develop especially in European countries since the end of the 20th century, has gained importance throughout the world

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(Atkinson & Easthope, 2009; Denning, 2012). In parallel with the developing new economic system, factors such as raw material, accessibility, labor pool, which had a great importance in the location decisions of companies in the past have started to give way to knowledge, ideas, originality, and creativity (Sharp, Pollock, & Paddison, 2005). This new system began to show itself as the rise of the creative economy in the 21st century with its positive and negative effects on physical, social and economic structure of cities (Sands & Reese, 2008).

In the direction of the creative economy, the creative industries, which consist of all kinds of activities that put culture, creativity or technology at the center of production and consumption processes, cover various sectors (Flew, 2012). Florida (2002) grouped creative industries as the "creative core", which is directly based on art and ideas, and “creative professionals", where artistic products are processed and converted into added value. So, creative sectors consist of a wide range from arts, culture and entertainment to science and technology sectors; besides, there is a mutual relationship between these different sectors, especially from the creative core to professionals (Howkins, 2001). Regardless of class and type, all creative sectors have started to dominate the urban market, and they have provided both social and spatial prosperity in cities. Therefore, they started to engage more attention in the production process of urban policies (Rosselló & Wright, 2010). Today, cities have a critical role in balancing creativity, human capital and economic development (Anderson & Mellander, 2011). Also, having more tolerance, diversity, talent and technology has become a fundamental requirement for attracting creative sectors (Landry, 2000). Thus, urban planning and design approaches began to gain new meanings and methods under the pressure of these new developments and requirements that emerged in the 21st century (Mommass, 2004).

Another significant issue that appeared in the development process of creativity is the distribution of creative sectors in cities (Khoo, Badarulzaman, Samat, & Dawood, 2016). Despite the judgments that creative sectors can develop flexibly without the need for a specific position in cities (Kelly, 1998), the existence of clusters such as Silicon Valley, Hollywood, and Wall Street shows that creative sectors tend to locate in certain areas of cities (Florida, 2003; Hutton, 2004). Moreover, these sectors tend to take advantages of the results of agglomeration such as highly skilled labor market, knowledge spillovers, experience sharing, and strong communication with other firms (Lorenzen & Frederiksen, 2008). On the other hand, although there are several regional and local indicators such as accessibility, urban atmosphere, governmental policies, and global linkages that directly affect the clustering tendency of creative economies (Flew, 2002), the location decisions of creative sectors can be changeable according to expec-

tations and desires of creative workers from the city which can be also variable depending on the creative sector type (Landry, 2000).

The architecture sector contains architecture, urban planning, and landscape architecture activities (European Commission, 2008); and, it takes place in all classification types of creative sectors; Florida (2002) evaluated the architecture sector from an artistic perspective and included them in the "creative core" group. On the other hand, the UK Department of Digital, Culture, Media, and Sport, has separated these professional groups from other art-oriented sectors and defined this sector as a value-adding process where ideas are processed and turned into a concrete product (DCMS, 1998). When these two approaches are combined, architectural activities can be defined as a business which the original ideas, both directly related to art and emerging from the artistic aspect, are developed and turned into a real product and have a direct role in the functioning and development of the city. So, it can be said that by the nature of their profession architecture sector workers have a direct connection with space as they analyze, reorganize, and create it. The architectural sector has been chosen as the main subject of this research, assuming that they will evaluate the place features in detail in the firms' location choices depending on their professional knowledge and experience.

In short, there are some economic, politic, social, and cultural factors in different scales that directly affect the office location choices of creative industries; moreover, some studies show that proximity to certain types of land use like transportation points, heritage sites, cultural facilities, recreation areas, universities, residential areas, sales markets for raw materials, and existence of similar industries increases attractiveness of place in the location choice of creative sectors. (Kang, 2010; Machado et al, 2013; He & Gebhardt, 2014; Liu & Silva, 2014; Liu et al, 2015), However, the impact of these indicators in the decision process can be changeable according to the internal dynamics of city such as size and population (Ronael, 2019). The effect of natural, social, cultural, economic and transportation, land-use related quality of place indicators on the location selection of architecture firm owners in Istanbul was analyzed in previous studies (Ronael, 2019; Ronael & Oruç, 2019; Ronael & Oruç, 2020). The main objective of this study is to analyze the spatial relation of the architecture sector with chosen land-use types namely; recreation activities, universities, public establishments, and transportation systems in Istanbul. On the other hand, explaining the effect of land use types on the location decision of architecture firm owners is not the purpose of this study. Although there is some definite information in the literature about the impact of land-use functions on the location decisions of creative industries, the spatial proximity of a creative

firm to a function does not necessarily mean the absolute effect of that function in the location decision process of the firm; however, the results can give clues about the preferences of firm owners, and they should be evaluated by including qualitative data in future studies.

In this direction, the addresses of registered architecture, urban planning, and landscape architecture firms in 2019 were obtained from the Istanbul Chamber of Commerce, and they digitalized in ArcGIS by using the geocoding method. After that, the network dataset of Istanbul is created, and all data was provided from OpenStreetMap Open Data Source. The dataset consists of the road system, transportation stations (bus, subway, Metrobus, train, tram, and ferry), recreation areas (parks, squares, forests, fair and entertainment areas), universities, and public establishments. After the production of the dataset, service areas of factors (0-10 and 10-20 minutes walking distance) is produced by using network analysis, and the location of architectural activities and service areas of factors are evaluated.

2. FACTORS AFFECTING THE LOCATION DECISION OF CREATIVE INDUSTRIES

According to Richard Florida (2002), the workers of the creative industries feel free to take a risk and change their location, and their emotions and feelings are prominent compared to economic factors in the location decision process (Florida, 2002). Trip (2007) explained this situation as the transition of the system from "people follow jobs" to "jobs follow people". Florida (2002) named this transformation as "people climate"; moreover, he emphasized the importance of life quality to manage people's location decisions. He also specified the originality, identity, diversity in physical, functional, and social environment, tolerance, talent, technology, and multiculturalism as requirements for people climate.

In this perspective, physical structure and social characteristics of place are fundamental indicators to attract creative ones (Florida, 2005). In addition, Brown & Meczynski (2009) emphasized the importance of hard infrastructure that consists of economic conditions including diversity of job opportunities, cheaper transportation, and affordable city life, and soft infrastructure that is related to socio-cultural dimensions such as feeling and participating socio-cultural life to explain location decisions of creative industries. Parallel with this concept, Murphy & Redmond (2012) worked on hard and soft factors in terms of urban land-uses structure. While they determined public services, transportation infrastructure, and cost of living as hard factors, they defined cultural and leisure amenities, city environment, and tolerance and openness as soft factors.

Landry (2000) also described the specific requirements for the existence of creative industries and accepted the economic viability as a base, the social and cultural viability as fundamental infrastructures, and the environmental viability

as a necessity, and all of these factors directly affect the location decisions of creative industries. On the other hand, Montgomery (2003) investigated factors that increase the success of creative quarters; and he focused on place through the spatial perspective. Three main elements constitute the structure of his theory, and these are activity, form, and meaning. The activity includes functional dimensions, the form includes the physical characteristics of place and meaning consist of perceptual ideas of users (Montgomery, 2003).

Florida (2002) determined some specific amenities that increase the motivation and inspiration of workers in the creative industries, and these are sports facilities, recreation areas, restaurants, cafes and bars, urban heritage, cultural functions, and public spaces. These functions can be defined as "welfare amenities" which support the communication between creative workers and the local population, increase the attractiveness of region, give dynamism to the location, and allow for newcomers in the clustering process (Machado et al, 2013). Similarly, Landry & Bianchini (1994) revealed that the existence of these amenities contributes to the occurrence of community spirit and the creation of vibrant civil society. These recreational functions can be a part of urban identity, personal or communal memory, and symbol; therefore, it is a part of the cultural viability (Landry, 2000). In parallel with these ideas, Montgomery (2003) stated the importance of functional diversity in terms of the balance between daytime and evening uses, and he defined the recreational functions that are important meeting and gathering spaces as a necessity. In this scope, Hutton (2004) underlined the structure of inner city as the most proper location for the creative clusters; besides, some intensive urban facilities such as galleries, museums, exhibition spaces, heritage buildings, parks, squares, restaurants, cafés and shops were defined in the inner city to invite creative industries to the location (He & Gebhardt, 2014).

The ease of transportation and high accessibility in the urban internal road system of the location are the most important factors for the location decisions of creative industries (Liu et al, 2015). Landry & Bianchini (1994) emphasized that traffic congestion and low accessibility decrease the working motivation of creative workers. Therefore, it is clear that the creative class tends to choose most convenient locations for commuting (Liu et al, 2015). In this sense, the necessity for convenient public transportation system stands out, and enhancing the public transit system would be an effective strategy for higher development in the urban economy and the occurrence of compact creative clusters (Kang, 2010). In addition, Florida (2005) underlined the significance of diversity in land-use, especially in transportation systems, indicating the importance of ease of transportation and high accessibility inside, outside, and between clusters. On the other hand, Landry (2000) defined that there should be high and strong

mobility between various social and economic strata through using transportation alternatives. So, "hard" factors (public services and transportation infrastructure) work with "soft factors" (vibrant environment, diversity, and tolerance); moreover, "hard factors", especially transportation infrastructure such as public transportation, bicycle lanes, and connectivity with inner-city are considered by the creative ones in their office choices (Murphy & Redmond, 2012).

Although Florida (2002) claimed that economic factors are less important than social and cultural factors, economic viability is also a critical parameter in the location decision process of creative industries, and income and job opportunities are stand out in this process (Landry, 2000). Also, Montgomery (1990) underlined that the creative industries tend to choose locations where they increase their economic capacity. In this scope, the existence of public establishment becomes prominent because of the possible job opportunities and new negotiations, and public-private coalition becomes one mechanism behind the clustering process of creative sectors (Zheng, 2016). In addition, similar to these ideas, Musterd and Deurloo (2006) emphasized that easy access to public services based on the company location theory is a critical indicator for attracting talented people in cities.

Lastly, the existence of universities, which is defined as a source of talent and technology, has an important role in engaging attention of creative workers (Florida, 2005). Montgomery (2003) pointed out the significance of access to education providers in terms of increasing activity opportunities for the creative class. Besides, creative individuals tend to be close to universities and research institutions because of their vocational development (Liu et al, 2015); moreover, creative employers choose their office locations according to regions where the talented labor pool exists most (Roodhouse, 2010).

As a result, although every social group has some desires from the space, the members of the creative class have some definite expectations and requests that are stand out in the location decision process. Although there are some studies about the effect of land-use factors on the locational distribution of creative sectors in literature, most of the studies focus on the effects of sociocultural and spatial qualities that attracts creative class. In this study factors related to the urban land-use pattern were chosen to evaluate the spatial growth of creative sectors in Istanbul.

3. THE ARCHITECTURE SECTOR IN ISTANBUL

According to annual reports (2009-2016) of the Social Security Institution, it can be said that Istanbul is the creative center of Turkey in terms of the number of creative workplaces and employees. Besides, this situation has supported by the

relevant policies of Istanbul Environmental Plan (2009), Tenth Development Plan (2013), Istanbul Regional Plan (2014), and by the acceptance of Istanbul to UNESCO's Creative City Network program in the design category in 2017. The Istanbul Environmental Plan that was completed in 2009 includes the first remarkable strategies for the creative sectors in Istanbul. According to the plan report, creative industries were defined as a priority, and considered to be sustainable and environmentally-friendly sectors that can provide economic progress and facilitate participation in global economic competition. Also, a cultural triangle was defined within the boundaries of Eminönü, Beyoğlu, Şişli, Beşiktaş and Kadıköy districts, and spatial strategies have been developed to improve creative sectors within and outside the triangle.

In order to understand the existing situation and development direction of the creative sectors in Istanbul the spatial distribution of creative workplaces and employees for the years 2009 and 2018 were evaluated. According to the data obtained from Social Security Institution, the creative industries are mostly concentrated in Şişli (17%), Zeytinburnu (9%), Beşiktaş (8%), Kadıköy (8%) and Beyoğlu (7%) districts in 2009 as indicated in the Istanbul Environmental Plan. However, when the spatial development of the creative economy between 2009 and 2018 is examined; even though the central districts (Şişli, Zeytinburnu, Fatih, Beyoğlu, Beşiktaş, and Kadıköy) sustain their numerical priority, there is a negative change in their ratio within the total (Table 1). On the other hand, it can be said that the creative economy tends to expand from center to peripheries (Esenler, Esenyurt, Başakşehir, and Beylikdüzü districts on the European side; Ataşehir, Ümraniye, Maltepe, Kartal, and Pendik districts on the Anatolian side), and new corridors for creative industries has started to be formed in the districts defined on both sides.

Table 1: Evaluation of the districts of Istanbul between 2009-2018, according to the number of workplaces in the creative sectors (Data was obtained from the Social Security Institution).

District	2009		2018		Variation
	Number of Work Places	Ratio(%)	Number of Work Places	Ratio(%)	
Ataşehir	**238**	**2.11**	**984**	**4.94**	**2.83**
Esenler	**114**	**1.01**	**555**	**2.79**	**1.78**
Esenyurt	**69**	**0.61**	**421**	**2.11**	**1.5**
Başakşehir	**194**	**1.72**	**554**	**2.78**	**1.06**
Maltepe	**200**	**1.77**	**532**	**2.67**	**0.9**

Beylikdüzü	**58**	**0.51**	**251**	**1.26**	**0.75**
Ümraniye	**326**	**2.89**	**713**	**3.58**	**0.69**
Çekmeköy	**23**	**0.2**	**171**	**0.86**	**0.66**
Pendik	**181**	**1.6**	**445**	**2.23**	**0.63**
Kartal	**161**	**1.43**	**405**	**2.03**	**0.6**
Avcılar	101	0.89	271	1.36	0.47
Bahçelievler	264	2.34	521	2.61	0.27
Sancaktepe	53	0.47	147	0.74	0.27
Tuzla	79	0.7	191	0.96	0.26
Sarıyer	228	2.02	454	2.28	0.26
Üsküdar	389	3.45	731	3.67	0.22
Arnavutköy	13	0.12	62	0.31	0.19
Küçükçekmece	184	1.63	355	1.78	0.15
Sultangazi	28	0.25	79	0.4	0.15
Eyüp	121	1.07	227	1.14	0.07
Silivri	24	0.21	54	0.27	0.06
Beykoz	152	1.35	280	1.41	0.06
Sultanbeyli	39	0.35	78	0.39	0.04
Şile	5	0.04	12	0.06	0.02
Adalar	5	0.04	6	0.03	-0.01
Çatalca	22	0.19	29	0.15	-0.04
Gaziosmanpaşa	97	0.86	161	0.81	-0.05
Bakırköy	226	2	356	1.79	-0.21
Kadıköy	919	8.14	1580	7.93	-0.21
Büyükçekmece	123	1.09	166	0.83	-0.26
Bayrampaşa	160	1.42	224	1.12	-0.3
Kağıthane	534	4.73	882	4.43	-0.3
Bağcılar	391	3.46	568	2.85	-0.61
Güngören	193	1.71	201	1.01	-0.7
Beşiktaş	**947**	**8.39**	**1418**	**7.12**	**-1.27**
Beyoğlu	**826**	**7.32**	**1025**	**5.14**	**-2.18**
Fatih	**655**	**5.8**	**685**	**3.44**	**-2.36**
Zeytinburnu	**1057**	**9.36**	**1334**	**6.69**	**-2.67**
Şişli	**1892**	**16.76**	**2800**	**14.05**	**-2.71**
Total	11291	100	19928	100	

To show the current situation of architecture sector in Istanbul, lists of registered architecture, urban planning, and landscape architecture firms in 2019 were obtained from Istanbul Chamber of Commerce. According to data, there are 3442 architecture firms, 137 urban planning firms, and 140 landscape architecture firms in Istanbul. So, 3719 firm's addresses were digitalized through geocoding method in ArcGIS, and point type data were produced to show the distribution of the architecture sector in Istanbul. According to Figure 1, firms commonly concentrates in Beyoğlu, Beşiktaş, Şişli, Fatih, Kadıköy, and Üsküdar districts, similar to the general distribution of the creative economy. Besides, the current spatial distribution of sector shows the sprawl to Atasehir, Umraniye, Maltepe, Kartal, and Pendik districts in the Asian side, and to Zeytinburnu, Güngören, Bakırköy, Bahçelievler, Küçükçekmece, Avcılar, Beylikdüzü, and Esenyurt districts in the European side. This sectoral sprawl is more apparent especially on the coastline and around the main transportation links (Figure 2). and some sub-centers have started to form especially in the peripheries.

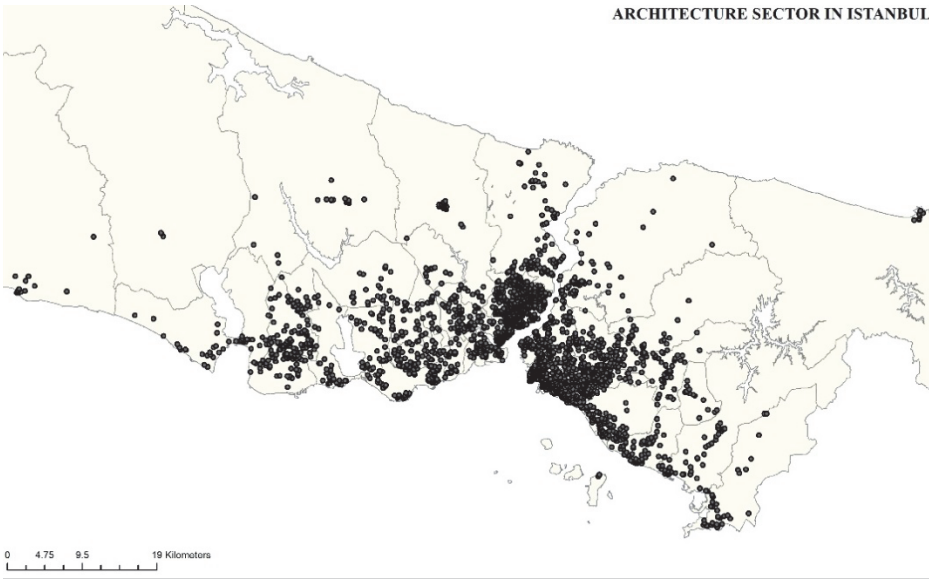

Figure 1: Spatial distribution of architecture, city planning and landscape architecture firms in Istanbul.

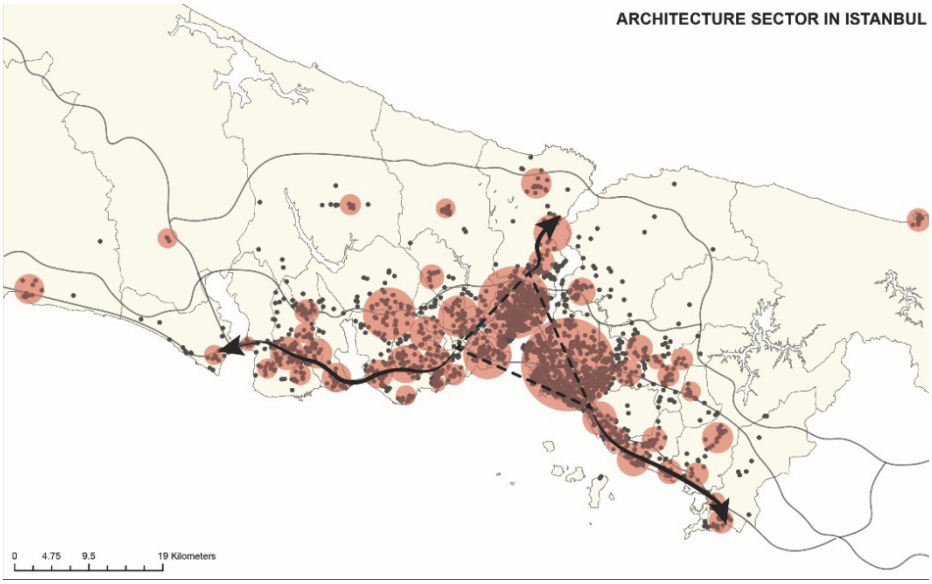

Figure 2: Spatial sprawl of the architecture sector (Ronael & Oruç, 2020).

As a result, there are six central districts in Istanbul where architectural activities are concentrated, and these are respectively Kadıköy, Beşiktaş, Üsküdar, Şişli, Beyoğlu, and Fatih. Also, according to the current situation, it is seen that there is a tendency to spread from center to peripheries on the European and Anatolian sides, especially parallel to the coastline and main transport connections. Under the pressure of this trend, sub-centers started to emerge in districts such as Zeyinburnu, Bakırköy, Beylikdüzü, Esenyurt, Ümraniye, Ataşehir, Maltepe, Kartal, and Pendik.

4. ANALYZING LANDUSE TYPES AFFECTING THE SPATIAL DISTRIBUTION

4.1. Methodology

As it was mentioned before, various land-use types like transportation infrastructures, heritage sites, cultural facilities, recreation areas, universities, sales markets for raw materials, and similar industries affect the location decisions of creative industries; and in this study the spatial relation of architecture sector with four of these functions will be evaluated These are;

- Recreation areas as a part of cultural facilities, as a motivation source for creative workers, as an important meeting and gathering place,
- Public establishments as a potential of job source, as a critical mechanism behind the clustering process,

- Transportation infrastructures as a main driver to sustain mobility and accessibility, as a significant issue for Istanbul,
- Universities as a source of talent and technology.

After the selection of evaluation factors, the network dataset was produced by using road data of Istanbul. In this step, walking was chosen as the travel mode, and the average walking speed was accepted as 5 km/h. After the creation of the network dataset, service areas for each function were analyzed as three categories. The first one is a maximum of ten minutes walking distance which refers to 850 meters from the function, and as the number/percentage of firms included in the maximum of 10 minutes' service area of the selected function increases, a significant spatial relationship between the firm and the analyzed function is accepted. The second one is between ten and twenty minutes walking distance which refers to 850-1700 meters from the function, and indicates a neutral spatial relationship between the analyzed land-use function and firms. Lastly, firms located more than 20 minutes' walking distance from the analyzed function accepted as spatially irrelevant.

4.2. Analysis and Evaluations

The existence of recreation areas provides more activity opportunities for the creative class and attracts them to the location (Florida, 2003), serves as important meeting and gathering places, contributes to the meaning of place (Montgomery, 2003). Also, the existence of recreation areas around workplaces is an important factor to increase creativity, inspiration, and working motivation. When the relationship between the location of recreation areas and architectural firms in Istanbul are analyzed (Fig.3), the results pointed out a different tendency. While 31% of all companies are located within a 10 minutes' walk from the recreation areas, 30% of them, which are more than 20 minutes away from the recreation areas, are not included in services areas of recreation functions. On the other hand, the majority (41%) of total firms is located between 10 and 20 minutes away from recreation functions; therefore, it can be said that the existence of recreational areas does not have a significant role in the sprawl of the architecture sector, and there is a neutral spatial relationship between recreation areas and architecture firms. This situation also can be related to the lack of recreation areas across Istanbul. Also, the service area of recreation function covers more firms in the center and coastal line, unlike in the periphery, where the ratio of companies having a meaningful spatial relationship with recreation areas decreases from 30% to 21%.

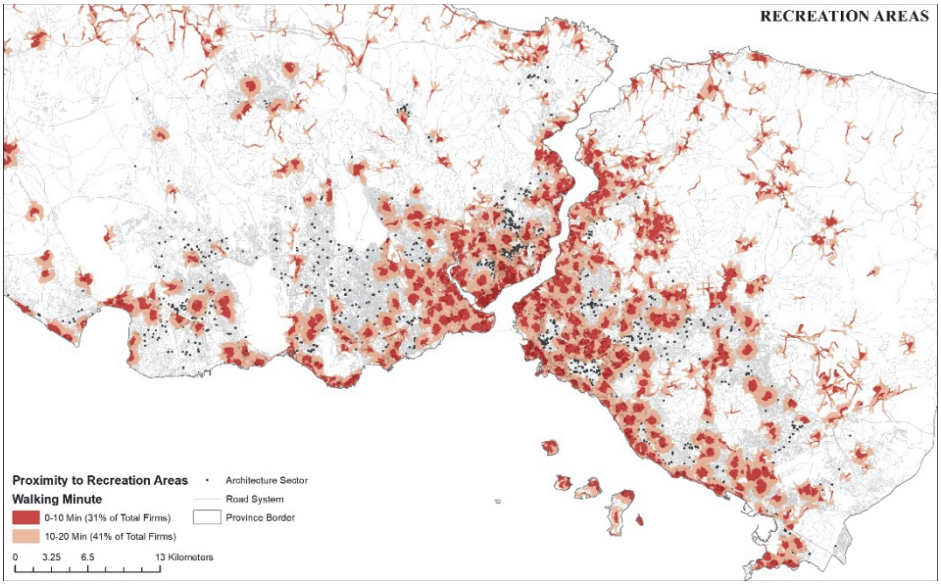

Figure 3: Service areas of recreation areas.

As it was mentioned before, creative industries tend to benefit from clustering opportunities and they aim to extend their economic capacity (Montgomery, 1990). In this sense, being close to the public establishments is important for the architecture sector because their outputs have to be approved by authorities. In addition, public establishments, especially municipalities, can be accepted as a job source, and the firms near the public establishments increase their opportunities for new negotiations. So, the opportunity for public-private partnership is a critical indicator to attract attention of creative individuals (Zheng, 2016), and they want to be close to the public institutions to access services easily (Musterd & Deurloo, 2006). However, when the results are evaluated (Figure 4), while 27% of all companies are located at a maximum of 10 minutes away from the public establishments, 34% of them are located 10-20 minutes walking distance from them. On the other hand, 39% of total companies is not included in services areas of public establishments. Therefore, similar to results of recreation areas, it can be said that being close to public institutions is not an effective factor in the distribution of sector in general. Although the majority of public establishments concentrates in the center of Istanbul, every district has its own municipal building inside its administrative borders and the emergence of clusters around municipal complexes is observed especially in the peripheries. However, when this result is evaluated with the number of firms and public institutions in the peripheries, there is a neutral spatial relationship between architecture firms and public establishments.

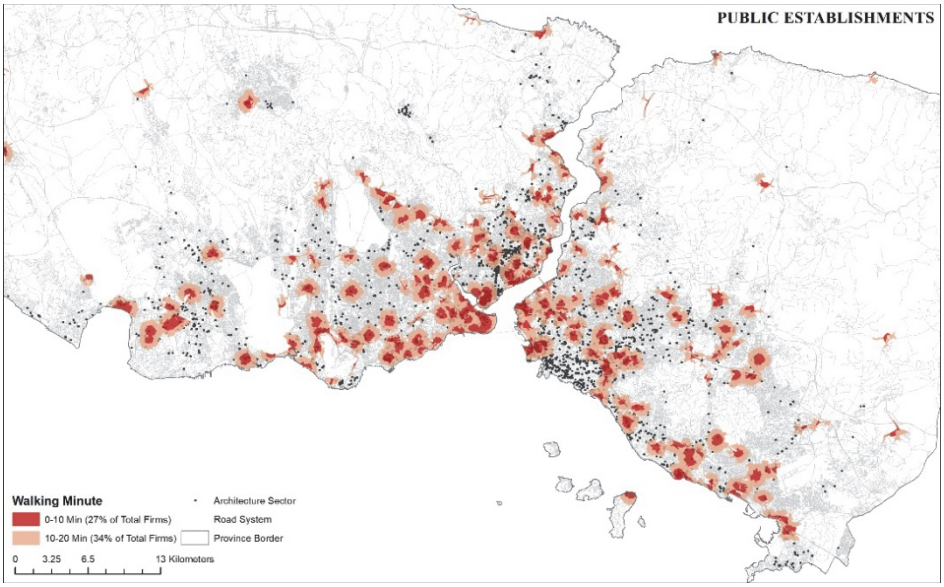

Figure 4: Service areas of public establishments.

It can be said that the high mobility and ease of transportation are the most critical factor in the location distribution of all creative sectors (Montgomery, 1990). It also directly affects access opportunities based on other economic and social factors (Landry, 2000), and it increases the working motivation and productivity of the creative class (Landry & Bianchini, 1994). The creative workers desire to reach urban internal transportation alternatives easily because they want to decrease the travelling time between their home and work (Liu et al, 2015), so they consider the existence of strong public transportation system, bicycle lanes, and connectivity with inner-city in the location decision process (Murphy & Redmond, 2012). Therefore, although it was claimed that the importance of transportation and accessibility decreases under the circumstances of the new economy (Sharp, Pollock, & Paddison, 2005), it is still a significant determinant in the spatial growth of architecture sector, especially in cities like Istanbul having traffic problems. The results are also parallel with the knowledge given in the literature. According to Figure 5, 93% of companies are located at a maximum of 10 minutes away from the bus stations., and While the service area of this function has the highest number of firms compared to the other functions, only 1% of firms is not included in impact area. When firms located in the peripheries are evaluated, 91% of companies are located at 0-10 minutes walking distance from the bus stations. The powerful impact of this factor can be relatable with the current accessibility problem of Istanbul; and even though the other public transportation alternatives continue to develop their network in Istanbul, bus is

still the most common form of public transportation, and this is also another reason for firm owners to arrange their locations according to bus routes.

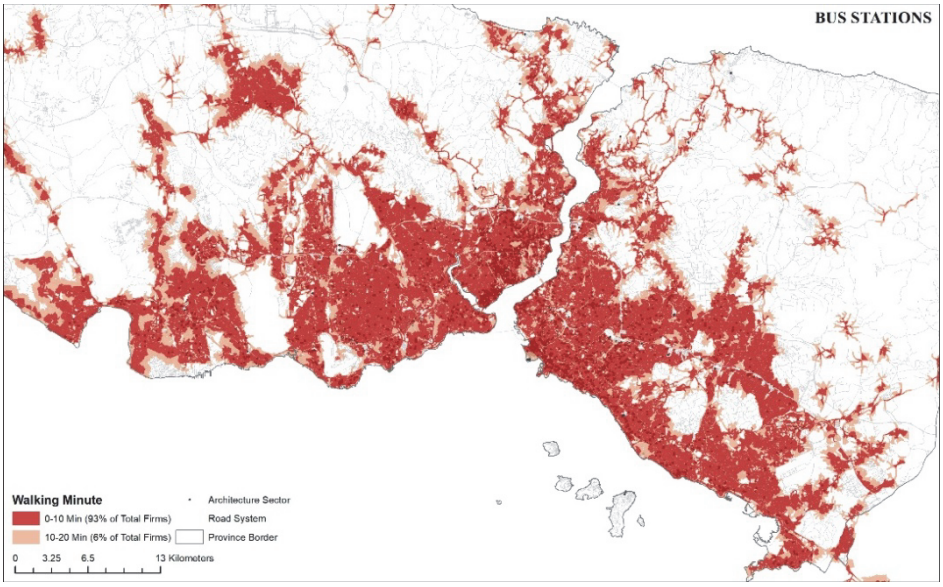

Figure 5: Service areas of bus stations.

On the other hand, when alternative public transportation systems (Metrobus, subway, and tramline system) are examined (Figure 6), 30% of total firms are 10 minutes away from the stations of these transportation systems; however, 32% of companies are located 10-20 minutes away from the stations. 37% of total companies is not included in service areas of alternative transportation routes. When the peripheral districts are analyzed, the ratio of firms in 10 minutes walking distance from the station decreases from 30% to 20%. These results are less than expected, especially in the peripheral districts that are located on routes of these transportation systems, and this situation can be explained with the ongoing development process of alternative transportation systems. Also, some of these systems that provide the connection with the peripheries such as Avcılar-Beylikdüzü Metrobus line, Kadıköy-Pendik Metro line, and Halkalı-Tuzla Train line was opened not long ago, so their effects on the spatial distribution of firms will be observed in the future. In addition, other specially located transportation modes that are ferry, tunnel, and ropeway were examined separately. According to Figure 7, 16% of companies are located at maximum 10 minutes away from the stations, and 19% of companies are located 10-20 minutes away from these transportation systems. In addition, while 3% of companies out of the center has a meaningful spatial connection with the stations, 74% of total companies is not

included in services areas of them. These results can be accepted normal because these transportation systems provide service for specific areas of the city, especially in the coastal regions and the center.

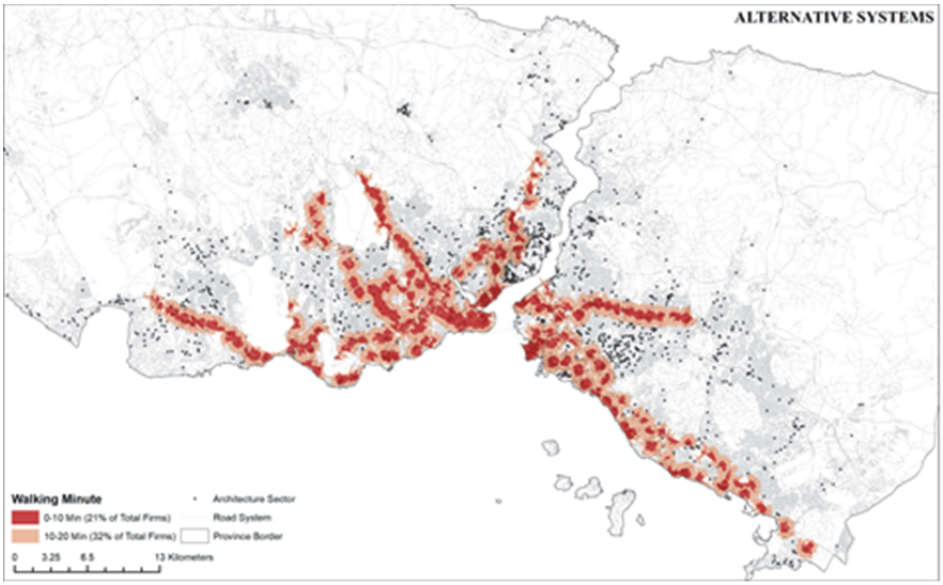

Figure 6: Service areas of alternative public transportation systems.

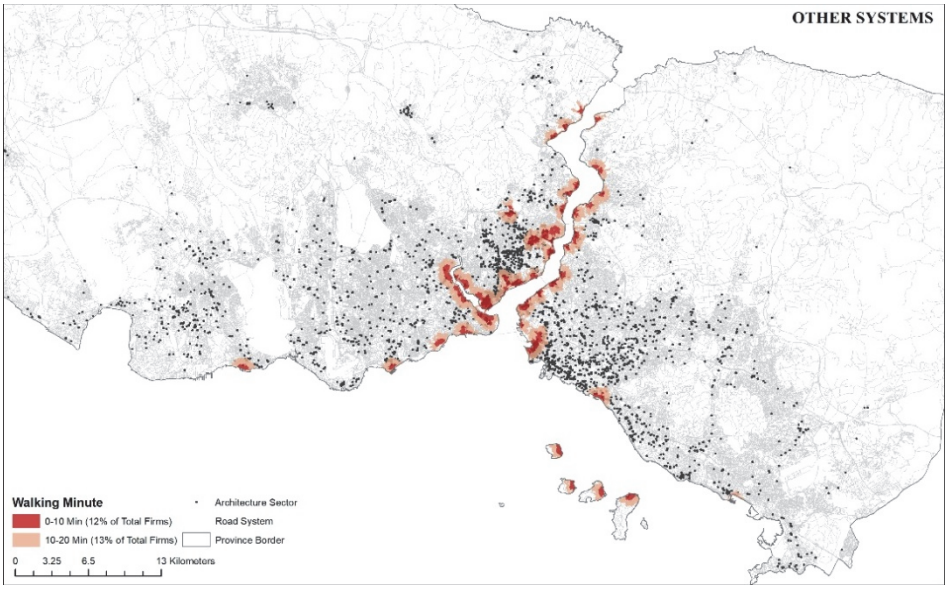

Figure 7: Service areas of other transportation systems.

In the rise of the creative economy, knowledge and creativity have gained importance more (Sharp, Pollock, & Paddison, 2005), and talent and technology became the most important factors for attracting creative ones (Florida, 2002). In this scope, universities that are education providers can be accepted as a source of talent and technology. The existence of universities provides social diversity, and it also leads to the occurrence of functional diversity. Also, the creative individuals tend to be close to universities and research institutions because of their vocational development (Liu et al, 2015); moreover, creative employers choose their office locations according to regions where the talented labor pool exists most (Roodhouse, 2010). However, findings are different from the literature. According to Figure 8, while 16% of all companies are located in 10 minutes distance the universities and majority of these firms are located in the central districts, 18% of them are located 10-20 minutes away from them. On the other hand, 65% of the total does not get involved in the service areas of universities, and this finding can be observed easily in the peripheries. Only 5% of the companies out of the central districts are located at a maximum of 10 minutes away from the function. Therefore, it can be said that despite the high number of universities (57 university) in Istanbul compared to other cities, there is not a meaningful spatial relation between this function and architecture firms.

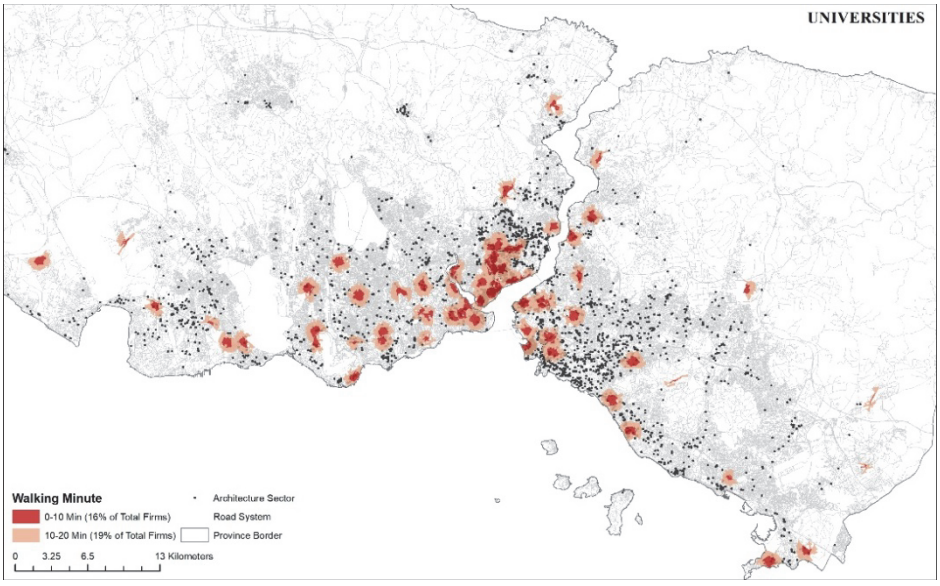

Figure 8: Service areas of universities.

5. CONCLUSION

In conclusion, the creative industries generally concentrated at the CBD and central districts namely Şişli, Beşiktaş, Beyoğlu, Fatih, Kadıköy, and Üsküdar in Istanbul. However, in parallel with sectoral growth and changing urban structure, creative industries are spreading out of the CBD and the city center. The sub-centers started to occur in Zeytinburnu, Güngören, Bakırköy, Bahçelievler, Küçükçekmece, Avcılar, Beylikdüzü, and Esenyurt in the European side; Atasehir, Umraniye, Maltepe, Kartal, and Pendik in the Anatolian Side. There are several hard and soft factors defined in the literature to explain this spatial distribution (Brown & Meczynski, 2009; Murphy & Redmond, 2012), and one of them is urban land-use structure. It is clear that urban land-use indicators affect the location decisions of architecture firms and play a great role in the spatial growth of the architecture sector in Istanbul. However, their effectiveness is changeable according to the type of land-use factor and internal dynamics of Istanbul.

Table 2 shows a comparison between the effects of determined land-use factors. According to the comparison, transportation systems have the highest effect on the spatial distribution of the architecture sector in Istanbul. The effects of recreation areas, public institutions, and universities follow this situation respectively. Although Florida (2005) asserted that the feelings of the creative class carry more weight than physical circumstances such as transportation system and costs, land values and production cost in the location decision process, and also he emphasized the impact of creative class's movement on the spatial growth of creative sectors (Florida, 2003), the results show a different tendency. In this situation, it is clear that the land-use types related to transportation have a remarkable effect on the spatial growth of sector in both the center and peripheries of Istanbul, especially bus routes, and findings prove that the significance of accessibility is still high in the new economic system contrary to claims about decreasing importance of geography (Kelly, 1998). This situation can be explained by the dynamics of Istanbul, such as traffic and mobility problems, high car ownership in the city, and sprawl direction of the city.

On the other hand, the low effect of other land-use types on the spatial growth of architecture sector may be associated with an unbalanced distribution and lack of functions. Besides, it is hard to measure the impacts of these factors in the central districts of Istanbul because of numerous dynamics and factors that might be effective in the location distribution process in central districts, like socio-cultural dimension that is related to tolerance, diversity, vibrant life style, urban atmosphere, and activity opportunities (Ronael & Oruc, 2019). On the other hand, when the firm distribution in the peripheral districts is examined,

except for the transportation, recreation functions, public institutions, and universities does not have strong impact on the spatial growth and sprawl trend of the architecture sector. The most unexpected result derived from analyzes is about the effect of university function. Universities were defined as a source of talent, technology, skilled labor pool (Florida, 2003) and the creative individuals tend to choose locations close to universities because of their vocational development and sustaining connection with skilled labors (Liu et al, 2015; Roodhouse, 2010); however, there is not a significant relation between the location of universities and architecture sector distribution in Istanbul as expected.

Table 2: Relationship between land-use types and number of firms.

LAND-USE TYPES	NUMBER OF FIRMS						Firms out of the Central Districts	
	Very Strong		Rather		Not at All			
	0-10 Min	%	10-20 Min	%	20- Min	%	0-10 Min	%
Proximity to Recreation Areas	1149	30.9	1518	40.82	1052	28.29	431	20.97
Proximity to Public Establishments	1015	27.29	1262	33.93	1442	38.77	498	24.23
Proximity to Transportation Stations								
Bus Stations	3476	93.47	218	5.86	25	0.67	1880	91.48
Public Transportation Systems	1140	30.65	1197	32.19	1382	37.16	421	20.49
Others (Ferry, Telfer)	446	11.99	499	13.42	2774	74.59	60	2.92
Proximity to Universities	609	16.38	705	18.96	2405	64.67	97	4.72

As a result, transportation is the most significant land-use type that impacts the spatial distribution of the architecture sector in Istanbul, and this result is derived from the traffic and accessibility problems based on the unplanned sprawl of Istanbul, so it is changeable according to the case city. However, by including further analysis of land-uses related to the socio-cultural environment and qualitative data like opinions of firm owners about the considered land-use types in future studies, more comprehensive results can be obtained.

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CORRELATION OF NEIGHBORHOOD UNIT DESIGN WITH URBAN HEALTH

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ABSTRACT

With the urbanization process, that gained speed after the Industrial Revolution, urban settlements received intense migration, thus living conditions in cities became more difficult. The fact that the urbanization process cannot develop in a controlled manner and the pressure created by the population in the city has led to the formation of unhealthy living environments and problems that threaten the health of the city. Health is complete well-being of physicallity, mentality and society. Therefore, health is highly associated with environmental factors as well as genetic and individual factors. Urban health is the product of many factors that can affect health, such as living conditions and economic factors, social services and sociocultural environment, built environment, quality of infrastructure services and their accessibility. The environment built from these factors has a direct impact on the health and on the life of individuals, but it is also an important determinant of urban health. The fact that the built environment is a determinant of urban health shows that the city planning discipline can play an active role in improving urban health. Because urban planning manages the formation of living environment features, which is one of the factors affecting urban health. The purpose of this study is to assess the impacts of the problems arising from the urbanization process on urban health in Turkey and to reveal the relationship of urban health with neighborhood unit design and the built environment in the light of literature. For this purpose, this study examines the existing relational solutions and multidimensional theoretical approaches by analyzing the relationship between urban health and the built environment with a comprehensive literature review. Increasing the welfare of people and the entire ecosystem and designing high-quality environments by creating healthy urban living environments in a rapidly urbanizing world should be among the main goals. The realization of these objectives will be achieved through exploration of the urban health's relation with built environment

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and neighborhood urban design also through awareness of the integration of the urban health with urban planning policies and urban design principles.

Keywords: Urban, Urbanization, Quality of Life, Urban Health

1. INTRODUCTION

Urbanization can be defined as a dimension of the social change process (Es and Ates, 2010: 212), resulting in the increase in the number of cities and the growth of cities (Keles, 1995:1). The urbanization process, which has enabled the cities to grow physically and demographically, and prepared an environment for more than half of the world population today, had advantages as well as disadvantages for cities and those living in the city. Economic, social and environmental problems occurring under the effect of unplanned urbanization in developing countries have also reduced the quality of living conditions. According to Basaran (2007: 209), the issue of how to create healthy living conditions in an urbanized world is the common agenda of the world today.

According to the World Health Organization (WHO) definition, "health is not only the absence of disease or disability, but a physical, mental and social well-being" (WHO, 1946). Urban health is also the product of many environmental factors, each of which can affect the general health of the individual. "Urban health is directly related to the urban context itself in relation to the emergence of determinants of health and disease in urban areas" (Galea and Vlahov, 2005: 342). Based on these definitions, it is safe to say that human health is shaped by not only individual and genetic determinants but also by environmental determinants and there is a close relationship between urban space and health. According to Başaran (2007: 209), the social and physical environment and life styles of the people are the main determinants of health. For this reason, urban structure and physical environment quality form the basis for human health.

One of the factors affecting human health is the built environment and neighborhood units that contain environmental determinants. According to Sallis et al. (2012: 729), changing the built environment has the potential to have a long-term impact on health and welfare at the population level. Many problems related to the built environment, such as unplanned construction, rapid increase in housing density, air pollution, noise, water and soil pollution, vehicle and traffic density, and insufficiency of physical activity areas and open-green areas, have an impact on physical and mental health. At the same time, the quality of urban life associated with the level of satisfaction and wellbeing in the living environment is also negatively affected by these environmental problems.

The research aims to evaluate the urban health consequences of urbanization and the effects of neighborhood and built environmental design on urban health

in order to shed light on the formation of high quality living and healthy spatial environments. The main objectives of the research are to reveal that the physical and environmental characteristics of the built environment have an impact on urban and urban health, and the necessity of integrating urban health with urban planning and urban design. The research aims to contribute to the literature from two aspects. Firstly, an inference is made about the relationship between urbanization and health by linking the problems of urbanization with the health of the citizens. Secondly, taking into account the built environment and socioeconomic characteristics that may affect the health of urban residents, it relates the built environment characteristics to urban health and goes beyond previous studies.

In summary, as a result of the acceleration of urbanization movements, today more than half of the world population lives in cities. Urban health and urban life quality have started to be at risk with the uncontrolled increase of population and housing in cities. It is possible to change the effects of the built environment on human health and urban life quality, primarily by changing that environment. Neighborhood units, which are accepted as the basic settlement unit that will be designed through urban planning policies and urban design principles prepared by considering the health of the city and urban life, will constitute the basic step in the transformation of the built environments into healthy living environments.

2. CONCEPTUAL FRAMEWORK

In this section, urbanization and urban health concepts will be examined. Then the results brought about by the urbanization process in Turkey will be associated with urban health.

2.1. Conceptually Urbanization and Urban Health

City is generally considered as "a settlement or a place that concretely contains the basic references and relationships on which a civilization is based" (Yılmaz and Citci, 2011: 255). The cities mostly remained as a minority experience from their first appearance to the Industrial Revolution, and have undergone little transformation in terms of functionality and structure until industrialization (Yılmaz, 2004: 252). After the Industrial Revolution, the urbanization process has started with the migration of the population in rural settlements to cities and the cities have undergone structural and functional transformations.

According to Keles (1995: 1); "urbanization is a population accumulation process that, in a broad sense, results in the increase in the number of cities in parallel with industrialization and economic development, and the growth of today's cities, creating city-specific changes in people's behavior and relations, creating

an increasing number of organizations, division of labor and specialization". This multi-faceted change process has affected cities and societies physically, socially, economically and culturally. At the same time, life styles, quality of life and health levels of the citizens have changed positively or negatively.

Health is a concept that has different definitions by many researchers but still has no consensus definition in the literature. According to the World Health Organization definition, health is not just the absence of disease or disability; is a state of physical, mental and social well-being. According to this definition, the health of an individual is shaped by environmental factors independent of genetic factors. Because health is not only a function of the individual's biological features, it is also a phenomenon that is naturally constructed and deeply affected by interactions with social environments (Glouberman, vd. 2006: 327).

Urban health is defined as the study of the characteristics of the social and physical environment that can affect health and diseases in the urban context and the urban characteristics that make up the character of the city (Ompad vd., 2017: 311). In other words, urban health is the projection of health in urban space. Health and city are two phenomena that mutually affect each other, and city health is a concept that discusses the effects of urban space on health. A healthy city is not a city that has reached a certain level of health, but a city that carries out the necessary studies and takes precautions to be a healthy and livable city (Basaran, 2007: 208). City planning is the basic discipline that can lead the success of healthy urban studies, as it manages the urban characteristics that make up the character of the city. Every decision affecting the city and the place affects the health of the city and its inhabitants. The urbanization process and its consequences, which have been still active since the Industrial Revolution, have affected and continue to affect urban health in this respect.

2.2. Results Relating to Urban Health Urbanization in Turkey

The urbanization process, which started with the rapid increase of the population in the cities, caused social, economic and cultural changes in the society, and created spatial and environmental changes in the cities. These changes have affected cities and societies pomelissitively and sometimes negatively.

The rapid growth of the population in the cities has prepared an environment for economic problems to occur. Unemployment, cross-sectorial imbalances (Es and Ates, 2010: 218) and the increase in income level are the main problems of urbanization. According to TUIK data, in 2018, the unemployment rate for the population aged 15-64 in Turkey is 11.2%, and the same age employment rate is 52% (TUIK, 2020). However, only 7% of the employed population is satisfied with their jobs and 2.28% are satisfied with their monthly income (TUIK, 2020). The

high level of unemployment and low satisfaction with the income earned by the job, directly affects the social and economic life of the person, while directly affecting life satisfaction, quality of life and individual health. Because general health and quality of life are cases that cannot be evaluated independently of economic welfare. According to the World Health Organization Healthy Cities Project, reducing unemployment and poverty is among the main targets for a healthy city to be established (Gurel Ucer, 2009: 33).

The emergent problems of urbanization can be exemplified with; increase in social discrimination, cultural alteration, unplanned urbanization, poverty, increasing number in crime, insufficient infrastructure, unbalance income distribution, decrease in sense of security. According to TUIK only 6% of the Turkish citizens are content with their residence, only 7% of the population are content with their neighborhood also only %6 of the citizens are content with their neighbor (TUIK, 2020). However in 2004 these rates were 14%, 9.55% and 12.55, respectively (TUIK, 2020). The level of satisfaction decreasement is directly related to health, social relations. This means urban health in Turkey has been affected negatively in the last 15 years. Since many of the problems mentioned are related to the socioeconomic determinants of health, they directly affect human health and therefore urban health. Because of the health of people living in cities, living and working conditions; from the physical and socioeconomic environment; it is affected by the quality and accessibility of care services (Basaran, 2007:211).

The distribution of income and socioeconomic development differences between people migrating to the cities and urbanites has been one of the social problems that accompany urbanization. Today, socioeconomic development differences are still one of the determinants affecting the social structure and the quality of life of the citizens.

Another big problem caused by urbanization is the insufficiency of the *housing stock*. The amount of housing available in the cities in 1950 and beyond was not sufficient for the migrating population. For this reason, people applied solutions the housing problem with their own methods and built their own houses illegally. "Slum" style houses, which are still a big problem for our cities, have been built and the problem of urbanization has become a difficult problem. The fact that this process was not controlled by state policies allowed the living conditions in cities to increase and social inequalities increased. Urban residents who live their lives in illegally built dwellings have not been able to benefit from the infrastructure services sufficiently, therefore urbanization has also caused the problem of *insufficient infrastructure and public services.* According to 2004 and 2019 TUIK data, there is a general decrease in the satisfaction of residents from public order services, transportation services, municipal public transportation

services, municipal services such as road and sidewalk construction, garbage collection and sewage (TUIK, 2020).

One of the elements that urbanization affects and changes the most is *the built environment*. Changing the built environment directly affects the lives and health of the people living in it. According to Morley (2005: 76), the increase in industrialisation and continuous development has affected the cities, the shape of the cities and the quality of life of the people living in them. With the increase of the population in the cities, unplanned living environments have been formed. This situation has caused the destruction of the physical environment and has greatly affected the quality of life of the city's inhabitants and the urban immigrants. According to the World Health Organization Healthy Cities Project, one of the primary goals for a healthy city is the creation of healthy living environments. Urbanization in developing countries such as Turkey, after moving away from the goal of designing a healthy living environment has led to the decline of urban health.

The rapid spread of the population, unplanned construction and technology, and the increase in the use of individual vehicles in the cities have caused major problems that cities and the ecosystem may face, such as *air pollution, water pollution and noise*. At the same time, problems that decrease the quality of life such as *physical activation areas per person, light-green areas and socio-cultural spaces* are insufficient with the rapid increase of population and housing.

All of these problems caused by urbanization are problems that seriously affect the quality of urban life and urban health, and the physical and mental health of urban residents. It is not possible to evaluate urban health and quality of life separately from these problems. The socioeconomic determinants affecting the health of the citizens and the determinants to be evaluated together with the built environmental characteristics are not independent of the problems caused by urbanization. Therefore, it would be a correct approach to mention that the built environment affects the quality of urban life and urban health and to address the problems caused by urbanization while doing so. "Van Kamp (2003) has stated that, concepts such as satisfaction with the residential environment, housing and living spaces, quality of life, property, human welfare, livability and environmental quality are sometimes used interchangeably and sometimes together and has focused on the relationship between the quality of residential environment and human welfare" (Salihoğlu ve Türkoğlu, 2019: 205). In the next part of the study, the relationship between built environment and urban health will be handled together with the approaches on urban health in the literature, and the effects of the built environment on city health at the neighborhood unit level will be evaluated.

3. BUILT ENVIRONMENT AND URBAN HEALTH RELATIONSHIP

The number of cities in Turkey and all over the world has increased with urbanization and the built environment quantity. As mentioned in the previous section, the problems brought about by urbanization affect urban health and quality of urban life. Health; it is shaped by many forces, especially demographic change, rapid urbanization, climate change and globalization (WHO, 2013). It is acknowledged that the majority of the population lives in cities, with many advantages and disadvantages. The current issue on the agenda is how to manage cities and other human settlements and create healthy living conditions in an increasingly urbanized world (Basaran, 2007: 209).

According to the World Health Organization's definition of health, it is understood that health is related to social and environmental factors independently of individual and genetic factors. The built environment in which the person lives is very much in terms of feeling good physically, mentally and socially. The built environment is defined as human-made areas where people live, work and recreate daily. The built environment is also considered a basis for health and wellness (Renald, et al. 2010: 68). Social and physical environment and life style of the people are the main determinants of their health status.

Table 1. Determinants Affecting Health
(It was created by the authors in the light of literature reviews, 2020).

Health Status Determinants			
Biological Determinants	Socio-Economic Determinants	Environmental Determinants	Accessibility to Services
-Genetics -Age -Gender -Alcohol, cigarettes etc. harmful substance use	-Poverty -Unemployment -Working conditions -Social Exclusion -Income rate -Spatial -Decomposition -Security -Sensation -Belonging	-Air Quality -Housing Quality -Density of Housing -Water Quality -Clean Food -Noise -Social Environment **-Urban Design** -Street Network and Connections -Public Transport Network -Pedestrian, Bicycle and Disabled Trails -Green Area Presence -Traffic Density	-Education Services -Health Services -Social Services -Transportation -Public Transport -Commercial Area -Entertainment Physical -Activity Venues

"Table 1" shows the main determinants that have an impact on health status. As the study aims to evaluate the impact of the built environment and neighborhood design on urban health, environmental determinants, one of the health condition markers, form the basis of this research. The environmental features mentioned in Table 1 are the basis of the built environment. Although each of these features is related to the satisfaction of living environment and quality of life, it directly affects urban health. For example; environmental determinants such as air quality, water quality and noise can cause chronic health problems in individuals. According to a research conducted, noisy environments; it causes auditory and non-auditory problems such as premature death, cardiovascular diseases, sleep disturbance, cognitive problems, high blood pressure, mental health problems in children (Khreis, vd. 2016: 252). Housing quality, housing density and traffic density can cause stress-related discomfort in people. The high green area and physical activity areas encourage people to physical activity and combat obesity. At the same time, the green areas and physical activity areas are high and the presence of the water element causes the psychological disturbances to decrease.

According to Sallis et al., (2012: 729) changing the built environment has the potential to have a long-term impact on health and well-being at the population level. Because the built environment is considered a basis for health and wellness (Renald et al, 2010: 68). The change of the built environment by considering the health of the city should start with the design of neighborhood units at the neighborhood level. Because, neighborhood units are settlements where people spend most of their time and socialize, feel or do not belong, and have a profound effect on their physical and mental health. For this reason, by designing healthy neighborhood units, it is possible to improve the quality of life in cities and create healthy spaces, thereby improving urban health.

3.1. Urban Health at the Neighborhood Unit Level

The built environment is human-made spaces where people live, work and recreate daily (Renald, 2010: 68). The neighborhood, on the other hand, is an "important urban life organ" where people are brought together, connected and live together like all living organisms (Mumford, 1954). As understood from Mumford's definition of "urban life organ", the neighborhood is a very important settlement unit for people. Settlement, which is of great importance for people, has a great impact on human health. In other words, addressing health determinants at the neighborhood level is an important start for designing healthy neighborhood units in terms of city planning.

Table 2. Neighborhood Level Determinants Affecting Health (It was created by the authors in the light of literature reviews, 2020).

Health Determinants At The Neighborhood Level			
Density	Diversity	Accessibility	Environmental Determinants
-Density of Housing -Population Density -Land Use Density -Traffic Density	-Mixed Use (Commercial area, Housing, Social Facility etc.)	-Commercial Areas -Public Transport -Open Green Area -Recreation Areas -Physical Activity Area - Education - Health - City Center	- Security and Crime - Belonging - Urban Aesthetics - Bicycle, Pedestrian and Disabled Trails - Physical Activity Venues - Street Connection Features - Urban Transport and Traffic Safety - Noise - Air pollution - Water Item Presence - Housing Quality

The determinants of health at the neighborhood level shown in "Table 2" can also be considered as determinants of urban health. Because each of these determinants has an impact on the life and health of the citizens. If the health determinants at the neighborhood level will be examined in the light of the approaches on this issue;

- **Density:** Chu et al. (2004: 21) found that the researches on the size and planning of the urban dwellings concluded that the features such as smaller housing units, narrow streets, cul-de-sac create more sense of belonging. Evans et al. (2002: 526) showed that high-rise houses have negative mental effects on children and mothers due to lack of playground and social isolation. Based on these inferences, it is possible to say that the sense of belonging is higher and the level of health may be better in the low-rise and non-high-density residential fabric, thus in settlements with less population density. According to a study by Sullivian and Chang (2011: 109), households living in high-traffic streets have less social relationships with their neighbors. Considering that there is a direct proportion between sense of belonging and social participation and urban health, the low intensity according to the conclusions of Chu, Sullivian and

Chang, is the determinant of urban health. According to these studies, the neighborhood units; designing low housing and low population density and planning in a way not to allow high traffic density will make the citizens feel more belonging to their neighborhood. According to the research made by Sullivian and Chang (2011: 111); crowded and noisy places can have a number of negative consequences, ranging from psychological stress and even depression. In other words, the density of built environment has a direct relationship with urban health, well-being and mental health. The study of the city planning discipline, which provides density control of the physical environment, by taking into consideration the negative effects of density on urban health, will lead the design of healthy neighborhood units.

- **Diversity:** The high diversity of land use in the neighborhood unit is related to the high social participation in that settlement. The intense entertainment facilities, social facilities, commercial facilities, open-green areas, physical activity venues, etc. ensure that the residents use the neighborhood more actively and feel themselves belonging to the neighborhood. In this case, the diversity of land use in the neighborhood is also a determinant in the improvement of urban health.

- **Accessibility:** High accessibility to the functions that urbanites need to use and access continuously, such as commerce, housing, open-green space, entertainment, social space, education, health, encourages physical activity. At the same time, accessibility and belonging to the living environment, time spent here and social participation increase. Accessibility also increases the vitality of the space, since accessing a space also increases the usability of that space. This improves the quality of the designed urban spaces. In addition, high accessibility in urban space enables people to come together and develop social ties and increase social capital. It is possible that people who use these places are healthier and more physically and mentally healthy, regardless of genetic or individual factors. Therefore, there is a positive relationship between accessibility and urban satisfaction and the improvement of urban health.

- **Environmental Determinants:** *Crime* is one of the most frequently discussed urban issues that affect health. According to a study by Chu et al. (2004: 24), Keithley and Robinson (1999) found that crime has a significant impact on mental health. Research by Perkins, Meeks and Taylor (1992) found that fear of crime was significantly associated with increased levels of depression and anxiety over time. In addition to the individual socioeconomic factors, it has been determined that the disturbance in the neighborhood structure and some social environment elements associated with fear of crime are associated with mental

illnesses and the absence of safe common areas in the urban environment contributes to mental health problems (Melis et.al., 2015: 14900). Designing neighborhood units with principles that will not allow crime spaces to be created together with lighting systems, observation points, etc. will provide more reliable and sensible spaces.

Belonging; it is one of the most important social bonds that keep neighborhood units alive. According to a study by Melis et al. (2015: 14888), the resident environment has been found to have a stronger impact on the mental health of people who spend more time in the neighborhood. According to Sullivan and Chang (2011: 107), the extent to which an environment affects mental health depends on the match between the person and that environment. The more successful the match is, the more likely the individual is to live at a higher level of mental health and well-being. The fact that social participation is high in the designed neighborhood, there are places suitable for establishing neighborly relations and other social relations, and the density is not high enough to prevent social participation.

Spaces that promote *physical activity* prevent depression (Sullivan and Chang, 2011: 111). Spaces that promote physical activity at the same time provide the fight against obesity, which is one of the common diseases of today. The fact that physical activity venues are high also increases social participation in urban space. For this reason, the design of the neighborhoods to have a lot of physical activity areas directly affects the physical and mental health of the residents. It also enhances the sense of belonging to the neighborhood as it will increase social participation.

Current information on the health-related effects of *urban transport* shows that motor vehicle traffic causes significant death and illness due to traffic-related environmental exposures such as motor vehicle accidents, physical inactivity and *air pollution, noise, increase in temperature levels, and a decrease in the amount of green space* (Khreis vd., 2016: 252). Again, according to a study by Chu et al. (2004: 21), a systematic study by Thomson et al.(2001) reveals that interventions to improve housing have an impact on health. Evans et al. (2000: 530), on the other hand, found that housing quality is an important determinant of psychological distress, and psychological distress symptoms decrease as the quality of housing increases.

The urban planning discipline interferes with all the health determinants at the neighborhood level mentioned above. Because the determinants related to the built environment control the city planning discipline. Therefore, the city planning discipline can directly control the determinants of urban health. Making

neighborhood design designs by considering the determinants of health at the neighborhood level will prepare an environment for the cities to be planned more from the foundation and to improve the health of the city.

4. CONCLUSION

Urbanization movement, which showed its effect all around the world in different periods, started to emerge in Turkey in 1950. However, due to inability to manage the process with the right policies caused many problems. Among these problems; economic unemployment, sectoral imbalances, socioeconomic disparities can be given as examples. Socially housing problem, lack of infrastructure, low education level, problems that directly affect human health such as unplanned construction in the environmental sense, increased use of individual vehicles and construction, increased air pollution, increased water pollution and noise, uncontrolled increase in traffic, housing and population density, lack of social participation, physical activity and insufficient green areas are also among these problems. All and more of these problems negatively affect urban health and urban quality of life, and living conditions in cities become more and more difficult. Urban health is integrated with social and physical environment features that may affect health and diseases, and it is highly related to the built environment in that it contains the urban features that make up the character of the city. For this reason, changes in the built environment directly affect urban health. At the same time, the changes in the built environment are related to urban health and the built environment in terms of affecting the residents' satisfaction in the living environment and the health of the city is related to the life satisfaction of the citizens. According to the research findings, the fact that the city planning discipline manages the built environment and its features directly reveals that it also controls the urban health. Therefore, it is possible to change the negative effects of urbanization on health by planning healthy cities and make urbanization beneficial for all city users. Exploring the relationship between built environment and neighborhood unit design and urban health, and the awareness of the integration of urban health with urban planning policies and urban design principles will be the basis for designing healthy cities.

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SESSION 3B

Theme: Conservation and Regeneration

13 October 2020 Tuesday, 16.15 – 17.30

Chairperson: Prof. Dr. Mohammad Mehdi AZIZI

Tiina Maria HOTAKAINEN

Examining Culture-Led Urban Regeneration Through the Lense of Temporality – The Case of Brunnenviertel, Vienna

Dilek ÖZDEMİR DARBY, İrem SELÇUK

Historic City Centres and Commercial Gentrification

Fatih EREN, Mürsel KARTAL

Competences in the Planning Process of Protected Areas: The Case of the Kubad-Abad Palace

EXAMINING CULTURE-LED URBAN REGENERATION THROUGH THE LENS OF TEMPORALITY - THE CASE OF BRUNNENVIERTEL, VIENNA

Tiina HOTAKAINEN*

ABSTRACT

Culture has become a main asset in urban regeneration over past decades. This 'cultural turn' has happened along larger societal developments: job relocations and rise of creative industries. This shift on the labour market has influenced leisure time patterns, creating a larger interest for cultural activities. Despite these societal transformations and their relevance to culture-led urban regeneration, the temporal perspective is widely ignored in academic discourse. Recent literature on culture-led urban regeneration accommodates a wide range of analyses, but there is no discussion on significance of the spatiotemporal aspect. This paper argues that a sole spatial inquiry is insufficient for culture-led urban regeneration strategies, and suggests time studies as a method of analysis.

The purpose of this paper is to address the research gap through a case study analysis. This article illustrates the culture-led urban regeneration process of Brunnenviertel area in Vienna, elaborating the key development in the local spatiotemporal setting. Austrian capital Vienna is a cultural metropolis of global significance. Culture has offered a significant asset of Brunnenviertel urban regeneration, and the laudable cooperation between stakeholders and local government has allowed an inclusive process. The analysis follows urban time studies research and the 'timescapes approach' as analytical framework. The empirical data for this study consists of local expert interviews, empirical observation material and municipal urban planning documents. The paper argues that a temporal perspective to culture-led urban regeneration could offer systematic dimensions for a critical analysis. The conclusions include methods of assessment and implementation for strategic planning interventions.

Keywords: culture-led urban regeneration, urban regeneration, time studies perspective, temporal analysis, metropolitan setting

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1. INTRODUCTION

The shift from industrialization to knowledge economy, and the growing importance of information businesses, has made culture a key driver of urban regeneration (Ferilli et al. 2017, Garnham 2005). Jobs have moved from manufacturing industries to creative and cultural fields (Ferilli et al. 2017, Garnham 2005, Garcia 2004), evolving in a 'cultural turn' in urban development discourse (Freestone & Gibson 2006). Urban regeneration signifies integrated and comprehensive action addressing long-lasting physical, social, economic and environmental improvement of urban areas (Bianchini 1993, Robert & Sykes 2000). Culture has potential to create notable improvements even with little financial contribution (O'Brien & Cox 2012). Originally, culture in urban regeneration referred to high culture and fine arts, but the current discourse encompasses also creative industries and local cultural production (Bianchini 1993, Evans 2002, Garnham 2005). The definition of culture varies within regeneration areas, but most projects relate to the increased amount of leisure time, where liberated temporal potential enhances cultural consumption and demand for cultural amenities (Bianchini 1993). Thus, time plays a crucial role for culture-led urban regeneration.

However, the temporal perspective in culture-led urban regeneration remains largely unexplored. This paper argues that a temporal reframing would offer a suitability analysis for implementing culture-led urban regeneration and support the existing local spatiotemporal assets. In order to demonstrate the temporal context of metropolitan culture-led urban regeneration process, the paper presents an empirical case study in Austrian capital Vienna. The neighbourhood of Brunnenviertel has undergone an urban regeneration process where culture has played a key part.

This study bases on urban time studies research (Chargboo & Mareggi 2018), the 'timescapes approach' (Degen 2018) and conceptions of time in cities (Madanipour 2017) to generate a temporal framework for the analysis. In order to locate conceptual temporalities in the empirical material, the study applies grounded theory (Strauss & Corbin 1997), reflecting the emerging sub-categories with Montgomery's (2003) classification of cultural agglomerations. Following a short introduction in the recent discourse on culture-led regeneration and the Viennese context, the article discusses Brunnenviertel culture-led urban regeneration under three temporal strands. An empirical case study demonstrates the temporalities of regenerative interventions.

2. TEMPORALITIES OF CULTURE-LED URBAN REGENERATION

The emphasis of culture-led urban regeneration has shifted from 'flagship' buildings or global mega-scale events (Evans, 2002) to local cultural production and place-specific activities (Mommaas 2004). Temporary uses have been a significant topic in culture-led regeneration, including the discourse on event-led urban regeneration (Richards & Wilson 2006), eventful cities (Richards & Palmer 2010), temporary uses and temporary urbanism (Madanipour 2017, Lehtovuori & Ruoppila 2017). 24-hour-city strategies (Lynch 1972) or the role of evening economies in urban regeneration (Bianchini 1995, Montgomery 1994) has been lively. Nevertheless, the academic discourse on culture-led urban regeneration has never proceeded further on the temporal perspective. Urban continuity through cultural usage patterns remains unexplored. This study argues that a temporal reframing would offer a suitability analysis in order to support the existing assets. The following chapter elaborates the existing temporal conceptualisations for an empirical case study of a neighbourhood culture-led urban regeneration process.

2.1. Temporal framework

This chapter draws together interdisciplinary discourse on urban temporality to illustrate the integrated character of culture-led urban regeneration. Subsequently, it presents a theoretical framework as a tool of analysis. The temporal framework founds on Monica Degen's (2018) and Ali Madanipour's (2017) suggestion of a conceptual triad for urban temporalities. The three conceptual categories are reflected with further perspectives on urban temporality (Charbgoo & Mareggi 2018, Lehtovuori 2010, Lefebvre 2004). The three theory-driven temporalities are designated linear, experiental and relational temporality, which in combination illustrate the complex temporalities of culture-led urban regeneration.

For the empirical case study analysis, this paper uses grounded theory to describe the neighbourhood elements as sub-categories for the theoretical triad. Linear temporality relates to elements of built environment, such as public space, streetscape and urban morphology, whereas cultural events and temporary uses describe experiental temporality. The case study introduced relational temporality via evening economy, social diversity, third places and market activities. These elements serve as sub-categories for the temporal analysis and guide the allocation under theoretical temporal elements. See table 1 for an illustration of the relations between the elements and the conceptual triad. The case study analysis follows the role of each temporal unity to culture-led urban regeneration.

Table 1. Reflecting neighbourhood elements with the temporal conceptualisations.

Temporal concept	*Neighbourhood elements*	*Theoretical contributors*
Linear temporality	public space streetscape urban morphology	Montgomery 2003, Gehl 2011, Degen 2018, Charbgoo & Mareggi 2018, Lidegaard et al. 2018
Relational temporality	evening economy social diversity market third places	Montgomery 1994, 2003, Manadipour 2017, Charbgoo & Mareggi 2018, Lidegaard et al. 2018
Experiental temporality	cultural events temporary uses	Manadipour 2017, Lehtovuori 2010, Richards & Palmer 2010, Richards & Wilson 2006

The first category describes linear temporality, where rational and abstract temporal thought dominates municipal urban development approaches (Degen 2018). Permanent and historical structures create a backbone for cultural activity and reinforce the collective memory as identity of the place (Gehl 2011). Municipalities construct new cultural flagship buildings to gain trademarks for the area to attract visitors and investors. 'Built form' ranges from public space to streetscape and urban morphology. The amount and quality of public spaces belong to key traits of cultural districts, while permeable streetscapes enable interaction (Montgomery 2003).

Urban experiences represent the following category. The rise of the 'experience economy´ (Pine & Gilmore 1998) is visible in current urban development initiatives, such as pop-up urbanism and temporary urbanism (Lehtovuori & Ruoppila 2017). These contemporary tendencies are offering an alternative for the permanent domination in urban space production (Madanipour 2017, Lehtovuori 2010). Events have become a key strategy for culture-led urban regeneration (Richards & Palmer 2010). Lehtovuori (2010) claims an entire urban planning paradigm around special moments, calling it 'experiental urban planning'. Culture contributes to image of the area (Richards & Wilson 2006). This article refers to cultural events as one-time urban occurrences, and to temporary uses as ephemeral urban practices (Madanipour 2017).

Relational, or social, temporality (Madanipour 2017) in culture-led urban regeneration refers to networks and stakeholder connections. Relational time as a social phenomenon links people with local spaces. This article defines cultural or urban activity though its continuity – whether daily, weekly or other analogous pattern: urban rhythms, which consist of natural, socio-cultural and spatial frequencies (Charbgoo & Mareggi 2018). Evening economy, social diversity, third places and market activity illustrate the local relational temporality. Evening economy refers to restaurants, cafés and other venues that are open after the

usual working hours, and studies connect it with success of cultural quarters (Montgomery 1994). Social diversity provides identity and resilience, whereas third places represent social places that are neither work or home but enable local interaction (Lidegaard et al. 2018).

3. VIENNESE CONTEXT FOR URBAN REGENERATION

Vienna, the capital of Austria, is both a municipality and a federal state with roughly two million inhabitants. The city consists of 23 urban districts, each of which has their own politically elected district government with controlled budgets. These governments are responsible for facilitation of culture among other things. Urban development in Vienna divides within municipal departments that conduct strategic urban planning, architecture, zoning and planning of public space. On the district level, there are 'local urban renewal' offices (original: Gebietsbetreuung Stadterneuerung, GB*), which are responsible for informing the residents, organising stakeholder participation, helping bottom-up initiatives and supporting the local economies. This paper depicts the regeneration process of Brunnenviertel neighbourhood in 16th Viennese district.

Brunnenviertel depicts an example of culture-led urban regeneration of parallel, overlapping processes that have contributed to the economic, social and physical renewal of the area. In this process, cultural openings preceded and initiated each wave of physical renewal. Although artists have started the processes, the projects have included a wide range of stakeholders, including architects and urban planners, residents, local politicians, market vendors, café owners etc. City of Vienna considers Brunnenviertel a positive example, for the role of culture, integration and inclusion in physical, economic and social urban regeneration.



Map 1. Brunnenviertel morphology.

Map 1 illustrates the urban morphology of Brunnenviertel. The neighbourhood represents a common working class neighbourhood with small-scale industry and

commerce. The built heritage stems from turn of the century. The fragmented morphology and the narrow streets are typical of Brunnenviertel urban structure. Old Vienna is visible in neighbourhood, with exceptional new construction in between. The diversity in urban environment and social backgrounds of the residents lends the neighbourhood its typical charm (Rode et al. 2010). The study area of this paper is limited between the district borders of heavily congested outer ring road Lerchenfelger Gürtel, to Veronikagasse street in the east and Ottakringer Straße street in the north. In the west, Haberlgasse defines a border and in the south, Thaliastraße culminates both the neighbourhood and the Brunnenmarkt street market.

The existing academic discourse on Brunnenviertel urban regeneration ranges from gentrification to peripheral development and further to cultural imaginaries. Rohn (2004) discusses the neighbourhood as peripheral urban development through culture. Assigned by the municipality of Vienna, Rode et al. (2010) researched the role of culture in Brunnenviertel urban renewal. Novak et al. (2011) examine gentrification in Brunnenviertel as physical and socio-economic transformation. Suitner (2015) discusses the transformations of cultural imaginaries from the viewpoint of community institutionalisation, planning-political ideologies and diversity image. Dlabaja (2016) examines Brunnenviertel regeneration through urban space production and its actors. Hammer & Wittrich (2019) present gentrification of public spaces with the example of Yppenplatz. This article adds to existing discourse by illuminating Brunnenviertel regeneration process from a temporal perspective.

4. METHODS AND DATA

The empirical data set consists of interviews, on-site observation material, photographs, municipal plans, maps and statistics, case-specific literature, media discourse, advertisement material, urban planning and policy documents. The two pilot interviews in 2016 clarified the interviewee matrix. The key semi-structured expert interviews in this data set stem from 2018-2019. Key stakeholders were identified with chain referral sampling: interviewees offered further contact persons during the process. Selection followed their central role in development process or activities. The interviews focused on the development process of the area, its temporal specifics in the three theory-driven categories and the role of culture within them. The analysis refers to interviewees by their representation (cultural worker, cultural administrative, urban planner, market vendor, local politician) to provide anonymity. The interviews and further research data was coded according to context-specific theoretical categories. The fifteen individual, semi-structured local expert interviews were recorded and

transcribed. The three key categories derive from theoretical framework; yet, grounded theory (Strauss and Corbin 1997) elaborated context-sensitive sub-categories and neighbourhood elements from case study context. The coding and analysis of research data was conducted with assistance of qualitative analysis software NVivo 12. The used data sets varied according to each sub-category. All translations by the author.

5. BRUNNENVIERTEL CULTURE-LED URBAN REGENERATION

Brunnenviertel's urban structure began to take form in 1800s. In 1873, first market activity starts in the neighbourhood, continuing throughout the wars. A wholesale market takes place at Yppenplatz. The built form survives the world wars to the large. Despite the rebuilding after Second World War, 75% of all housing in Brunnenviertel is sub-standard still in 1970s (personal interview, urban planner, 2018), meaning that apartments have no personal lavatories but instead, communal lavatories on corridors. In 1972, a fire destroys Yppenplatz market structure and the municipality decides to close down the wholesale market. The neighbourhood buildings are in bad shape and ground floors vacant. Brunnenviertel suffers of bad image, criminality and drug dealing; the amount of poor immigrant population is high. This lack of economic perspective remained for decades - yet a 1998 report claimed Brunnenviertel a "problematic urban area" (Werkstattberichte, 2000).

The municipality of Vienna presented several urban designs for Yppenplatz after the fire and wholesale market closure. As a 1993 proposal suggested demolishing the old market structures and replacing them with a massive seven-storey building (Werkstattberichte, 2000), locals resisted the suggestion and established a stakeholder initiative 'Forum Yppenplatz' with the lead of Wolfgang Veit, owner of 'Club International'. The local stakeholder collaboratives, especially 'Forum Yppenplatz' and 'Marktgeschrei', a cultural initiative for young immigrants, established a basis for subsequent collaborative urban regeneration. The local renewal office GB* became the leading address for Brunnenviertel urban regeneration. In 1997-2000, the first EU project URBAN Gürtel Plus financed urban regeneration of the problematic area around the Viennese outer ring road bordering Brunnenviertel. This funding enabled renovation of Yppenplatz, realised as a collaborative project within the guidelines of preceding local initiatives. (Werkstattberichte, 2000, Rode et al. 2010)

5.1. Linear temporality in Brunnenviertel's urban regeneration

The municipality, the district and EU have invested in the streetscape and infrastructure by renewing the local water provision and Brunnengasse street

market area, improving the traffic situation and introducing pedestrian zones. Public transport access includes metro U6 and four tram and bus lines. The tempo on smaller streets is limited to 30 km/h. The process of pedestrianizing streets is still ongoing in 2019. Brunnenviertel culture-led urban regeneration has transformed the ground floor vacancies to active frontages and enabled a mixture of commerce and residence (Montgomery 2003). The urban morphology enables active frontages: the representative ground floor height corresponds with commerce, restaurants or cafés. Local artists on Grundsteingasse assure that their galleries have showcase windows and thus are visible on streetscape (personal interview, cultural worker, 2018). Brunnengasse street market renovation paid special attention to ensure visibility and permeability between the new market stands and facades behind them: shops, cafés and restaurants (personal interview, urban planner, 2018).



Image 1. Yppenplatz plaza, the central public space.

The district governance has invested in public spaces (Hammer & Wittrich 2019). The urban regeneration of the key public space Yppenplatz featured a masterplan with rezoning, illumination plan, a redesign of piazza and park. Currently the district government is working on trees to fight urban heat islands (personal interview, local politician, 2018). Yppenplatz has kept its historical façade and architectural heritage. Instead of new buildings, there have been renovations and attic floor constructions on historicist buildings (personal interview, urban planner, 2018). Architectural heritage is important for the local identity as it reinforces collective memories that contribute to quality of public places (Gehl 2011). Brunnenviertel residents have considered the changes in the neighbourhood positive as long as architecture of different eras remain, keeping local history recognisable (Novak et al. 2011).

Brunnenviertel represents a diverse built environment with small-scale urban morphology. Instead of cultural flagship building, the local amenities such as Brunnenpassage hide within the heterogeneous urban structure. The trademark

and image that the architectural heritage narrates is that of local everyday life, instead of a trademark for high culture. The mixture of old and new buildings and variety of functions helps cultural agglomerations prosper in times of economic and social change (Montgomery 2003, Jacobs 1961). The large demand for apartments in Vienna causes pressure on the housing market, although the municipality practices strong rental control and protection of tenants. Brunnenviertel's image changes faster than its social structure (Novak et al. 2011), media discourse strengthening the gentrification narrative. Local rents remain yet below the Vienna average (Rode et al. 2010). "*There are around 300 houses in this neighbourhood, and about 50 of these have gone through major transformations. --- City signifies changes that we cannot plan. We cannot plan the housing market. We can take care that small apartments sustain. However, it would be cynical to sustain apartments without lavatories. The municipality has no such objectives*." (Personal interview, urban planner, 2018)

5.2. Experiental temporality in Brunnenviertel's urban regeneration

Despite the bad image of Brunnenviertel, the "slum of Ottakring", artist Ula Schneider recognised Brunnenviertel's potential: vacant spaces on ground floors, public spaces, affordable rents, networks of artists, potential visitors. In 1999, Schneider founded an art festival, SOHO IN OTTAKRING (later: SOHO). It started as a common art event, offering installations, film, photography, video, music, media, visual and electronic art (Schneider & Zobl 2008) from Ula Schneider's personal concern to do something with local problems. Through the huge resonance it created, SOHO began to affect urban regeneration. Within SOHO, the whole neighbourhood received an exception status for two weeks annually, where the public space extended to ground floors (Rode et al. 2010). In 2003, the organisers made a relaunch of the festival. They included topics and groups of local relevance– thematising local issues, enabling participation and involving neighbourhood institutions (personal interview, cultural worker, 2018). "*In my experience, (culture) has an impact of giving a place another face. For me, this is the key asset of art. A visualisation. Of topics, as well. So that we not only talk, because talk is volatile, but that we can do something. So that there are actions. So that something becomes visible*." (Personal interview, cultural worker, 2018)

The local problems prior to the regeneration process included criminality and drug dealing, street market issues, housing stock in bad shape and immigration from poor regions together with little financial perspective. The cumulative effect created a downward spiral (personal interview, urban planner, 2018). SOHO cooperated with Viennese Economic Chamber (Wirtschaftskammer Wien) for several years, whose aim was to generate positive publicity by art. Afterwards,

the festival received support from local politics, renewal office GB* and private enterprises. The SOHO actors felt ambivalent about the role of 'art as an engine for urban regeneration' (personal interview, cultural worker, 2018). The tremendous image shift was apparent, media presenting the neighbourhood via art and culture, as ethnic, exotic and trendy. "*Within the logics of urban development, the art project (SOHO) was, if anything, image polishing. It went as far as, real estate people writing 'in SOHO-neighbourhood': 'living in SOHO-neighbourhood'. Instead of 'living in a migrant-neighbourhood', which would have a negative annotation. So, they rather used 'art'*". (Personal interview, cultural worker, 2018)

Currently, Brunnenviertel has good cultural coverage through everything that already takes place there, and few need for new openings (personal interview, cultural administration, 2018). In lack of vacant spaces and without the need to regenerate miserable corners, SOHO left the neighbourhood in 2012 to Sandleiten, a more remote location in Ottakring. Today, Brunnenviertel's leading event is the annual Street Art Festival (Strassen-Kunst-Fest), which strengthens social networks and neighbourhood's identity as village-like community. Art space Brunnenpassage organises the festival together with local merchants and renewal office GB*. (Personal interviews, local politician, 2018 / urban planner, 2018).

5.3. Relational temporality in Brunnenviertel's urban regeneration

The cheap rents, authentic atmosphere and public transport access in Brunnenviertel attracted urban pioneers: students, artists (Zukin 1989, Suitner 2015), and immigrants. These social networks inaugurated the local artist scene. At that time, the neighbourhood suffered of bad image, criminality and poverty. Despite the gentrification claims (Hammer & Wittrich 2019), the changes within the urban regeneration process have been numerous and various. For instance, traditional Austrian businesses have retired, and ethnic economies have taken their place (personal interview, urban planner, 2018). Brunnenmarkt would cease to survive altogether without ethnic economies. In Brunnenviertel, parallel societies coexist in the smallest space (personal interview, urban planner, 2018). Cultural actors wish to live in Brunnenviertel "*because it is multi-ethnic and - as you say - cultural. And this square (Yppenplatz) --- is socially used*." (Personal interview, cultural worker, 2018)



Image 3. Brunnenmarkt open street market along the Brunnengasse pedestrian street.

In 2007, Art Space Brunnenpassage, a permanent cultural facility opened in a former market hall in Yppenplatz with motto "culture for everyone", with a continuing cultural programme of performances, concerts, discussions, courses and education. They pursue integration of minority groups as part of Caritas charity organisation and Catholic Church. Brunnenpassage represents a significant third place in the neighbourhood, offering a wide range of culture with "pay as you can" principle, encouraging groups with low income, no German language skills, lacking education and any nationality to participate. Their daily and all-year round participative cultural programme comprises performances, concerts, discussions, courses and educational overture. (Personal interview, cultural worker, 2018) "*I think the neighbourhood has given a positive example on how different cultures can coexist and exchange*" (personal interview, cultural administration, 2018).

Brunnenviertel evening economy encompasses the current café and restaurant scene around Yppenplatz plaza. These commerce spaces were vacant for several decades. Rezoning of the former wholesale market area on Yppenplatz enabled these new economies to exist. The explicit economic interest for creative and cultural contents has supported the popular nightlife scene. Where Yppenplatz represents a lively and gentrified cultural spot for the wealthy creative class today, Brunnenmarkt street market vendors sell inexpensive foods (personal interview, urban planner, 2018). It is uncertain whether Brunnenmarkt street market profits of the development of the café and restaurant scene on Yppenplatz (personal interview, cultural worker, 2018).

There are two main market activities in the neighbourhood: the daily street market Brunnenmarkt and the weekly farmer's market at Yppenplatz square, where the former wholesale market was located. Brunnenmarkt is a 600-meter-long street market for food, clothes and ethnic products. "*For me, personally,*

Brunnenmarkt has always been something special. --- It is the longest street market in Europa. We have a street market that spans through the whole neighbourhood." (Personal interview, local politician, 2018) The market was renewed from 2005 to 2010, where the district-led initiative renewed the Brunnengasse market as a pedestrian street, constructed closed market stands for the vendors, as well as renewed the infrastructure and water supply. Social diversity has given a distinctive identity to Brunnenviertel. "*It's the market part, which gives a sign of multi-cultural. --- Every district tries in one way or another to brand themselves with something and culture is one of the, in my opinion, one of the most interesting ones. Integration is one of these*." (Personal interview, cultural worker, 2018)

6. CONCLUSIONS

The history of Brunnenviertel included two significant cultural opening, as ruptures of experiental temporality, which have initiated urban regeneration: the 1991 local initiative Marktgeschrei for young immigrants; and 1999-2012 annual Art festival SOHO IN OTTAKRING for reusing vacant spaces and local potential. The relational temporality relates to everyday activities, but also to cultural amenities through the permanent Art space Brunnenpassage, est. 2007, for integration and art for everyone. On the other hand, the two big linear urban regeneration projects have transformed the neighbourhood: 1997-2000 Urban Gürtel Plus and 2002-2010 Zielgebiet Gürtel. Whereas several previous studies on Brunnenviertel urban regeneration stress the Yppenplatz evening economies (Hammer & Wittrich 2019, Novak et al. 2011) or cultural events as urban catalysts (Rode et al. 2010, Rohn 2004), the temporal analysis of this study illuminates the importance of mundane everyday activities, such as Brunnenmarkt market and social diversity.

A temporal analysis framework for culture-led urban regeneration enables a reconsideration of regenerative interventions as temporal objectives. The experiental temporal aspects of Brunnenviertel urban regeneration created media attention and discourse, explored the limits of public space, reduced vacant spaces, stimulated real estate development and generated a new artistic image for the neighbourhood. The relational temporality emerged from local social networks, enabling interaction, participation, strengthening of social networks, variation in the local economies, a rise of a local scene and social diversity, whereas the role of linear temporality remained as facilitating rather than actively engaging.

The emerged nightlife scene at Yppenplatz represents the typical gentrification narrative but cultural neighbourhoods require more than after-work activities of the metropolitan creative class to flourish. Degen (2018) reminds of different

social groups bearing a specific temporal relationship to their everyday places. Varied local urban rhythms emerge in interdependence with social diversity. Due to the rising relevance of temporal scarcity over spatial scarcity (Henckel 2007), temporal analysis will gain importance.

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HISTORIC CITY CENTRES AND COMMERCIAL GENTRIFICATION

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ABSTRACT

Regenerating the historic centres of cities has long been an important and widely used intervention for local authorities to fight urban decay and obsolescence. It also has helped administrations to increase their competitive power in attracting new businesses, increasing visitors' footfall, and to promote rising property values. To plan for regeneration it is vital to adopt an area-based approach which requires a joint organizational management perspective to deal with social, economic, spatial and environmental issues under a single umbrella. Otherwise, various unexpected consequences might arise. To illustrate this, physical improvements in such areas usually end up with increased property values which are both enjoyed and/or endured by the stakeholders, including local residents, tradesmen and others. Therefore, any intervention with reference to the regeneration and rehabilitation of historic city centres should be monitored by the planning departments of the municipalities to deal with the possibility of unexpected consequences.

Pedestrianization is one of these intervention tools used to regenerate historic city centres, providing benefits in such areas as health, environment, transportation and accessibility, and also economic and social prospects. Pedestrianization is also one of the most important contributors to the expansion of retail activities, since it increases visitors' footfall. Increased retail activities in pedestrianized streets and historic areas drive sales and property prices upwards. Therefore, it is largely welcomed by the local authorities. On the other hand, pedestrianization might produce an unintentional commercial gentrification. Therefore, it is wise to note that feedback mechanisms should be established in the earlier phases of the regeneration plans formulated by municipalities.

In this respect, the regeneration of the historic centre of the Istanbul's Kadıköy district, which started in 2004 and still continues, is worth-noting. In the context of our research, in 2014, 400 surveys were conducted with visitors and shopkeepers and a land-use analysis was completed to identify the changes which had occurred in the past ten years. Then, in 2018, a new

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land-use analysis was carried out to track the changes from 2014 to 2018. Moreover, face-to-face interviews with city council members and the head of trade associations were made in 2018 and 2019. In our case study, the most important achievement of the regeneration scheme was the pedestrianization of the area, the success of which promoted an unintended commercial gentrification which turned into an impasse between local tradesmen, property owners and the municipality. In this paper, the reasons behind this commercial gentrification will be discussed, together with proposed solutions to any problems which might arise, using examples from various developments in other countries.

Keywords: Pedestrianisation, Historic Town Centres, Regeneration, Commercial Gentrification, Retailing

1. INTRODUCTION

Throughout history, all pre-industrial cities were also pedestrian-cities. The balance between pedestrians and traffic was first interrupted by industrialisation in the 19th century, and then this separation was further deepened in the first half of the 20th century. In this period, much of the effort of the Modernist architects and planners was focused on the design of healthier environments (sun, space, greenery), and separating pedestrians and cars to provide more 'freedom' to moving traffic (Carmona, et al, 2003, p.21). Conversely, this resulted in pedestrian-unfriendly cities. In Europe, Germany was the first country to introduce pedestrianisation schemes in 1926 in Essen. This idea of attracting customers to car-free environments for shopping was also used by European planners to develop projects such as the Lijnbahn Street in Rotterdam and other war-damaged cities, particularly those in West Germany, in the 1950s. In the second half of the 20th century, the pedestrianisation schemes were continued to be implemented in Europe, such as in Germany, the Netherlands, the UK, etc. Among these cases, Copenhagen has turned out to be a success story, in which 100,000 m^2 of land in the city centre was pedestrianized between 1960 and 2000 (Gehl and Gemzoe, 2000).

The city centres in Europe and elsewhere entered in a declining status after the suburbanization and deindustrialization of the 1960s and 19700s (Hall, 1998). There also other reasons for this decline, such as physical, economical and functional obsolesce of the building stock, aging buildings, legal issues, etc.; and as shown with examples, in many revitalization schemes, pedestrianisation has been used as a major tool (Tiesdell, et al 1996). According to Wooller (et al, 2012) 'urban regeneration through pedestrianised spaces' helps to decrease car-dependency and increase in physical activity levels. Similar paths were also followed in the UK (Tallon, 2010). Through pedestrianisation, city centres are

expected to regain their popularity, with the increase in the number of visitors, growing sales, and various opportunities for socialization (Gehl and Gemzoe, 2000; Monheim, 2013).

A successful pedestrianisation scheme requires citizen participation; the optimum allocation of space for all users (including residents, operatives, tourists, and traders); management of public parking facilities; provision of access to public transport; adequate demarcation of spaces for loading and unloading; co-ordination of municipal services such as waste collection; cleaning, security, and maintenance; and finding a solution to the various parking and traffic problems which surround and occasionally intrude upon the pedestrianised area (Sastre et al, 2013, p.743). On the other hand, the success of such schemes may also drive gentrification, leading the displacement of current residents and businesses.

In this context, the aim of this article is to analyse the consequences of a pedestrianisation scheme located on the Asian side of Istanbul, in Kadıköy historic centre and retail zone, by focusing on changes in retail structure during the post-pedestrianisation period. The pedestrianised area is the locus of a very important hub for different modes of transportation on the Asian side of the city, and, of equal importance, remains a conservation area and a historic market place.

2. PEDESTRIANISATION AS A MEANS FOR REVITALISING HISTORIC TOWNS

2.1. Positive and Negative Aspects of Pedestrianisation Schemes

Pedestrianization has transportation benefits, such as improved mobility and accessibility, reduced congestion, accidents, increase in public transportation use. Social benefits include, increased sense of belonging, increase in safety, heritage preservation. Environmental benefits include reduced air pollution, fuel and oil saving, noise reduction, more greenery and plantation, and improved microclimate. Economic benefits contain increase in pedestrian footfall, increased sales and rents. Health benefits are unpolluted air, more exercise, fat and calories loss, improvement in metabolisms, cardiovascular system etc. (Soni and Soni, 2016, p.149). The study by Sandahl and Lindh (1995) on Sweden revealed that the attractiveness of the city centres significantly increased with pedestrianisation, which also contributed to the increased the accessibility. As the pedestrianised city centres become more popular, the real estate prices rise in the vicinity as well. Litman, (2014) summarizes the advantages of traffic calming measures such as increased road safety, comfort and mobility for non-motorized traffic, reduced noise and air pollution, and increased property values.

As well as positive aspects, the pedestrianisation also has negative aspects. It is usually inevitable that the small-scale businesses in the pedestrianised areas are

displaced (commercial gentrification). The change to the trade in the area to meet the consumption requirements of the high-income group is called "commercial gentrification" (Rankin, 2008). If the pedestrianisation project achieves success, the real estate prices rise, and the small businesses fail to keep up with this price boom. Thus, they are replaced by the chain stores which can pay the increased rents. Despite the increased sales, the small businesses have to leave the area since they cannot afford the increased rental prices. This puts the shopkeepers in the area in a difficult situation. Consequently, losing their originality and authenticity, these areas become cloned/identical centres. There have been criticisms that the city centres have been turned into monotype cash machines. There is also pressures for the displacement of residential uses in favour of commercial expansion (Tan, 2008).

The efforts to revitalise the historic city centres might possibly end up with two interrelated threats; the first one is the displacement of local and authentic shops with chain stores or higher-end brands; second one is the loss of diversity and variety of the city centres at the expense of chains which provide standardised services together with their standardised logo, colour, etc. (NEF Report 2005). After the popularisation of the area, the increases in shop rents cause the displacement of tenant retail premises. This is the case when the shop ownership pattern does not support ownership. Therefore, the small shops and stores owned by these groups are outcompeted by the big international retail chain stores and eventually shut down.

The economic success of a pedestrianisation scheme is measured by analysing the increase in sales, pedestrians' footfall, and residential/commercial property prices (Hass-Klau, 2015; Sinnett, *et al* 2011; Cömertler, 2007; Kumar and Ross, 2006). There is a wide range of literature analysing the economic dimension of pedestrianisation; however, the research relating the retail/shop-mix changes with that of the commercial property rental changes in the pedestrianised environments are relatively few (Hon-Yip 2014, Chau et al 2000).

3. PEDESTIANISATION OF KADIKÖY HISTORIC CENTRE

Kadıköy Historic Centre (KHC) has always been an important node for shoppers, passer-bys and retail activities. During the 19th century, the old marketplace was the centre of the area. From the 1950s onwards, social-economic problems started. The "Regeneration of the Historical Centre of Kadıköy" project was launched under the leadership of the Kadıköy Municipality in 2004. In this context, an association of the tradesmen in the historic centre was also established. In accordance with the decisions of the Board for the Protection of Cultural and Natural Properties, the Municipality of the County of Kadıköy and the ÇEKÜL

Foundation became project partners on 06.10.2004. With the protocol signed upon this partnership, the Regeneration Project for the Historic Centre was launched. The overall purpose of the Regeneration Project for Kadıköy Historic Centre was to 'regenerate' the 'Historic Centre which had gradually been losing its economic, physical and historic significance'. Although the pedestrianisation scheme was not welcomed by all tradesmen in the beginning, after observing its success it has been widely accepted by retail establishments in the area.

3.1. Methodology

The aim of this study is to shed light on the pedestrianisation project in Kadıköy Historic Centre (KHC) and marketplace and its economic consequences with regard to the changing retail uses as a result of the rising shop rents. The survey covers a wide range of questions, from social and physical aspects (such as attractiveness, safety, physical and visual improvements, and user profiles) to economic issues (such as the volume of pedestrians, or sales.).

The pedestrianisation project in the area was started in 2004 and completed in 2009. The first part of our survey was conducted in 2014. The research has a tripartite structure: a land use analysis to identify before and after changes of the pedestrianisation project, a survey of pedestrians and shopkeepers, and interviews with two non-profit organizations which were involved in the revitalization project. The original land use analysis was conducted by the Kadıköy Municipality in 2004. Ten years later, in 2014, the authors conducted another land use survey in the same area to understand the changes that had taken place in the past ten years. Then, four years later, in 2018, another landuse analysis was conducted in order to track the changes after 2014. The results of this landuse study are also presented on a map and a chart.

Within the project area, the boundaries of which are set by the Kadıköy Municipality, there are 317 commercial properties at the ground floor level. The majority of these are members of the Association of the Retailers of the Kadıköy Historic Centre. Among the retail premises visited in the area, a hundred shops agreed to participate in the survey. In this context, a third of the retail premises (100 shops) were surveyed in July 2014. The questionnaires were filled by face-to-face interviews with the shopkeepers. There are also 398 pedestrian surveys completed[1]. The survey was conducted on weekdays and at the weekend; and

[1] When the size of the universe is unknown, within the limits of $_{+}^{-}$ 0.05 sampling error and 95% confidence interval, at least 384 surveys should be completed (Yazıcıoğlu and Erdoğan, 2004, p.50). In the research, 400 questionnaires were distributed, with 398 completed correctly.

took place between 09.00 and 19.00 hours. In order to distribute surveys equally during the day time, in every hour, only 10 people were surveyed.

4. THE RESULTS OF THE SURVEYS AND INTERVIEWS

The results of our analysis showed that a great majority of the visitors (65,58%, 216 out of 298 people) is between 20 and 39 years old, i.e., young people. The age group between 40 and 49 is 13,32 % (53 people) and the youngest age group (10 and 19) is 11,31% (45 people). As it can be observed from the Table 1, majority of the visitors (the sum of *agree* and *totally agree*) think that after pedestrianisation property prices increased (45,7%); foreign and local visitors increased (50,1%); area visually and aesthetically embellished (47%); eating and drinking places increased (55,6%). These are recognised as the indicators of the success of the scheme. The increase in property prices is a positive aspect of the pedestrianisation with respect to the owners. However, for the tenant retailers, this indicator of success, turns into a threat; because shop rents also increase with the increase in visitors' footfall.

Table 1. Visitors' Views about Pedestrianisation / Positive Aspects

VISITORS' VIEWS POSITIVE ASPECTS	DISAGREE		SLIGHTLY AGREE		PARTIALLY AGREE		AGREE		TOTALLY AGREE	
	N	%	N	%	N	%	N	%	N	%
Area became safer	94	23,9	44	11,2	110	27,9	81	20,6	65	16,5
Property prices increased	59	15,4	41	10,7	108	28,2	114	29,8	61	15,9
Cultural activities increased	64	16,7	42	11,0	119	31,1	94	24,5	64	16,7
Foreign/local tourists increased	50	13,0	55	14,3	87	22,6	118	30,6	75	19,5
Visual & aesthetics beautification	69	17,9	32	8,3	103	26,8	109	28,3	72	18,7
Increased attractiveness	63	16,4	44	11,4	100	26,0	106	27,5	72	18,7
Eating/drinking places increased	35	9,1	45	11,7	91	23,6	121	31,4	93	24,2
Number of car parks increased	88	23,0	56	14,6	83	21,7	101	26,4	55	14,4
Local tourists increased	41	10,7	52	13,5	101	26,3	108	28,1	82	21,4
Foreign tourists increased	59	15,4	44	11,5	80	20,8	85	22,1	116	30,2

This observation of the visitors' is also confirmed by the shopkeepers, stating that the number of shops closed down increased, because they could not afford the increased shop rents. (See Figure 1) One of the consequences of increasing rental values is the displacement of small shops which have difficulty in affording these increases. Sixty-one percent of the shopkeepers (65 out of 96 shopkeepers) *agree* or *totally agree* about the closures of the old and small businesses

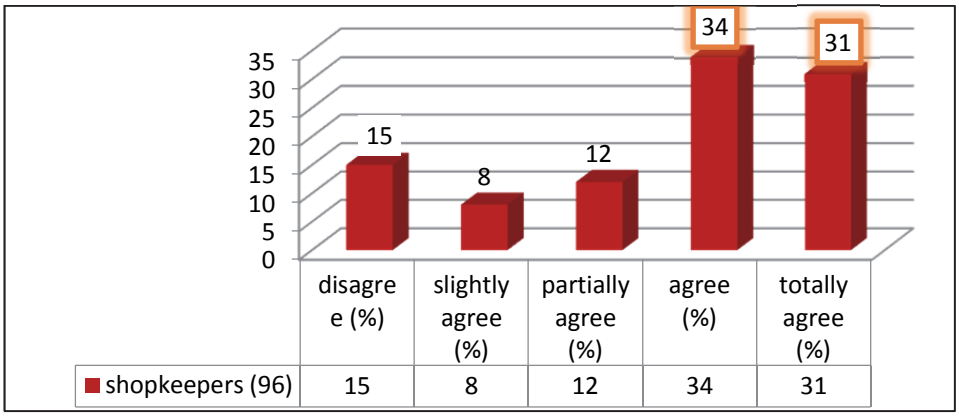

Figure 1: Shops are closed down after pedestrianisation (Shopowners' views)

The KHC has always been a prominent centre for the food and drink industry. Mühürdar is the main street, while Muvakkithane, Tellalzade, Serasker and Yasa are also important thoroughfares. In the context of this research, a map showing land-use in 2004 (maintained by the Kadıköy Municipality), was updated in July 2014. From 2004 to 2014, the range of shop-types changed. A third of the shops (108 out of 317 shops) had changed their functions (see Figures 2,3 and Table 1)

An important turning point in the in the pedestrianisation of the KHC was the change in item 10 of the *Law of Obligations* which made it possible to annul the deeds of shopkeepers who had rented the same shop for more than 10 years. The change was amended in July 2014. In the KHC, almost 2/3 of the shopkeepers are tenants, and this legal change worsened their affordability of rents. After this change, it became possible for property owners to ask for higher rents. In 2016, for example, for a 100-m^2 shop, the rent was as high as 30,000 TL monthly[2] (Karakaş, 2016).

[2] As of April 2016, the exchange rate of US $ 1 equals to 2.8 Turkish Lira, and € 1 equals to 3.1 TL.

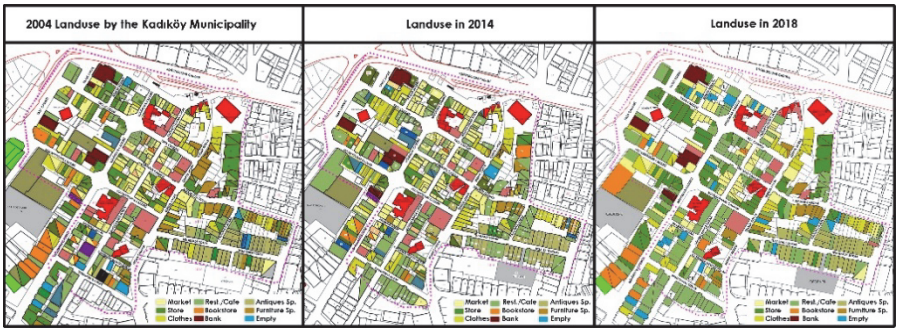

Figure 2: Changing Landuse in the KHC between 2004 and 2018

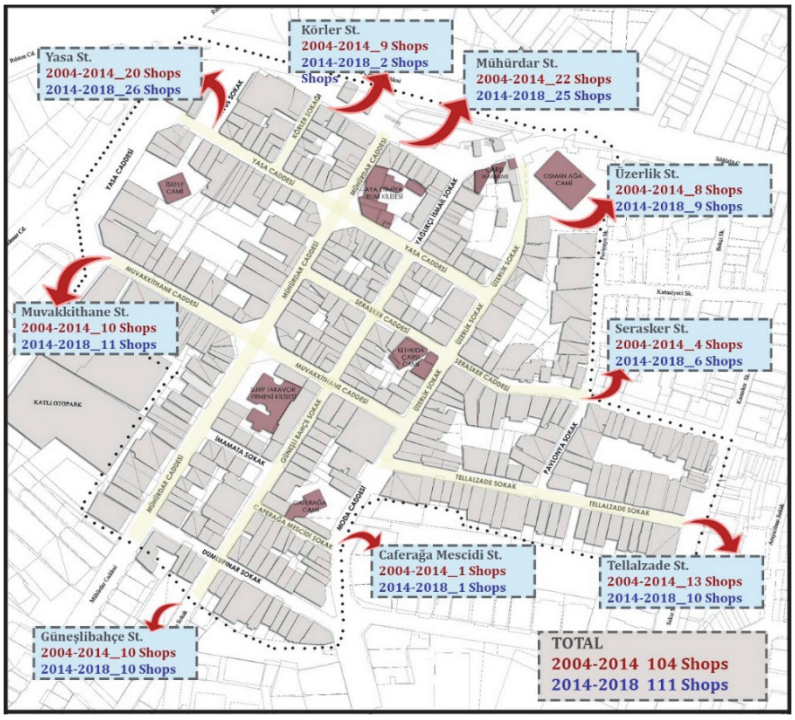

Figure 3. The Change in the shopmix in the KHC (2004, 2014 and 2018)

In the year 2014, the comparative analysis with 2004, showed that 107 shops changed their functions over 10 years, mostly turning into restaurants and cafes (43%). In that decade, four antiques shops and 10 bookstores were closed. These changes occurred mostly in two main streets, Mühürdar and Yasa.

During the interview with Mr. Mehmet Ecevit from the Board of Directors of the Association of the Retailers of the Kadıköy Historic Centre on November 14, 2016, it was revealed that the area started to be much more popular with pedestrians

soon after its pedestrianisation in 2009. This development spurred entries of many new retailers to conduct business in the KHC, with the assumption that increased popularity would bring higher profits. The emerging demand from the entrepreneurs for retail space to rent consequently created pressure on the traditional, established tenants of this historic retail centre, since owners of shops started to ask for higher rents from their existing tenants.

As mentioned above, the change in the Law of Obligation created an opportunity for commercial property owners to ask for higher rents. An average 70-80 m^2 shop rent increased from 5,000 TL to 20,000 TL. Although new retailers started business with initial enthusiasm in the KHC, and were willing to pay over-the-odds rents, within a short time (mostly after six months) they realized that doing business there had not been profitable enough to compensate for inflated rents. As a consequence, there has been a rapid turnover of ownership in the rented shops.

Another change revealed by Mr.Ecevit during the interview was the loss of retail variety which was related to the upward expansion of retailers to the first and second floors of buildings through displacement of pre-existing residents. The buildings which were once hosting the shop owners' families living on top of their shops started to be deserted by them. Consequently, although the area remains very popular with pedestrians, the demand for retail services has changed in line with a larger presence of drinking/eating and dining activities, rather than the provision of *daily needs*.

In the 2018-landuse analysis, the consequences of this legal amendment became more visible. In four years' time from 2014 to 2018, 107 shops changed their functions. Similar to the previous years, Mühürdar and Yasa streets are the ones with a high rate of change. See Table 2. Also, the rate of change in the shop types became faster. For example, in Mühürdar Street, 25 shops changed their functions in four years (2014 - 2018), while 22 changes took place between 2004 and 2014.

Table 2: The Consecutive Change in Retailers in the KHC from 2004 to 2018

STREETS	2004-2014	2014-2018	TOTAL
Muvakkithane Street	10	11	21
Mühürdar Street	22	25	47
Tellalzade Street	13	10	23
Serasker Street	4	6	10
Yasa Street	20	26	46
Üzerlik Street	8	9	17
Körler Street	9	2	11
C.Mescidi Street	1	1	2
Pavlonya Street	6	2	8
Yağcı İsmail Street	3	3	6
Tavus Street	2	2	4
Güneşlibahçe	10	10	20
TOTAL	108	107	215

Tellazade Street managed to keep its authentic atmosphere with the antique shops, in spite of the changes. In the 2014-2018 period, there are four new antique shops, 21 new retail stores, and 25 new restaurants and cafes were opened, although 3 bookstores were closed.

A striking result was the scale of the changes, that is, on the street level there are 317 commercial premises; and as it can be observed in the Table 2, within 14 years, 215 shops changed their functions. This means that 68% of the shops have gained new functions, mostly in the eating and drinking sector. Many of these new businesses are the "*fish and rakı*" restaurants, which filled a gap in the market after the closing down the *fish and rakı* restaurants in the historical Beyoğlu district in 2011 (Milliyet, 2011; Bilgici, 2017).

4.1. Kadıköy Historical Centre in the Covid19 Pandemic Period

During work on this article, the world has been hit by the Covid19 virus. In order to understand the economic consequences of the pandemic in Kadıköy's historic commercial centre, we conducted an online connection with the chair of the Association of the Retailers of the Kadıköy Historic Centre, Mr. Ali Geçgel on September 1, 2020. According to Mr.Geçgel:

"Kadıköy historic centre has been going through a difficult period, many shops are turning over their rights, and closing down due to high rents and the absence

of customers. Delicatessens, sweet shops, *halva* shops, and many other similar types of businesses have either closed down or moved to other locations with cheaper rents. Along the Tellalzade Street, many antique shops have been replaced by restaurants. The Historic centre has been losing its diversity of shops. Unfortunately, local shopkeepers have not been able to benefit from the support funding of the government; and many of the shops have been subleased. Moreover, since the Bill on the Historic City Centres has not been amended yet, not only Kadıköy, but many other historic cities in Turkey are also in difficulty. Another problem is the inappropriately restored historical buildings, and during the pandemic, this problem has worsened."

According to the chair of the Association of the Retailers, if the necessary steps are not taken immediately, Kadıköy historical centre will be a marketplace serving only the textile and clothing industry, and eating and drinking places. To prevent this, historic shops and businesses along these historic streets and age-old buildings should be listed to conserve their heritage, and their guilds tradition.

5. CONCLUSION

Pedestrianisation schemes contribute to the improvement of the built environment through various outcomes, including increased safety and visual attractiveness. These positive effects lead to an increase in the number of pedestrians passing through, and a further increase in the volume of sales. In such cases, the literature review frequently mentions an increase in property/rental values as a positive outcome (Chau *et al*, 2000, Hon-Yip, 2011).

As our research has shown that the success of the pedestrianisation of the KHC scheme has created a threat, that is, the replacement of many smaller older businesses with domestic and international chain-stores or eating/drinking facilities.

Planning authorities should carefully consider preventive measures to protect the diversity of small individual shops which contribute to the maintenance of an authentic image which may be invaluable for such historic centres and their retail zones. One measure that emerged from our interview with the Association of the Retailers of the Kadıköy Historic Centre is the possibility of controlling business permits. This might indeed be one of the most useful policies to prevent the conversion of the area's image into a mono-functional retail zone, if there is a will to implement restrictions in the licensing of new businesses. An inventory of the retailers can also be prepared, with new business permits given only to new start-ups in the same retail category of the closed premises, rather than the licencing of new eating and drinking places. Moreover, historic shops and

businesses along historic streets and age-old buildings can be listed to conserve their heritage. Family-owned, small businesses, offering a variety of specialized services, can be given local tax exemptions by the municipality. Methods used in the assessment of commercial property can also be regulated to prevent speculative rent increases.

Having concluded in her study on Toronto's three west-central neighbourhoods, Rankin (2008, p. 43-47) proposes three possible solutions to deal with the commercial gentrification: a) "Municipalities can retain some of the shops and stores during and after the gentrification process, and employ the old businesses with low rents in order to preserve the traditional fabric of the area; b) Individual independent retailers can form cooperatives to counter the entrance of the global companies into the area; c) The visitors can show sensitivity and shop at local independently owned stores".

In conclusion, in a pedestrianisation scheme there are many factors which need to be considered. Although mostly positive results, and often very positive results, are achieved after pedestrianisation schemes are introduced, commercial functions in the pedestrianised areas, together with the dynamics of retailing and the tenure status of commercial properties, need to be assessed beforehand. In this respect future studies on pedestrianisation may wish to incorporate more fully these issues in their research agenda.

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COMPETENCES IN THE PLANNING PROCESS OF PROTECTED AREAS: THE CASE OF THE KUBAD-ABAD PALACE

Mürsel KARTAL*, Fatih EREN*

ABSTRACT

This study aims to explore issues that will increase the effectiveness and efficiency of the planning process in order to examine the problems encountered in spatial planning studies carried out in protected areas within the scope of Kubad-Abad Palace Protection Plan. The study targets to improve the planning process of protected areas in every sense and to reduce the conflict of authority between different institutions. The jurisdictional confusion experienced in Conservation Development Plans is a subject that is rarely discussed in the urban studies literature. The study is expected to fill this gap in the literature to a certain extent.

In the research, literature review, document analysis, case study and in-depth interview methods were used together. Kubad-Abad Palace in the Beyşehir District of Konya Province has been selected as the case area. Kubad-Abad Palace has 5 different conservation status: I.Degree Archeological Site, III. Degree Archeological Site, Sustainable Conservation and Controlled Use Area, Qualified Natural Conservation Area and Beyşehir Lake National Park. Therefore, the case area has the feature of "overlapping restricted area". Physical structure analyzes and various specific analyzes were conducted for the selected case area. A detailed process analysis was made on which institutions contributed to the conservation plan studies regarding the Kubad-Abad Palace and in what manner. Excavation and Research Studies, Documentation and Storage Arrangement Studies, Restoration and Conservation Studies, Tourism Studies and the process of these studies were evaluated in detail.

The study revealed that too many institutions were involved in the planning process of the Kubad-Abad Palace, and many authority conflicts emerged among many institutions that had to work together. The emergence of conflicts of authority between institutions arises from the

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existence of provisions and uncertainties that cause controversy in protection laws and regulations. Dissemination of decision-making authority on protected areas among too many institutions complicates, slows down, extends the planning process and weakens the success of the resulting plan. Simplification should be made in the number of institutions that plan, supervise, approve and implement the plan in overlapping protected areas. New legal and institutional arrangements are needed to ensure coordination between competent institutions in protected areas and to eliminate overlapping roles and powers.

Keywords: Conservation, Conflict of Authority, Conservation Plan, Kubad-Abad Palace, Planning Process, Protected Area Management.

SESSION 4A

Theme: Resilience, Sustainability and Quality

14 October 2020 Wednesday, 10.45 – 12.15

Chairperson: Prof. Dr. Özge YALÇINER ERCOŞKUN

Invited Speaker: Özge YALÇINER ERCOŞKUN

Resilience, Sustainability and Quality

Polat DARÇIN, Ayşe BALANLI

A Discussion on Indoor Air Pollution Exposure Process and Resultant Problems

Polat DARÇIN, Ayşe BALANLI

Examining the Effects of Space on Indoor Air Pollution Exposure

Halide BOZKURT, Cahide AYDIN İPEKÇİ, Nilay COŞGUN

Investigation of Reuse and Recycling Potentials of Fibrecement

Kutay KARABAĞ, Zeynep ŞAHBAZ

Hydrophilic Structures

RESILIENCE, SUSTAINABILITY AND QUALITY

Özge YALÇINER ERCOŞKUN*

The world is in the midst of a disquieting period of increasing consumption, population growth, and environmental degradation, and the resulting environmental trends such as global warming, urban sprawl, and land consumption are truly terrifying. The major challenge for cities is in their ability to respond to climate change, peak oil, and decline of ecological regions. Cities need to move away from the idea of reducing their impact on their ecological region to actually enhancing it ecologically.

Factors that drive risk in cities are unplanned urban development, inappropriate construction, weak urban governance, concentrations of economic assets, a lack of available land for low income citizens, rising populations, and increased density. The big question is how to meet the needs of urban systems and urban quality of life. Quality of life can play an important role in addressing these problems, particularly by minimizing the ecological footprint of the general public, saving energy, providing a car-free environment, recycling water, using sustainable building materials, and incorporating renewable energies through green technologies. Meeting needs in the local market is a key factor in resilience, as purchasing local goods and materials from local shops will keep money circulating locally. Diversity of the local retailers strengthens the viability of the local economy and vitality of the local community. Businesses will be more viable and resilient if they have adaptation plans in the event of unexpected crisis.

A resilient city is one that is envisaged and planned following a participatory approach. It has a competent and accountable local government that cares about sustainable urbanization and is well served by good infrastructure, services and structures. It has a strong database and as such is able to minimize both physical and social losses in the event of setback. A resilient city is committed, possessing the necessary resources and organizational capacity for before, during and after a disaster. It can quickly restore basic services and social, institutional and economic activity after a disaster. This leads to a holistic approach in understanding the functioning of the whole system, embracing its

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complexity and dynamics. Transition to this level is difficult, in that it requires a complete reorientation of industrial society to a different set of technologies related to renewable and distributed small-scale water, energy and waste systems.

Post-carbon, climate responsive, city planning will require a shift in our current way of thinking, as many practices of car-oriented, single-zoned planning will no longer be viable. For the ideals of sustainable development to be achieved in developing countries, the various manifestations of poverty, urbanization, and urban transformation need to be carefully considered, analyzed, and incorporated into strategic and local policies geared toward sustainable development.

Globally, sustainable development is recognized as a potential pathway for building ecological cities, reducing poverty and unemployment, and safeguarding the natural environment. With the aim of achieving a symbiotic relationship between the economy, society, and ecology, the concept of sustainable development should be increasingly focused on fostering adaptive capabilities and creating opportunities to maintain or achieve desirable social, economic, and ecological systems for both present and future generations.

A DISCUSSION ON INDOOR AIR POLLUTION EXPOSURE PROCESS AND RESULTANT PROBLEMS

Polat DARÇIN*, Ayşe BALANLI*

ABSTRACT

The production and usage processes of buildings correspond to a highly complex interrelation among many experts of professionals and users in which the space is produced according to certain approaches to become one of the essential factors to affect the users' life. In this context, indoor air and its pollution are in the most critical aspects of spaces with a very high potential to create a wide range of comfort, many health and related economic problems. In order to structure a better cause and effect relation between spaces and users in the context of enhanced indoor air quality, among other aspects particularly the exposure phenomenon: process between encountering indoor air pollution and the formation of problems should be investigated in regard to underlying mechanisms. Existence of harmful substances with diverse properties for a definite period of time causes indoor air pollution and certain parts or the entire indoor environment of a building can constitute an exposure environment as the pollution meets with building users. This process can occur via respiration, olfaction or contact to skin and eyes where pollutants, their metabolites or reaction products compose biomarkers. The number of biomarkers, determined as dose, is directly related with the occurrence of a vast number of health / comfort conditions ranging from odour intolerance, headache or irritation to respiratory infections, heart diseases and cancers. Although there are many different approaches for classification of these outcomes, the problems are categorized under three groups in this research: cancers, non-cancerous diseases and sick building syndrome. It is believed that the study is beneficial to present an alternative qualitative point of view different from the common quantitative tendencies in the field of indoor air quality studies and the resultant classification can be useful for a more practical and accurate assessment process which is appreciated to be vital to sustain existing building stock and transform the problematic spaces in better and healthy living environments by raising

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awareness for particularly important but mostly ignored or misplaced problem groups.

Keywords: Indoor air pollution, Exposure process, Health problems, Systems thinking, Evaluation process

1. INTRODUCTION

The production and usage processes of buildings correspond to a highly complex interrelation among many professionals and users creating a vicious and prevalent circle of interactivity during which a living space is produced impulsively mostly in line with certain popularized approaches to turn out to be one of essential factors affecting its users' life adversely on many levels. In this context, pollution of indoor air is one of the most critical aspects of spaces with a very high potential to create a wide range of comfort, many health (Balanlı & Öztürk, 1995) and related economic problems (Commissions of the European Communities [CEC], 1991). Each year in the world, nearly 4 million people lose their lives due to indoor air pollution correlated illnesses such as pneumonia, stroke, ischemic heart disease and lung cancer (World Health Organization [WHO], 2018). A design process overlooking its possible consequences or a usage period negligent to necessary assessment activities are within significant indifference to feed this vitiation and elevate an essential requirement for a different thinking system to break the circle. In order to establish a potent cause – effect relation between indoor spaces and their users to serve not only for the assessment but also to unveil important design principles consequently, producing an accurate decision about the qualitative and quantitative properties of indoor air pollution in terms of human health by using a practical method constitutes one of the primal necessities (Darçın, 2014). Stated deficiency of knowledge systematization about exposure to indoor air pollution (Darçın & Balanlı, 2018a) is among the missing essential inputs to construct and operate this method effectively.

The aim of this research is to examine the progress mechanism of exposure between encountering indoor air pollution and the formation of problems and through interpretation of scientific information to procreate a new categorization for its possible results. The scope of the research, limited with the stated aim, is believed to present an alternative frame to common quantitative tendency in the field of indoor air quality studies and categorical systematization as the outcome of this research can be useful for a more practical assessment process.

2. INDOOR AIR POLLUTION

Disparity in the contents of air or existence of harmful materials in indoor environment (Vural, 2004) for a definite period of time at certain concentration

levels towards affecting the health adversely creates indoor air pollution. Many substances with diverse properties – more than 60 thousand different types and two million mixtures (Ferro & Hildemann, 2007) – are considered as indoor air pollutants. It can be observed that specific classifications have been structured according to physical (National Research Council [NRC], 1991), chemical properties, sources, effects or origins (Vural, 2004) in scientific literature. Most common pollutants are given under groups according to their physical properties in Table 1.

Table 1. Indoor Air Pollutant Groups (Darçın & Balanlı, 2018b)

gas / vapor	carbon monoxide, carbon dioxide, nitrogen monoxide, nitrogen dioxide, sulfur dioxide, radon, ozone, mercury, volatile organic compounds, …	
particulate matter	fibers	asbestos, plant fibers, stone wool, glass wool, …
	metals	lead, …
	biological pollutants	viruses, bacteria, mold, pollens, arthropods, skin residues, …
some pollutant groups	different types of smoke, pesticides, …	

Pollutants can be emitted from various sources in the form of objects (i.e. building products, living entities, etc.) or activities (i.e. cooking, vacuuming, etc.). Location of sources and emission properties such as direction, rate, duration and frequency are the primal factors that cause air pollution which can occur in indoor environment through emissions directly from indoor sources or due to transportation from outdoor environment via air movements, humans or pets (Darçın & Balanlı, 2015). The quantity of pollutants emitted from a source in unit time (Koontz, Evans & Wilkes, 1998), unit activity or unit area (CEC, 1992) determines the rate of emission which may be long or short, continuous or intermittent (Kephalopoulos, Kositinen & Kotzias, 2006), may repeat frequently with short breaks or rarely with long intervals (Koontz, Evans & Wilkes, 1998). Pollutants can be emitted towards one or more directions (Patrick, 1999).

Because almost always many pollutants are present in a group forming a mixture in indoor air, there is a definite possibility for physical or chemical interactivities amongst different types (Weschler & Shields, 1997). Physical activity is determined with aggregation of different pollutants to form clusters in indoor air (Kephalopoulos, Kositinen & Kotzias, 2006) and chemical reactions are specified as oxidation or photochemical reactions (Jantunen, 2000) in which the concentration levels of pollutants change or new types emerge and reach to a certain amount.

The other essential group of determinants comprises the aspects of closed spaces as volume (Repace, 2007), geometric features (Chen & Glicksman, 2001), interior organization (Spengler, Chen & Dilwali), movement of air (Demokritou, 2001) and certain interactions between pollutants and indoor surfaces (Kephalopoulos, Kositinen & Kotzias, 2006) due to affecting both the qualitative and quantitative properties of pollutants, users and their co-presence.

Certain parts or an entire closed space or building itself can constitute an environment of exposure as different types of pollutants at certain concentration levels meet with building users for a significant period of time (Figure 1).

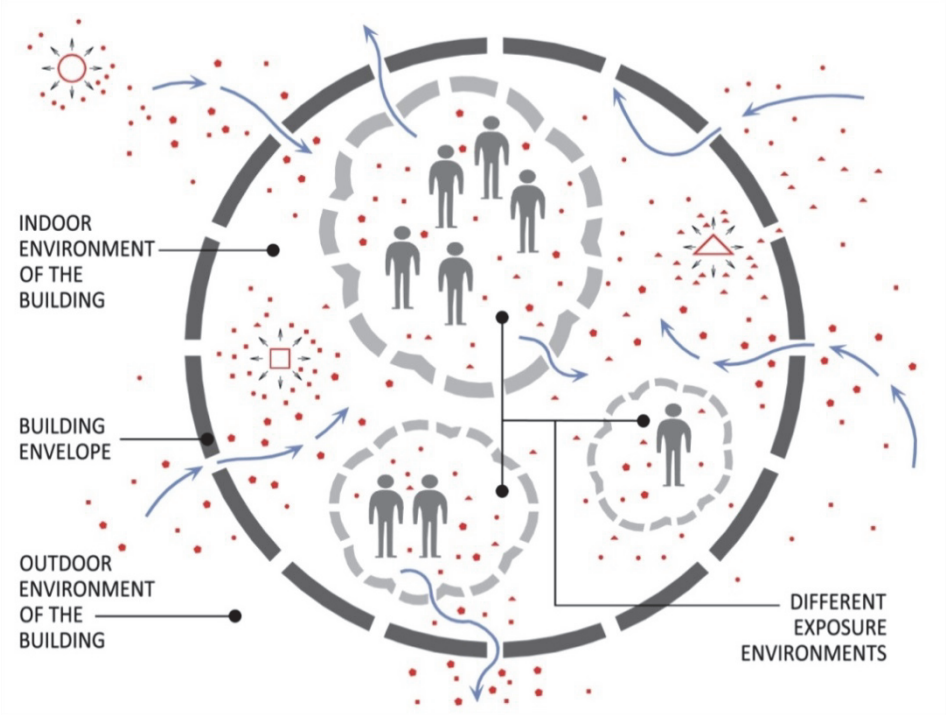

Figure 1. Exposure Environments in a Building

3. EXPOSURE TO INDOOR AIR POLLUTION

The occurrence of problems through exposure to indoor air pollution can be determined by following an examination and relations model (Figure 2) in which the existence of a negative feature at the indoor or outdoor environments may cause a negative condition to trigger a hazardous effect and ultimately reveal a certain probability for a problem (Balanlı, 2011).

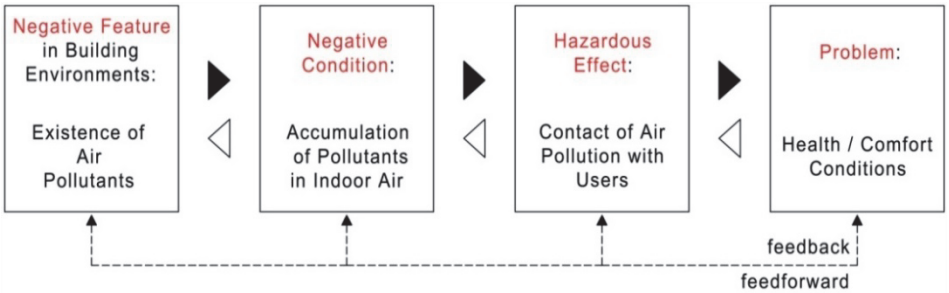

Figure 2. Indoor Spaces – Health Relationship (adapted from Balanlı & Öztürk, 2004)

Based on the scientific definition (Zartarian, Ott & Duan, 2007), exposure occur as the pollutants, which can be considered as agents, reach to and touch building users - here represent the targets - on a contact boundary to create a change (Environmental Protection Agency [EPA], 1992). Contact boundary forms a hypothetical membrane on which the agent touches and / or passes through into the internal structure of the target (EPA, 2012). For indoor air pollutants, this process can occur via respiration, olfaction or contact to skin and eye surfaces where the inner surfaces of the respiratory system and outer surfaces of the body can be regarded as the contact boundary (EPA, 1992).

3.1. Biomarkers and Dose

Although exposure can start with pollutants to only touch to the skin, eyes, olfactory receptors or inner surfaces of the respiratory system (Darçın, 2014), in most cases, it happens as they pass these borders into blood and are transported to other body systems (Mølhave, 1998). Pollutants, their metabolites or new substances produced by interactivity between pollutants and various body parts compose biomarkers (Wallace, 2007) which can be found inside tissues, cells or fluids throughout the body (Anderson & Patrick, 1999). The number of biomarkers, determined as dose, is directly related with the occurrence of symptoms of health / comfort problems (Duan, Dobbs & Ott, 1990), this approach of examining exposure at interface of human body – indoor environment (Georgopoulos & Lioy, 1994), is depicted in Figure 3. Yet it is not possible to state neither every exposure results in dose nor development of dose always causes a health problem (NRC, 1991).

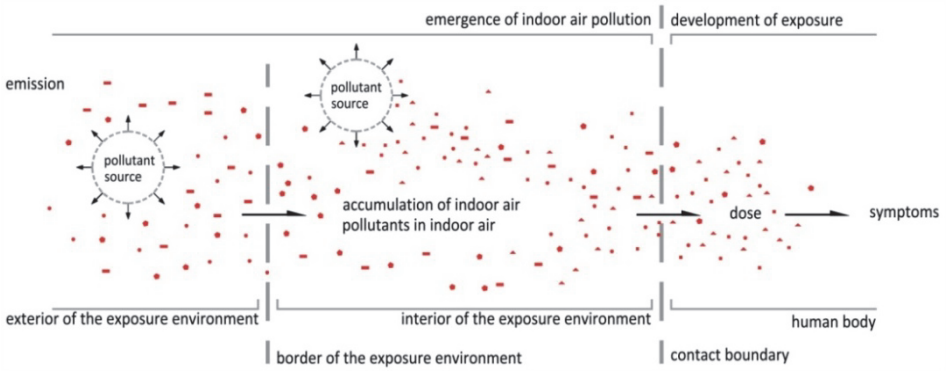

Figure 3. Process of Dose and Relations (adapted from Darçın, 2014)

Types and concentration level of pollutants in the vicinity of building users, duration of exposure, respiratory and dermal absorption rates are the factors to determine the level of dose. According to Zartarian, Ott and Duan (2007), the quantity of biomarkers can be described as intake dose if pollutants permeate the contact boundary without a resistance (i.e. permeation of pollutants into respiratory system through nostrils or mouth), whereas this level is specified as uptake dose when the pollutants penetrate the boundary overcoming a certain resistance (i.e. transfer of pollutants into blood through tissues of alveoli) (Figures 4 and 5). Absorption, distribution, metabolization and elimination of a substance in a biological system are associated with its pharmacokinetic, development of a health problem as the result of interaction between them is related to its pharmacodynamic properties (NRC, 1991).

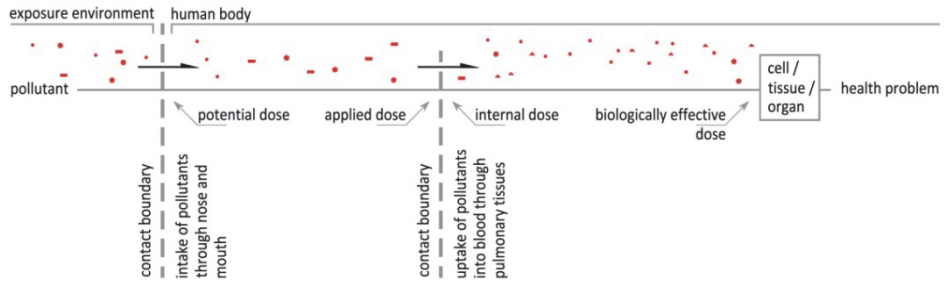

Figure 4. Intake Dose in Exposure via Respiration (adapted from Darçın, 2014)

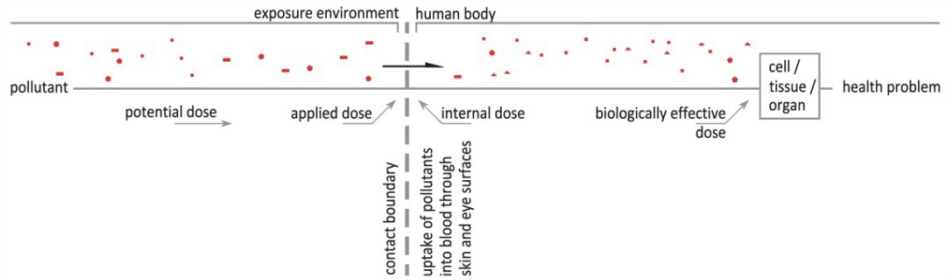

Figure 5. Uptake Dose in Exposure via Dermal Contact (adapted from Darçın, 2014)

3.2. Resultant Problems of Exposure

The route, duration, frequency of exposure, susceptibility and biological properties related to respiratory system, skin and eyes of building user along with the qualitative and quantitative properties of indoor air pollutants (Darçın & Balanlı, 2018a) are the basic determinants of problems which are examined under various classifications (Table 2) in scientific literature.

Table 2. Classification of Health / Comfort Problems (adapted from Darçın, 2014)

institute	**criteria**	**classification**	
NRC (1991)	duration and genre	acute:	acute respiratory infections, transient deficits in lung function, allergenic reactions, etc.
		nuisance:	noxious odors; eye, nose, throat irritation, coughing, etc.
		chronic:	chronic obstructive lung disease, cancer, heart disease, etc.
EPA (2020)	duration	immediate:	irritation of the eyes, nose, throat, headaches, dizziness, fatigue, etc.
		long-term:	respiratory diseases, heart diseases, cancer, etc.
Kephalopoulos, Kositinen & Kotzias (2006) (European Commission)	severity	severe	cancer, acute and chronic pulmonary diseases, upper airways inflammatory diseases, allergic diseases, ocular and mucosal reactions, infectious diseases and respiratory infections, intoxications,
		less severe	discomfort, odor perception, sensorial irritation and annoyance, SBS
WHO, 2018	-	pneumonia, chronic obstructive pulmonary disease, stroke, ischaemic heart disease, lung cancer, impaired immune response, reduced oxygen carrying capacity of the blood, low birth weight, tuberculosis, cataract, nasopharyngeal and laryngeal cancers, etc.	
Liccione (1999)	-	acute and chronic respiratory effects, neurological toxicity, lung cancer, eye and throat irritation, reproductive effects, developmental toxicity, odor	

Despite these many different and easily diversifiable classes, in certain risk assessment approaches and regulations, problems are grouped under two main categories: cancers and non-cancerous diseases. As a collection of related more than 100 diseases, cancer is caused by uncontrollably dividing cells which can spread through the body to other organs / tissues (National Cancer Institute [NCI], 2015). Non-cancerous diseases are reviewed under building related illnesses which are identified with diagnosable signs and symptoms directly attributable to specific air pollutants (EPA, 1994). The fundamental reason for this categorization is the theories of carcinogenesis according to which it is not possible to determine a safe level of concentration for carcinogenic pollutants, exposure to even lesser amounts can cause cancers (CEC, 1992).

It is believed that examining some symptoms of building users under a third category is required and can be beneficial at this juncture. Classified as sick building syndrome (SBS), these problems are determined according to time and frequency of their occurrence (Kephalopoulos, Kositinen & Kotzias, 2006) which are observed to be temporally related to the presence of the user in indoor environment. Symptoms mostly occur after a short period the user enters a building (Spellman, 2009) and disappear soon after they exit (National Safety Council [NSC], 2009). Although it is not certainly validated, mostly accepted cause of SBS is the mixture of many indoor air pollutants at low concentration levels in indoor air (Bernstein, et al., 2008). Mainly headache; eye, nose or throat irritation, dry cough, dry or itchy skin, dizziness and nausea, difficulty in concentrating, fatigue and sensitivity of odors are regarded as the basic symptoms (EPA, 1991). However, cacosmia due to odors of indoor air pollutants (Balanlı & Darçın, 2012) and other negative features related to other properties of indoor environment such as visual, auditory, tactile, dimensional and spatial should also be acknowledged under this category (Vural & Balanlı, 2011).

4. FINDINGS AND CONCLUSION

Existence and accumulation of harmful substances in indoor air create a high probability for exposure. In regard to the relationship of building with its users, many factors define and affect the results through various interactions between its multi-scale nested systems. Numerous sources in indoor and outdoor environments, constant transportation through the permeable building envelope, possible interactivities and properties of closed spaces determine the emergence of indoor air pollution by affecting physical, chemical and biological properties and concentration levels of pollutants. Development of this negative condition can trigger a hazardous effect whenever pollution meets with users and creates

an exposure environment as an interwoven sub-system of building with ever-changing boundaries.

Adverse effects are highly correlated with progress and properties of exposure. As the pollutants touch to the outer surfaces of the body or pass through the contact boundary and create a certain dose in various locations throughout the body, many problems, varying from odour intolerance, headache or irritation to respiratory infections, heart diseases and cancers, can occur.

Resolving and preventing indoor air pollution exposure require an efficient assessment process in which an accurate decision must be made about the encountered situation in terms of health. The primary procedure for this evaluation is to compare the resultant dose of biomarkers or the concentration levels in the breathing zone of the user to a threshold regarded as harmless to human health. It can be acknowledged that this method has been constructed over the hypothesis in which conceptually the relationship between the dose and possibility of comfort / health problems allows to determine of a limit value where the problem cannot be encountered. However, for some pollutants – especially the types specified as carcinogens – it is impossible to define such limit; if there is dose, there is a risk. Accordingly, specifying the possible results of indoor air pollution based on properties of pollutants, users and exposure becomes an essential step during the assessment process.

Health and comfort conditions have been examined under various groupings, nevertheless in order to avoid inconsistencies between accepted definitions and categorization and more importantly to conclude the assessment process with a substantive decision, a three-section classification: cancers, non-cancerous diseases and sick building syndrome symptoms, is constructed. It is believed that, with this system, a practical evaluation can be managed for evaluation of indoor air pollution in existing buildings during which determined pollutants can be grouped according to their possible health effects and risk can be calculated for each three group.

With improved future researches on detailed dose-response relationship for different pollutant types, the assessment activities can be more feasible which should be regarded as a vital necessity in order to sustain existing building stock and transform the problematic spaces in better and healthy living environments.

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EXAMINING THE EFFECTS OF SPACE ON INDOOR AIR POLLUTION EXPOSURE

Polat DARÇIN*, Ayşe BALANLI*

ABSTRACT

Humans' interaction with the built environments generally actuates a rather severely exposure process. One of the important aspects under this category: indoor air and its pollution cause premature death of nearly four million people every year. The vital necessity to sustain existing built environment through proper improvement requires adaptability by using a consciously structured assessment process which focuses on the relationship of space and humans in a systematic perspective. Accordingly, as an alternative to common tendencies in indoor air pollution studies, the subject can be structured on three pillars: pollutants, humans and indirect participant of their relationship: exposure environments. Due to the complex interactivity created between hierarchical environmental systems of building, main aspects of closed spaces play an essential role as creating complicated impact-result mechanisms on progress of exposure. The existence, location, duration and concentration levels of indoor air pollutants are affected by the volume of closed spaces, air movements in and between indoor and outdoor environment, possible interactivity among surfaces and pollutants and related factors such as temperature, humidity, dampness that transforms these interrelations. Furthermore, the architectural arrangement of the spaces affects the exposure by determining location and duration of building users. It is believed that constituting systematization for fundamental properties of closed spaces as exposure environments can be useful to reveal interrelations between three participants of exposure in a broader and more holistic comprehension consistent with whole systems thinking in preference to common popularized approaches which mainly concentrate on quantitative properties in a single building scale towards better structured assessment activities with a higher potential for accurate results.

Key words: Indoor air pollution, Exposure environment, Exposure assessment, Exposure factors, Indoor spaces

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1. INTRODUCTION

Humans' interaction with the key entities of built environments under the influence of numerous inconsistent factors generally actuates an exposure process which has the tendency to occur rather severely in closed spaces of buildings regarding the frequently encountered level of negative consequences. World Health Organization (WHO, 2018) states that 3,8 million people a year die prematurely from illnesses such as pneumonia, stroke, ischemic heart disease, chronic obstructive pulmonary disease and lung cancer which are attributed to one of the major aspects that falls under this category: indoor air pollution. The vital necessity to sustain built environments while enhancing their properties invokes a requisite of adaptability via accurate improvement and transformation. In order to achieve this, not only the production but also the assessment processes, focusing on the relationship of space and human, must be revitalized in a critical and reformatory form to supply a more supportive influence and prevent destructive effects of built environment on personal, economic and even social wellbeing. Despite the large number of indoor air pollution studies, prevalent restricted perspectives, which tend to regard the subject by narrowing the boundaries of focus on pollutants to a great extent, creates an essentiality to re-consider the fundamental structure of approaches towards embracing all ignored but essential constituents. As an alternative to this pollutant centered research tendency, the subject can be concerned on a three pillar structure: pollutants, humans and environment (Darçın, 2014) based on the fact that problems occur in the event of indoor air pollution meets with building users for a definite period of time (National Research Council [NRC], 1991) in closed spaces. Different from direct participants of the phenomenon: pollutants and users, closed spaces have generally indirect yet more complex impacts on the formation and development of exposure (Darçın & Balanlı, 2015) through the interactivity between their multi-scale nested environments. Accordingly, it is possible to remark that an important scarcity appears about the main aspects of spaces in the context of stated potency of creating complicated impact-result mechanisms.

The aim of this research is to examine the fundamental properties of building spaces in order to constitute a systematization by using related knowledge from scientific literature and to reveal interrelations of three phenomena of the exposure by pursuing a broader and more holistic comprehension consistent with whole systems thinking in preference to common popularized approaches which concentrate solely on quantitative properties in a single building scale. The scope of the study is limited with the stated aim and it is anticipated that this kind of a consideration can create a different standpoint for future studies and

categorical system as the result finding of the research can serve as a strategic input particularly for determination activities regarding the labor-cost-time expenses or the quality of quantitative values towards a better engagement by reflection and reaction in shaping and sustaining healthier environments.

2. EXPOSURE TO INDOOR AIR POLLUTION

Air pollution in closed spaces of built environments is quite often a mixture of many different pollutants (Ferro & Hildemann, 2007) that may emerge from a vast number of sources and mostly prone to undergo hard to predict transformations (Milner, Vardoulakis, Chalabi, & Wilkinson, 2011). Existence of pollutants in or around the living environments may cause this problem to create a certain level of risk through exposure that can develop as the pollutants touch and / or enter to building users' body (Environmental Protection Agency [EPA], 2012). In exposure science, opposite to the past source-oriented approaches, the focus has been moved on to the target where the pollutants at the contact boundary of the receptor are being examined (Ott, 2007). Accordingly, it can be stated that possible consequences are correlated not only with the characteristics of exposed individuals but also with several aspects of pollutants such as types, physical / chemical / biological properties and concentration levels (NRC, 1991) in their breathing zone or metabolism and particularly all the mechanisms of elemental patterns and relations that have an effect on them.

A building, basically created by separating a part of the nature with an envelope to be re-organized as a living area for their users (İzgi, 1999), comprises many interwoven sub-systems with numerous different participants. On account of this, a certain closed space or a definite part of it, which gathers users and pollutants together, can be defined as an exposure environment. The nested systems with ever-changing boundaries, fundamentally specified by the physical existence of the permeable building envelope which constantly transfers not only matter but also energy as well, have a major potential to affect indoor air, building users and their co-presence separately and simultaneously. Therefore, it can be asserted that the impact-response mechanisms as the result of complex interrelations through up and down these hierarchical systems: indoor environment embracing the exposure environment which are encircled with building envelope and all together enclosed by outdoor environment (Figure 1) can be counted among the important factors that define the exposure process. It is required that basic properties of the exposure environment should be determined congruous with the focus of this context.

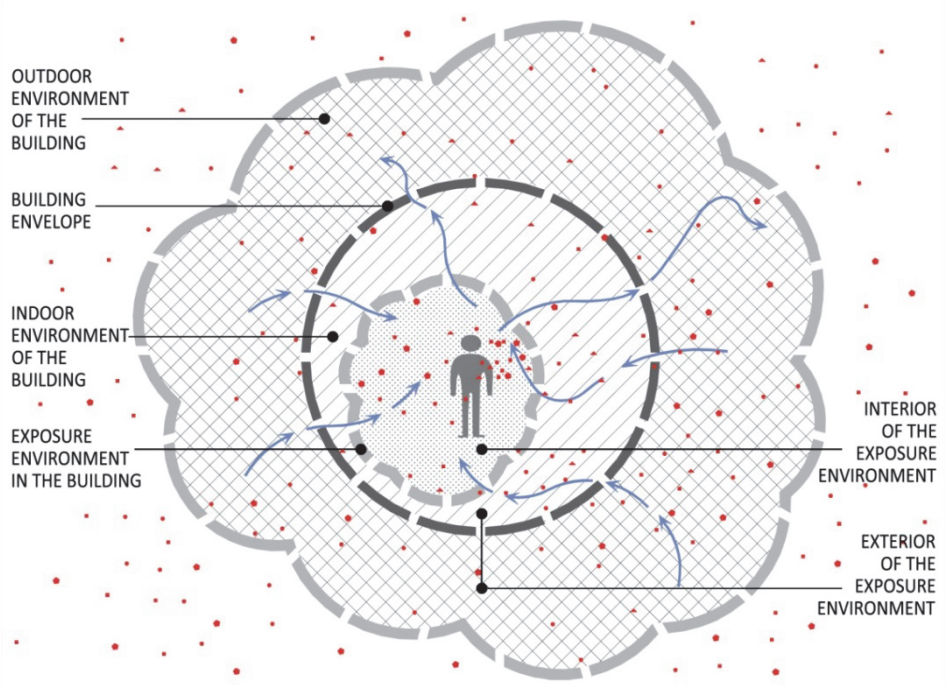

Figure 1. Building and Its Environments

3. EFFECTS OF EXPOSURE ENVIRONMENT ON EXPOSURE PROCESS

Qualitative and quantitative properties of indoor air pollutants such as existence, types, positions, duration and concentration levels tend to constantly change in different parts of the indoor environment and accordingly create various exposure environments as they meet with building users mainly because of varying volumes of closed spaces (Mølhave, 1998), air movements (Spengler, Chen & Dilwali, 2001) in and between exposure environments and their surroundings, interactivity between different surfaces of the spaces and pollutants (European Commissions Scientific Committee on Health and Environmental Risks [EC SCHER], 2007) and certain factors that transform these interrelations (Chen & Glicksman, 2001). Furthermore, the architectural organization of the spaces affects the exposure due to determining specific properties related to users.

3.1. Volume of the Exposure Environment

As the air pollutants emerge into the building, they disperse in the indoor air filling the volume of the closed space depending on their physical properties and air conditions to develop a certain level of concentration. Under proper circumstances, molecules of the pollutants in the gas / vapor state can homogeneously

mix into indoor air (Kephalopoulos, Koistinen & Kotzias, 2006) and reveal a constant concentration level throughout the space (Repace, 2007). Subsequently, the volume of the space is inversely proportional to concentration level of gas / vapor pollutants (Figure 2). On the other hand, particulate matter pollutants may present a heterogeneous dispersion according to their size, weight, form, surface properties, etc. as they become airborne for a certain period of time and almost always sink.

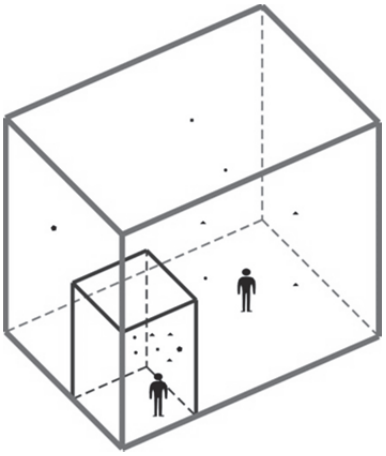

Figure 2. Relationship between Volume of the Space and Concentration Level

3.2. Air Movements in and around the Exposure Environment

The fundamental physical phenomenon affecting the properties of indoor air pollution is the movement of air molecules. The basic cause to trigger a movement is the driving effect created by the differentiation among air pressures which can occur naturally or by force between different parts of a closed space or between its interior and exterior (outdoor environment of the building or indoor environment that encloses the related closed space) environments (Kephalopoulos, Koistinen & Kotzias, 2006) by natural ventilation / air infiltration through the permeable borders of the space or via a mechanical ventilation system. Geometric properties of the space (Chen & Glicksman, 2001) and its interior organization (such as the positions of furniture or separators) (Spengler, Chen & Dilwali, 2001) are the other constituents that determine the speed, direction, behaviour and form of the airflow (Darçın & Balanlı, 2012). Replacement of indoor air of a closed space with outdoor air is defined as air exchange and the ratio between the incoming air flow (m^3/h) and the volume of the space (m^3) determines the air exchange rate (h^{-1}) (Salthammer & Bahadir, 2009).

Along with the moving molecules of air in and between interior and exterior environments of the space all other airborne substances are replaced and transported (Demokritou, 2001) therefore the position, duration and concentration levels of pollutants can be affected (Figure 3).

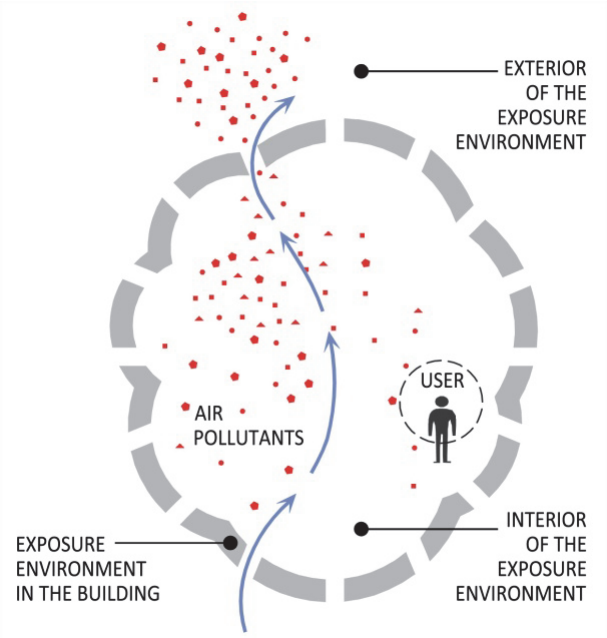

Figure 3. Effects of Air Movements

3.3. Relations between Indoor Air Pollutants and Surfaces of the Exposure Environment

Physical or chemical interactions between pollutants and substances that compose the building products / furniture in the exposure environment have a significant potential to affect the properties of indoor air pollution and accordingly exposure.

The main phenomenon in the context of interactions, described as indoor sinks (Koontz, Evans & Wilkes, 1998), subsumes possible situations that may occur when pollutants of gas / vapour or particulate form encounter an indoor surface during their movement in indoor air in which the pollutant may rebound / bounce off from this surface back to the indoor air, may get attached to the surface or may be absorbed by the surface (NRC, 1991). In the event of attachment or absorption, same pollutant may be reemitted back to indoor air (deposition) or may react with the substance and form a new type of pollutant (Kephalopoulos, Koistinen & Kotzias, 2006).

It has been stated that, mostly particulate matter can attach (Milner, et al., 2011), however, gas molecules can also adhere to the surfaces to form a very thin film (Kephalopoulos, Koistinen & Kotzias, 2006). Properties such as size, weight and smoothness with features of the surface constitute essential factors (Wallace & Smith, 2007). Furthermore, mold spores easily proliferate in proper circumstances on the materials which provide nutrition (Brennan & Burge, 2005). Mostly, large and porous surfaces absorb gas / vapour pollutants (Logue, McKone, Sherman & Singer, 2011) substantially cause a decrease on the concentration levels and become secondary sources. Even if the primary resource is removed from indoor space, these secondary sources can reemit the absorbed pollutants for a long period of time (Colombo, et al., 1993).

Relations between indoor surfaces and air pollutants can be affected by air temperatures, humidity and the dampness of the surfaces or inner layers (EC SCHER, 2007).

3.4. Architectural Organization of the Exposure Environment

Humans use buildings in accordance with their biological, psychological and sociological properties and requirements originated from these aspects (Balanlı, 2014). In the frame of exposure to indoor air pollution, duration, frequency and location of co-presence of humans and pollutants are related to properties of usage, in other words, how long, how often and where the users be in the building which are mainly determined by architectural organization and function of indoor spaces. The positions of furniture, location of windows and doors, indoor physical environment features such as lighting, auditory properties, indoor temperatures, etc. can be listed as basic factors under this category.

4. CONCLUSION AND RECOMMENDATIONS

An indoor space, designed and constructed primarily to offer a healthy living area, can turn into an exposure environment due to bringing air pollution and users together. Because there is a very high potential that various aspects of indoor air pollution, building users and their co-presence are determined and affected by this environment, its properties that create an impact-result mechanism on exposure should be examined and systematized.

The existence, location, duration and variable concentration levels of pollutants – especially types which are emitted in outdoor environment and transported – can be affected by the volume of the closed spaces, air movements in and between indoor and outdoor environments, possible interactivity between surfaces and pollutants such as deposition, absorption or chemical reactions,

temperature and humidity / dampness of the air or surfaces. The location of the primal user: humans in exposure environment and their duration of presence are highly correlated with the architectural arrangement in accordance with the function of the space.

Resolving and preventing indoor air pollution require an efficient assessment process in which an accurate decision must be made about the exposure in terms of health. Realistic and effective determination of the encountered situation within the scope of direct participants of exposure: indoor air pollution and building users in appropriate time-money-labour conditions constitutes one of the critical steps and depends on the examination method. The quality of the determination activities is believed to be related to the structure of the process where the complex impacts of the exposure environment can be utilized for a more realistic interpretation of the pollutant – user relationship through a holistic consideration towards all nested hierarchical systems created by the building envelope. In accordance with this aim, examining

- transportation of air between exposure environment and its surroundings,
- air movements and air exchange rate,
- properties of the surfaces,
- air and surface temperatures, relative humidity, current and previous dampness on the surface materials or inner layers,
- volume of the air,
- arrangement of the furniture in the indoors of exposure environment are highly essential in order to correctly specify
- entrance of outdoor originated air pollutants, accordingly the possible increase in their concentrations,
- departure of indoor originated pollutants, accordingly the possible decrease in their concentrations,
- location and duration of the pollutants in exposure environment,
- possible sinks and interactivity between pollutants and surface materials,
- emission properties of secondary sources and proliferation possibilities of biological pollutants,
- concentration levels
- location and duration of building users in exposure environment respectively.

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INVESTIGATION OF REUSE AND RECYCLING POTENTIALS OF FIBRECEMENT

Halide BOZKURT*, Cahide AYDIN İPEKÇİ**, Nilay COŞGUN*

ABSTRACT

In recent years, thanks to technological developments, the variety of building materials used in the building sector is increasing. Increasing the diversity of materials expands the usage areas of new materials in construction activities. Building materials, which are the main source of the building production process, have environmental impacts during in the period from the production stage to the use stage. The greatest damage to the environment by building materials is the generation of construction and demolition(C&D) waste. C&D wastes are composed of building materials and components resulting from construction material production, construction, renovation, repair and demolition activities of buildings. Today, C&D wastes which are one of the most important environmental problems emerge at every stage of the building production process and adversely affect human and environmental health. The providing reuse or recycling of building materials is important in terms of reducing C&D wastes. Material properties should be well known and sustainable building materials with minimum environmental impact should be used in order to reduce environmental problems caused by building production.

In this study; the reuse and recycling potentials of the fibrecement board, which is one of the most frequently used building materials in the building sector recently, have been investigated in the production and construction phases. Within the scope of the study; waste management in the production phase, reuse and recycling of the material has been researched in the fibrecement board production facility. In this context; face to face interviews were made with the facility official about the production process of the material and the production phase was photographed in the production facility. Interviews were held with material sales offices and construction supervisors in order to determine the recovery opportunities

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of the material in the construction phase. According to the study; fibrecement board is a building material that has the potential to reuse and recycling during the production and construction phases. It has been concluded that the fibrecement can be recovered at other stages due to the fact that it has more reuse and recycling opportunities especially in the production process and it is a material that can be used in several parts of building does not harm the environment and human health.

Keywords: Fibrecement, C&D Waste Management, Reuse, Recycling

1. INTRODUCTION

Building materials are among the main components of building production systems. Technological developments and rapid urbanization have changed the points of view towards building materials and traditional building materials have been replaced by modern building materials. Increased diversity of materials allows broadening the usage areas of new materials. Although new material usage creates positive outcomes for the building sector, it also brings about environmental problems. Building materials are in a direct or indirect interaction with the environment through a cycle of process consisting of acquisition of raw materials, production and application on buildings, usage, end of usage and recycling or disposal (Terzi, 2009). Researches point out 10-20% of the negative environmental impacts of buildings during their life cycles come from building materials (Kaya & Türkeri, 2010). The building sector uses 60% of all raw materials extracted in the world as a resource. According to a study by Worldwatch Institute, the quantity of raw materials used in building construction is 40%. Depending on the quantity of raw materials used in the building sector, construction and demolition (C&D) waste is a major problem in the world (Lachimpadi, Mokhtar, Pereira & Taha, 2012). C&D wastes, which constitute a significant part of solid wastes, consume 50% of the resources (Ajayi, 2016). C&D waste is defined as waste consisting of all kinds of building materials and elements that arise for various reasons during the building life cycle (Coşgun & Esin, 2006). C&D wastes consist of building materials and components such as concrete, metal, wood, ceramic and plastic that comes out of processes of building material production and construction, renovation, alteration and demolition of buildings. Uncontrolled release of C&D waste into the environment causes air, water and soil pollution as well as damaging living spaces. In Turkey, various legal regulations have been created to reduce the negative effects of C&D wastes on the environment. The 'Waste Management Directive' that was put into effect by the Ministry of Environment and Urban Planning by publication in the Official Gazette dated 02.04.2015 and numbered 29314 is the most up to date regulation. With this directive, it is aimed to reduce the use of natural resources and provide waste

management through methods such as reduction, reuse, recycling and recovery of wastes (The Official Gazette of TR, 2015). According to the data of 2014, more than about 100 million tons of C&D waste was recovered or disposed in Turkey (National Waste Management Action Plan, 2023).

Nowadays, the importance of using sustainable building materials is increasing in the building production process. Sustainable building materials are materials that are sensitive to the environment and the limits of exhaustible resources in production, using raw materials effectively and having the least harmful effects on the natural environment by the life cycle assessment. Usage of these materials has a positive impact on the environment and human health by preventing the decrease in raw material resources and increasing energy consumption. Regarding the environmental impacts of building materials, there are the ISO 14001 Environmental Management System and TS EN ISO 14040 Environmental Management – Life-Long Assessment standards. The TS EN ISO 14040 standard; covers assessment of possible environmental impacts through the life cycle including processes such as raw material supply, production, usage and recycling or disposal after usage. 'Sustainable Use of Natural Resources' was added to the obligatory conditions required for building materials in the 'Building Materials Directive' (305/2011/AB) that put into effect by the Ministry of Environment and Urban Planning by publication in the Official Gazette dated 10.07.2013 and numbered 28703. Sustainability of the use of natural resources depends on whether the building materials can be reused or recycled after demolition, the use of environmentally friendly raw materials and secondary materials in the building and the durability of the building (The Official Gazette of TR, 2013). In the 10th Development Plan of the Ministry of Development (2014-2018), an environment protection policy was determined to increase environmental sensitivity and quality of life in cities by practices such as waste and emission reduction, energy, water and resource efficiency, recovery, noise and visual pollution prevention and usage of eco-friendly materials.

The main building materials that are used in building production are concrete, wood, plastic, stone, bricks, iron and glass. These materials are recovered in various methods such as reuse or as the raw material for another material in the process from production to construction, usage and demolition. In the world, especially in the EU countries, the reuse/recycling rates of building materials are above 70% in the Netherlands, Denmark, Estonia, Germany and Ireland; between 50% and 70% in Belgium, the United Kingdom, France, Norway, Lithuania and Austria; between 30% and 50% in Latvia; between 10% and 30% in Poland, Finland, Czechia, Hungary and Spain (Tojo &Fischer, 2011). Precise data about the rate of reuse/recycling of building materials in Turkey cannot be reached.

In this study; fibrecement board is investigated which are prevalently used in the building sector today. Fibrecement is a general term used for composite materials that are formed by mixing Portland cement, inert/mineral filling materials and various organic fibers (Schoon et al., 2012). Fibercement boards are obtained by turning materials such as cellulose fiber, quartz sand and cement into boards by processing in specialized machines and autoclaving them (Erdem, 2015).

The aim of this study is to investigate the waste management practices in the fibrecement board production and research of reuse and recycling potentials of the material in the production and construction phases. The study is limited to the production and construction phases of the material in the life cycle. Two methods are used as literature and field study in the study. Within the scope of the study; a literature review was carried out on the material; as a field study; interviews were held with an official of a production facility in Sakarya for the production phase, with material sales offices and site supervisors for the construction phase in Sakarya -Turkey. As the field study; the production process stages of the material were photographed, and the works on waste management, reuse and recycling of the material in the facility were evaluated in the production facility.

2. LIFE CYCLE OF BUILDING MATERIALS AND WASTE MANAGEMENT

Building materials have an effect on the environment throughout every stage of the life cycle. In order to reduce the negative effects of building materials on the environment, usage of sustainable construction materials comes to the fore. In sustainable building material selection, attention should be paid to what the environmental effects of the material are, how its use affects the environment and how these effects may be prevented. It is important that building materials protect natural resources by reducing the need for new raw materials and create a healthy environment by forming minimum wastes.

2.1. Life Cycle of Building Materials

The production, use in building, and recycling or disposal of building materials constitutes the life cycle of the material. In the life cycle, with the approach of 'from the cradle to the grave', the environmental impacts and outcomes of all processes from acquisition of resources to their return to their place in nature are considered (Sev, 2009). The life cycle of a material consists of the processes of raw material acquisition, material production, material packaging and distribution, material implementation, usage of material, maintenance and repair, recycling or disposal (Tuna Taygun, 2005). In order to reduce the negative effects of building materials on the environment; one needs to minimize the resources that are used, energy that is consumed and waste that is formed in the processes of raw

material acquisition, production, construction-installation-usage during the life cycle (Sev, 2009).

2.2. Construction & Demolition Waste Management

Waste, which is one of the most important environmental problems today, is formed as a result of unconscious use of resources. C&D wastes constitute a large part of solid wastes. C&D wastes with different properties and qualities are formed at each stage of the building production process. The most important factor in waste generation is the type and construction technique of the building material. In order to reduce the environmental impacts of building materials in the life cycle, waste management needs to be implemented. C&D waste management is a method that involves many stages, achieves more efficient utilization of C&D wastes and may be used for management of area, construction, repair, disaster, disassembly and demolition wastes that emerge out of building practices (Ustaoğlu, 2014). The effective C&D waste management will help reduce the need for natural resources and energy by minimizing waste generation.

The waste management hierarchy provides evaluation of wastes by determining suitable methods for the qualities of wastes. The types, quantities and usage areas of materials in buildings are important in terms of with which method recycling can be achieved. Waste management consists of the stages of prevention, reduction, reuse, recycling, recovery (raw material/energy) and disposal (storage/combustion). Providing reuse or recycling of building materials are important in terms of reducing wastes. In order to reduce environmental problems caused by building production; material properties should be very well-known and sustainable building materials with minimum environmental impacts should be used.

3. FIBRECEMENT BOARD AS BUILDING MATERIAL

Cement-based boards are one of the composite building materials that enable usage of existing materials in various forms by development of production techniques through technology. Fibrecement board, which is one of the cement based boards, is a preferred building material in the building sector in terms of technical properties in the historical process.

3.1. Definition and History

Cement-based boards are composite building materials with high specific weight and smooth surface that are created by combining certain ratios of wood chippings or agricultural plants, cement, water and several chemical substances (Arslan, 2018). These materials have the lightness, elasticity and workability of

wood and the water and moisture resistance of cement, and its resistance against burning and corrosion (Yapı Katalogu, 2019). Fibrecement board is a general name given to fiber-reinforced cement boards among cement-based boards (Hekim Yapı, 2019). Fibercement boards are cement-based boards that are used in all types of interior and exterior facade applications, are hardened by autoclaving and have a flat or wood patterned surface appearance with natural fiber added (Erdem, 2015).

The first example of cement-based particle board in the world emerged as a result of production of thick boards named Mevrit by mixing cement and waste wood particles that are formed as a result of producing wooden shoes worn by villagers in the Netherlands with the initiative of Mijnheer Muiselaar and Mijnheer de Vries in the late 1930s (Tepe Betopan Fibrecement Guide, 2013). The first cement-based board production facility was established in 1967 in Switzerland, and serial production started in 1970. Board production facilities were established in Germany and Hungary between 1977 and 1978 (Arslan, 2018). As a result of using asbestos in cement-based boards in 1970s, health problems emerged. After the prohibition of the usage of asbestos in building materials, cellulose which is a sustainable and harmless fibre type was started to be used as an alternative to asbestos in fibrecement production. Today, it is estimated that the number of facilities producing fibrecement is around 1100 to 1500. Fibrecement board production and usage is highly prevalent in the Northern part of the Americas, Spain in Europe and especially South Korea in Asia (Erdem, 2015).

In Turkey, fiber-added cement-based boards produced in the 1950s started to be used in industrial buildings (Erdem, 2015). For fibrecement boards, Tepe Group started trial production in 1984, and production continued in the 2000s with a mechanical spreading system. The annual production capacity of the facility is 67,500 m^3 (Tepe Betopan Practical Guide, 2018). Hekim Yapı Industry established its production facility in 2001 and started production in 2004. The production capacity of the facility for 2014 was 125,000 m^3 (Hekim Yapı, 2019). The annual production capacity of Vefa Holding's Ekobord Facility is 24.00 m^3 (Ekobord April Catalog, 2016). In Turkey, fibrecement is a building material that has been used actively especially after the 2000s and included in the sector with the names of the firms that take part in its production.

3.2. Material Properties

Fibercement board is produced by using organic or inorganic fibers and mineral filling materials (quartz or silica) where the binding element is cement. By adding various reinforcement minerals into the formulation based on the usage purpose of boards, improvement can be provided in thermal isolation, electrical

resistance, lightness and fire resistance (Hekim Yapı Fibrecement Board Practical Guide, 2013). Fibrecement board production takes place with two different methods as air-curing and autoclaving. Air-cured products have similar formulas and contain synthetic reinforcement fibers (polyvinyl alcohol and polypropylene), cellulose, Portland cement, pozzolanic and inert filling. Autoclaved products mainly contain cellulose, cellulose-added fibers, Portland cement, quartz sand and stabilizing materials (Schoon et al., 2012).

Fibercement board has many properties. It is produced from natural materials that contain no substances harmful to the environment and human health. It is an A1 class of fire-proof building material according to EN 13501-1. It has no emission of any gasses that are harmful to human health or the environment during a fire. It is very resistant to atmospheric conditions and is not affected by water and ultraviolet rays. It has good sound and thermal insulation. It is resistant against animal wastes, chemical substances, crashes and impacts. It is lightweight, easily portable, and can be processed and mounted with suitable tools. It does not rot, has a long lifespan, and does not require special care. It can be painted many times with interior and exterior paint (Hekim Yapı Product Catalog, 2015).

Fibrecement boards are divided into 3 groups as smooth, grooved and textured boards. The standard dimensions of boards are 1250 x 2500 mm and 1250 x 3000 mm; thickness 6-20 mm and 8-12 mm. Fibrecement boards are applied to the various parts of buildings such as wall, flooring and roof. The boards are used in all types of buildings as interior and exterior coating material, cross partition wall material, support material under roof coating materials, under-eaves coating material, under-ceramic material in wet volumes, undercoat upholstery material in multi-story buildings with pre-production, concrete mold material, frames around windows/doors in outer facades and decorative coating elements in interior spaces (Hekim Yapı Product Catalog, 2015).

4. REUSE AND RECYCLING POTENTIALS OF FIBRECEMENT

In the scope of this study, waste management in the production phase and the reuse and recycling potentials in the process from production to construction of fibrecement board is examined. On-site observation was made at a fibrecement production facility in Sakarya. In order to examine the reuse and recycling potentials of the material in construction phase, interviews were held with material sales offices and site supervisors in Sakarya.

4.1. Production Phase

The production process of the material was investigated by interviewing a facility official of a firm that produces fibrecement boards in Turkey. The firm examined

in the study is a production facility that was established in 2001 in Sakarya - Hendek 2nd Organized Industrial Zone on a land of 111 acres on a 20.000 m^2 closed area. The facility has an annual capacity of 80,000 m^3 fibrecement board. The production capacity of the facility was 125,000 m^3 as of the end of 2015 (Hekim Yapı Product Catalog, 2017).

Supply of Raw Materials: The raw materials of the fibrecement board are Portland cement, cellulose fiber and micronized milled silica. Portland cement; is stored in cement silos after purchased from cement plants. Groundwater is used as water source. The water is stored in clean water and filtered water silos (Fig. 1). Cellulose fiber is imported from abroad. Packaged cellulose stacked at the factory entrance is transported to closed storage areas by material transport vehicles (Fig. 2). Cellulose is made ready for production by passing through grinding machine in open area (Fig. 3). Quartz; is extracted from the mine in a land very close to the production facility and processed in the facility. Silica sand is obtained by grinding the quartz mine stored in the open area in a stone grinding machine (Fig. 4). The milled silica sand is stored in open and semi-open areas (Figs. 5 and 6). The aim of the facility is to reduce the use of raw materials and to protect natural resources by using appropriate technologies that harm the environment at least within the framework of technical and economic opportunities.







Figure 1.Cement and Water Silos (Author[1], H. Bozkurt Archive, 2013)

Figure 2.Transport of Cellulose (Author[1], H. Bozkurt Archive, 2013)

Figure 3.Grinding of Cellulose (Author[1], H. Bozkurt Archive, 2013)







Figure 4.Stone Grinding Machine (Author[1], H. Bozkurt Archive, 2013)

Figure 5 - Figure 6. Milled Silica Storage Area (Author[1], H. Bozkurt Archive, 2013)

Processing of Raw Materials: At the first stage of board production, the raw materials, which are cement, cellulose and silica, are processed by special processes and turned into process sludge. The sludge sized as a raw sheet on the 'Hatscheck' machine is stacked between steel sheet molds and kept in the curing room for setting the cement. After the waiting period, the boards are made resistant to climatic conditions by autoclaving at high pressure and temperature (Figs. 7 and 8).

Packing of Materials: Fibrecement boards are palletized to be sent to the stock area after production. The pallets are transported to the storage area by material transport vehicles (Fig. 9). The packed boards are stacked on top of each other and stored in a closed area for protection (Fig. 10). Attention is paid to the storage conditions determined by the Quality Management Department in writing in the facility.

Transportation of Materials: The packaged boards are delivered to the sales and application offices via covered vehicles (Fig.11).



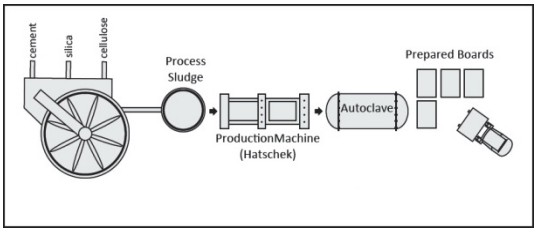

Figure 7.Fibrecement Production Facility (Author[1], H. Bozkurt Archive, 2013)

Figure 8.Fibrecement Board Production (Hekim Yapı Fibrecement Practical Guide, 2013)







Figure 9.Transport of Pallets (Author[1], H. Bozkurt Archive, 2013)

Figure 10.Storage of Fibrecement Boards (Author[1], H. Bozkurt Archive, 2013)

Figure 11.Packed Boards (Author[1], H. Bozkurt Archive, 2013)

4.1.1. Investigation of Waste Management in Fibrecement Production

A field study was carried out to examine waste management in the process of producing fibrecement boards. In this context, a questionnaire was applied to an official of the facility, information was obtained about the production process of the material and the operations carried out in the facility were supported with photographs. The information obtained as a result of the examination in the study is summarized below:

- The facility has a waste management plan, and the wastes that are generated in the facility are categorized according to their types and sent to recycling through licensed firms.
- The Environmental Management Unit in the facility that has TSE EN ISO 14001 Environmental Management System and TSE EN ISO 9001 Quality Management System certificates works on the directives published by the Ministry of Environment.
- Environmental impacts are kept in consideration during raw material processing. According to the Hazardous Chemicals Directive, the boards that are produced do not contain harmful materials such as asbestos. There is no harmful gas emission during production, and the CO_2 emission caused by production in the steam chimneys in boiler rooms is being controlled.
- The water that is necessary in the separation facility for the cement to enter into a reaction is reused by constantly being cycled with a cycling system (Fig. 12). The process water is sorted after being stored in the balancing tank. Cement and sand particles that are mixed in the process water are precipitated in sedimentation tanks and sent back to production in the form of sludge (Fig. 13). The decomposed water is reused in the production phase after waiting in the settling ponds (Fig. 14).
- The material wastes that are generated in the production phase are reutilized in new material production. The edge cut parts of the boards can be included in the production process by turning them into by products out of paste. The defective products are stored in an open space (Figs.15 and 16).



Figure 12. Decomposition Plant (Author[1], H. Bozkurt Archive, 2013)
Figure 13. Sludge in Sedimentation Tank (Author[1], H. Bozkurt Archive, 2013)
Figure 14. Separation Water Recreation Pool (Author[1], H. Bozkurt Archive, 2013)



Figure 15-Figure 16. Defective Materials (Author[1], H. Bozkurt Archive, 2013)

The precautions are taken to prevent any negative effects on the environment and human health in the production process of fibrecement boards. Necessary precautions have been taken for employees during dust output from the dry sizing facility of the material. Trainings are organized for employees to act with environmental consciousness and the production areas to be clean and tidy. Certificated branch-foreman trainings are provided for the correct implementation of the material and taking the necessary precautions. Sales and application dealers are also informed about how to dispose of the material.

4.2. Construction Phase

The fibrecement boards are applied to cutting, screwing and dying processes during the construction phase. In order to apply the fibercement board as coating material on a wall, the wall is coated with insulation plates and anchored. The insulation plate is covered with protective membrane. Vertical and horizontal profiles are mounted onto the wall for board placement, and boards that are cut based on the wall dimensions are screwed onto the profiles. The screw holes on the boards are closed with paste, and the boards are dyed (Fig. 17).

The reuse and recycling opportunities of the fibrecement board during construction are limited. In the scope of the study, information has been reached that the large-scale boards that are left during construction are sent back to sales branches and reused for various applications (Figs. 18 and 19).

Small-sized materials are disposed of as waste in the construction site. It was determined that the producing firm does not have any implementation related to collecting and recycling the waste materials that are generated during construction. The reuse potential of the material may be increased by reducing material losses with designs made based on the dimensions of the material, correct practices and labor utilization.



Figure 17. Fibrecement Board Construction (Hekimboard Application Movie, 2013)

Figure 18- Figure 19. Storage of Remanent Materials
(Author[1], H. Bozkurt Archive, 2013)

5. CONCLUSION

In order to reduce the negative effects of buildings against human health and the environment, it is important that the building material that composes the building is being sustainable. In this context, the harm to the natural environment will be minimized thanks to the minimum level of waste generation in the life cycle of building materials and the possibility of reuse / recycling. In the scope of the study; the reuse and recycling potentials of fibrecement board in production and construction phases are investigated. Based on the data obtained in the study, the following conclusions are reached:

- The waste management plan created by the 'Environmental Management Unit' minimizes negative impacts on the environment by preventing/reducing wastes at the fibrecement production facility. In the firm's environmental policy, the wastes such as packaging, paper and metal that are formed in the facility are categorized based on their types and collected; they are sent for recycling through licensed firms.
- The presence of a separate production area for quartz mine in the facility shows that the facility uses its own means to meet the raw material needs. In addition to this, it also reduces the amount of energy consumed for obtaining raw materials.
- It has been determined that the wastes generated during the production of the material are recovered by inclusion in the production process. The reuse

of the water that is used in production by cleaning through a sorting system shows that natural resources are minimally consumed and polluted. The reuse the sludge that is obtained during separation of the process water back for production reduces the amount of raw material needed for producing new material.

- The inclusion of the material wastes and defective materials that emerge during the cutting process back in production shows that fibrecement board is a recyclable building material during the production process.
- The forestation in the production facility area leads the environment to look better. The organization of various information seminars on environmental issues for employees shows that the facility has an environmentally sensitive approach.
- Although fibrecement boards have the potential of reuse during the construction phase, no studying is carried out for recycling of the material. The waste materials in the construction site are sorted out according to size and while large boards are stored for reuse, small boards are thrown out. The material dimensions need to be taken into consideration in the design process in order to provide maximum usage and minimum waste generation during construction process.
- As fibrecement board is a building material that can be installed and removed, damaged parts during usage can be replaced. It is thought that fibrecement board will not have negative effects in terms of human and environmental health in terms of disposal as it is building material that does not contain any harmful materials such as asbestos.

Consequently; fibrecement board examined in the study is a building material that has the potential to reuse and recycling in the production and construction phases within its life cycle. In the production facility of the material; importance is given to waste management practices and works are carried out towards considering the environmental impacts in recycling, reuse or disposal of waste in the facility. While boards can be reused by evaluating according to the material dimensions, there is no study on recycling during the construction phase. In this context; the reuse and recycling potential of fibrecement board during the production phase is better and higher than the construction phase. Fibrecement board is a building material used in buildings especially recently and it is not yet possible to determine reuse or recycling of the material in the use and demolition phases. It is thought that the material can be used as a raw material of a different building material after various processes are performed in order to increase the reuse and recycling potential of the fibrecement. The facts that the

usage rates of fibrecement board are increasingly higher in recent years, it does not harm the environment and human health, and the evaluation of wastes generated in the life cycle shows that it is a building material that can be recovered in terms of reuse and recycling potentials.

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HYDROPHILIC STRUCTURES

Kutay KARABAĞ*, Zeynep ŞAHBAZ*

ABSTRACT

This text intends to present the outcome of the graduate design studio titled 'hydrophilic structures', as well as to discuss the potential and design parameters of the waterfront at Santralİstanbul campus. Studio research is structured for revealing the potentials of floating spaces in connection with the public spaces. Concepts such as floating structures, interaction with water and public waterfront may initially refer to human utilization however, non-human living organisms are critical for their decisive role on the qualities of the water itself. Through this perspective, it is required to reveal the ecological cycles as design input when working in relation to water, and any possible environmental effects have to be handled as design parameters.

Design of floating structures and water interaction had been a niche inside the traditional culture and practice of architectural design, whereas design and production skills in connection with water had historically developed mostly in the field of engineering and transportation. On the one hand, floating structures and their potential for unconventional spatial experiences have recently engaged in the focus of contemporary design culture, mainly due to the increasing density and lack of public spaces on the land.

In parallel, the presented design-research covers principal case-studies of floating spaces, the buoyancy principles, various material tests and essential variables of ecological dynamics in Haliç as a general framework. The subsequent prototype, developed with the above intentions, serves for a specific bird population utilizing Haliç as a part of their life cycle, rather than human utilization. Through this way, the project intends to contribute to ecologic cycles of the small habitat as well as, though indirectly, to the public life. One the one hand, it triggers a discussion for architectural design experience where users are non-human. The proposal, designed through computational tools and fabricated through robotic technology, concentrates on various ways of interaction with water and acknowledge distinct formal potentials for the birds, as the users of space.

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Keywords: Floating Structures, Hydrophilic Design, Robotic Fabrication, Floating Space, Haliç

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SESSION 4B

Theme: Conservation and Regeneration

14 October 2020 Wednesday, 10.45 – 12.15

Chairperson: Dr. Menelaos GKARTZIOS

Bahar ELAGÖZ TİMUR, Nilüfes BATURAYOĞLU YÖNEY

Conservation Planning of Rural Heritage Landscapes on Urban Periphery: Valley Settlements Around Kayseri

Tuba Nur OLĞUN, Müjgan BAHTİYAR KARATOSUN

Conservation of Rural Earthen Architectural Heritage: The Case of Malatya Region

Ceren ERCOŞKUN

Rural Gentrification or Urban Agriculture? A Case Study on Sirkeli-Ankara

Tuğçe UÇAR

Exploration of Heritage Conservation Issue with Volunteer Tourism

CONSERVATION PLANNING OF RURAL HERITAGE LANDSCAPES ON URBAN PERIPHERY: VALLEY SETTLEMENTS AROUND KAYSERI

Bahar ELAGÖZ TİMUR*, Nilüfer BATURAYOĞLU YÖNEY*

ABSTRACT

The process beginning with the rapid growth of cities following the Industrial Revolution and culminating in recent globalization has transformed the interaction between urban and rural areas in the last two centuries. Uncontrolled urban growth threatens rural settlements especially on the periphery, and these eventually lose their cultural and physical identity and landscape characteristics. This study investigates the effects of governmental policies and regulations in Turkey concerning the transformation and conservation of historical rural landscapes focusing on valley settlements around Kayseri, and aims to contribute to the discussion by identifying and examining relevant threats.

In Turkey, villages in metropolitan areas are considered "neighborhoods", and their statute is obscured. Rural heritage areas represent the culture, social structure, art and architecture, construction technologies and interaction with the environment in their period, and thus, possess both tangible and intangible heritage values. However, due to the inconsistent administrative approaches of local authorities, they are rapidly losing their integrity, authenticity and characteristics, resulting in loss of cultural memory and spirit of place, beginning with those located on the periphery of growing cities.

This paper explains the vital role of policies, laws and regulations on the conservation of rural heritage areas, focusing on two Derevenk Valley settlements, Germir and Tavlusun on the urban periphery of Kayseri. Their rural, archaeological and natural heritage features resulted in their listing in 1993. These multi-cultural and multi-layered settlements, where different religious, ethnic and social groups lived together in the past, are mostly devoid of their original population and used only seasonally today. Although there are similar valley settlements around them, only two are listed as historic urban sites whereas the others, not recognized, are under the threat of new building and urban development. Derevenk Valley,

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closest to the city, has already been absorbed by the urban sprawl. The conservation history, legal status, management and administrative policies, characteristics and state of preservation of the designated areas analyzed here, demonstrate the importance of the timing of planning and implementation as well as the integration and coordination of the urban and conservation plans, the lack of which threatens the preservation of similar areas.

Keywords: rural heritage, historic urban sites, Kayseri, Derevenk Valley, conservation planning

1. INTRODUCTION

Rural heritage brings together diverse cultural material, including architecture, building technologies and traditions, settlement practices and interaction with the environment, agricultural production landscapes, and other tangible and intangible practices and traditions. Recognized rather recently in terms of preservation theory and implementation, and celebrated by UNESCO's International Council on Monuments and Sites (ICOMOS) in 2019, rural heritage includes the conservation and stewardship of natural and cultural heritage and habitats, and economic livelihood and well-being of their inhabitants, also involving ecological tourism. *ICOMOS-IFLA Principles Concerning Rural Landscapes as Heritage* adopted in New Delhi in 2017 define rural landscapes as "terrestrial and aquatic areas co-produced by human-nature interaction used for the production of food and other renewable natural resources", multifunctional in character and having "cultural meanings attributed to them by people and communities"; these may be "well-managed and degraded or abandoned areas that can be reused and reclaimed – huge rural spaces, peri-urban areas as well as small spaces within built-up areas". "Rural landscape as heritage" refers to the "tangible and intangible heritage of rural areas", encompassing "physical attributes – the productive land itself, morphology, water, infrastructure, vegetation, settlements, rural buildings and centers, vernacular architecture, transport and trade networks, etc. – as well as wider physical, cultural and environmental linkages and settings" and "associated cultural knowledge, traditions, practices, expressions of local human communities' identity and belonging, and the cultural values and meanings attributed to those landscapes by past and contemporary people and communities," including "technical, scientific and practical knowledge related to human-nature relationships" and "cultural, spiritual and natural attributes that contribute to the continuation of biocultural diversity".

The continuing loss of population and communities through the 20th century in rural areas in Turkey and the increasing growth of urban sprawl forms one of the

greatest threats against rural heritage landscapes, leading to loss of both tangible and intangible characteristics. The lack of specific designation tools in the legislation, the recent separation of the legal status of natural and cultural property and the standard processes of urban and conservation planning make integrated conservation and sustainability of such areas almost impossible. This paper discusses the problem over two listed settlements in Derevenk Valley on the periphery of the urban development and practically absorbed by the urban sprawl of Kayseri, focusing on legal and administrative issues.

2. THEORETICAL FRAMEWORK

The human urge to safeguard cultural heritage gained new momentum in the 20th century as a result of the destruction caused by the two world wars. One of the first actions was *Carta del Restauro* in 1931, an 11-article document published by the Italian Superior Council of Antiquities and Fine Arts (*Consiglio superior per le antichita e belle arti*). This was the first guideline, suggesting the conservation of the sites and contexts together with artistically important monuments. The *Athens Charter for the Restoration of Historic Monuments* adopted by the First International Congress of Architects and Technicians of Historic Monuments became the first international initiative concerning the preservation of sites as well as single monuments. Thus, although they were recognized as contexts or backgrounds at first, historic urban sites became a part of heritage. (Ahunbay, 1996, p: 116) The devastation caused by World War II in various historic centers such as Warsaw and Dresden brought about a new turning point. (Dinçer, 2010, p: 228) An enlarged view of preservation, including sites of different types, created its international concepts and principles in the second half of the 20th century.

The idea of conservation in the Ottoman Empire focused on movable archaeological artefacts in the 19th century and was afterwards enlarged to include monuments. (Dinçer, 2010, p: 228) However, despite two laws on antiquities dated 1869 and 1884 (*I. Asar-ı Atika Nizamnamesi* and *II. Asar-ı Atika Nizamnamesi*), a centralized state organization was not formed, and preservation and restoration of historic monuments was carried out either by the Ministry of Pious Foundations (*Evkaf Nazırlığı*) or through the efforts of individuals. The first organization with such a purpose was the Permanent Council on the Conservation of Monuments (*Muhafaza-i Asar-ı Atika Encümen-i Daimisi*) founded in Istanbul in 1917. (Madran, 2002, p: 14) Following the proclamation of the new Turkish Republic in 1923, local and municipal authorities began preparing first urban plans. The Building Construction Act (*Ebniye Kanunu*) of 1882 was remodeled as Turkish Act No. 2290 in 1933 and formed the basis of new construction in municipal urban areas. (Dinçer, 2010, p: 229) This law left the planning around monuments to

municipalities but required the conservation of sites and contexts surrounding them.

The need for a more centralized and effective authority in heritage conservation resulted in the establishment of the High Council of Immovable Antiquities and Monuments (*Gayrimenkul Eski Eserler ve Anıtlar Yüksek Kurulu* or GEEAYK) with Turkish Act No. 5805 in 1951. The Turkish Act No. 6785 on Building (*İmar Kanunu*) in 1956 and its renewal in 1957 were the only regulations during this period. (Madran, 2000) Charter of Venice adopted by ICOMOS following the 2nd International Congress of Architects and Technicians of Historic Monuments in 1964, declared historic sites worthy of preservation in their own right for the first time. (Binan, 1999, p: 76) A new Building Regulation adopted by the Republic of Turkey in 1969 also included terms such as "protocol area" (*protokol alanı*) and "housing area to be conserved" (*korunacak konut dokusu*).

The transformation of architectural conservation in this period led to the adoption of Turkish Act No. 1710 on Historic Monuments (*Eski Eserler Kanunu*) in 1973 with the support of the members of GEEAYK and other specialists. (Ahunbay, 1996, p: 130) The term "protocol area" was replaced by "site" (*sit*) and the conservation of historic sites became part of the legal system. With these changes in the laws on Building and Historic Monuments, urban planning and conservation was considered in a more integrated manner and provided solutions accordingly. (Dinçer, 2010, p: 233) GEEAYK was still responsible for the listing, documentation and conservation of the built heritage. Following the signing of UNESCO Convention Concerning the Protection of the World Cultural and Natural Heritage by the Republic of Turkey in 1982, Turkish Act No. 2863 on the Conservation of Cultural and Natural Heritage was accepted in 1983. GEEAYK was transformed into the High Council on the Conservation of Cultural and Natural Property (*Kültür ve Tabiat Varlıklarını Koruma Yüksek Kurulu*) according to this law. The terminology was also updated: For instance, cultural property (*kültür varlığı*) was used instead of historic monument (*eski eser*), and historic sites and their types were defined in more detail. Accepting that conservation of historic sites was a problem of city planning, the concept and term of "urban conservation plan" (*koruma amaçlı imar planı* or KAİP) was adopted as well.

The changes in Turkish Act No. 2863 on the Conservation of Cultural and Natural Heritage, adopted by the Turkish Act No. 5226 in 2004, defined urban conservation plan in detail and formed its technical specifications (*Koruma Amaçlı İmar Planı Teknik Şartnamesi*) as well as explaining the requirements for authors, regulations for their preparation, implementation and control. Following the listing and declaration of an area as a historic urban site, there is a deadline for the completion of the urban conservation plan, and "transition

period building regulations" (*geçiş dönemi yapılaşma koşulları*) are determined and enforced until then. The responsibilities concerning the urban conservation plan are not limited to its authors but Regional Councils on Conservation of Cultural Property, municipalities and NGOs are also accountable. The previously unrecognized concept of administration of historic urban sites also entered the legislation, and "management areas" (*yönetim alanları*) were determined. Such administrative decision-making process includes economic problems and ownership.

Turkish Act No. 5366 on the Regenerative Preservation and Sustainable Use of Dilapidated and Deteriorated Historic and Cultural Immovable Property (*Yıpranan Tarihi ve Kültürel Taşınmaz Varlıkların Yenilenerek Korunması ve Yaşatılarak Kullanılması Hakkında Kanun*) was a surprising negative development in 2005. According to this law, areas could be designated for regeneration by the Turkish Cabinet of Ministers and rapid implementations were accordingly possible without the more delicate and time-consuming process of urban conservation planning. Turkish Act No. 648 on the Organization and Responsibilities of the Ministry of the Environment and Urbanism (*Çevre ve Şehircilik Bakanlığının Teşkilat ve Görevleri Hakkında Kanun*) in 2011, transformed the process of urban and conservation planning, excluding natural property, including natural sites and parks, from the jurisdiction of Turkish Act No. 2863, which was renamed the Law on Conservation of Cultural Property. This change made the planning and administration of rural, archeological and complex sites, which include natural heritage, problematic. Such sites need to be evaluated and administered by two different ministries. The Regional Councils on the Conservation of Cultural Property were no longer responsible for natural sites, making integrated conservation of complex sites more difficult. Turkish Act No. 6360 on Metropolitan Areas converted the status of villages to neighborhoods in 2012. Rural areas and sites thus acquired the same status as urban neighborhoods, and this administrative change made the conservation of identity and authenticity in heritage areas more challenging.

One of the main problems are legal definitions of heritage sites; the only available ones are "historic urban", "archaeological" and "complex" sites. Rural landscapes, which encompass both architecture and landscape, and sometimes archaeology, and thus both cultural and natural resources become "complex sites". However, their management have become impossible to the legal separation of cultural and natural heritage. According to current legislation and regulations, the Regional Councils on the Conservation of Cultural Property list and declare historic sites, and "transition period conservation guidelines and use conditions" (*Geçiş Dönemi Koruma Esasları ve Kullanma Şartları*) are determined

until the completion of the urban conservation plan. These guidelines and conditions supersede other building regulations in the area. However, as indicated by their name, these are temporarily determined in a very short time and without detail. If the planning process is delayed, then their long-term application causes the deterioration and destruction of heritage areas. The conservation plans need to be integrated with the other plans for the surrounding areas both in terms of the decision-making process and implementation. Integrated planning and not unnecessarily enlengthened research and preparation, bringing various stakeholders into the process, are important for the preservation of heritage sites.

3. CASE STUDY: GERMİR AND TAVLUSUN VILLAGES IN DEREVENK VALLEY, KAYSERİ

3.1. Methodology

This paper analyzes and evaluates the legal and administrative processes in the preservation of cultural heritage sites in Turkey, demonstrating the importance and urgency of control and implementation. For this purpose, Germir and Tavlusun Historic Urban Sites have been selected as case study examples. These are located within the present Kayseri urban settlement area. Both designated in 1993, Germir's urban conservation plan was completed in 2017 after 24 years while Tavlusun's is still incomplete after 27 years. The research and analyses include archive documents from the Kayseri Regional Council on the Conservation of Cultural Property (KRCCCP) and Kayseri Metropolitan Municipality (KMM), demographic data, Building Regulations and the state of preservation of the sites.

The urban sprawl over these designated sites forms the major threat against their conservation while the various new legislations mentioned in the previous section pose various levels of risks. The study also evaluates these threats and risks.

3.2. Geography and Historical Background

Germir and Tavlusun villages in Derevenk Valley, located about 6km from the center of Kayseri, have settled on the slopes due to the topography. Forming the southeastern edge of the Cappadocian Plain, the plateau around Kayseri is carved out with valleys housing streams at the bottom, and many historic rural settlements are located along them. Germir, the easternmost village in Derevenk Valley, is located on a relatively more level land towards the valley bottom and the houses are morphologically organized along long and narrow streets.

Tavlusun, located at the center of the valley, on the other hand, is on steeper ground. The houses are located on terraced gardens on the valley slopes, opening up to the view and the panorama of Mount Erciyes (Argeus). The streets join larger public spaces while the stream fed by the melting snow of the mountain waters vineyards, gardens and pastures at the bottom.



Figure 1. Germir Photos



Figure 2. Tavlusun Photos

The demographic and social structure of the settlements are similar to that of the city center. Sources indicate that the ethnic population was largely formed of Armenians and Greeks at least since the 15th century. The Byzantine invasions of eastern Anatolia in 11th century, relocated the Armenians to Sivas, Kayseri and along the Euphrates, changing the ethnic structure of Central Anatolia. (Kevorkian,

1992, p: 217; Turan, 1971, p: 68) Although the original inhabitants were mostly of Greek origin before and during the Byzantine Period, Arab and Turkish invasions during the Middle Ages caused the settlement of Christian Turks in the area as well. (Özkan, 2000, p: 337) Following the Turkish Conquest of Anatolia after the Battle of Manzikert in 1071, Muslim and Turkoman groups began settling in the area. The ensuing demographic and social structure was multi-ethnic, multi-religious and multi-cultural.

According to the population census of 1875, Tavlusun had 578 houses, of which 75 were Armenian, 158 were Greek and 355 were Muslim. (Karpat, 1999, p: 83) Ownership title deed records indicate that although some neighborhoods were largely Muslim in population, different ethnic and religious groups co-existed. (Keskin, 1998, p: 291; Keskin, 2000, p: 16) This was also a seasonal settlement for the officials in Kayseri; indeed, most of the houses are named after the governors, mayors, judges and other notables of the period. (Url-2; Keskin and Cömert, 2007, p: 283) The historic site area today contains two churches, three mosques, four fountains, two bridges, one aqueduct, one water well, one school and one *namazgah* (open prayer area) listed in the national inventories. (KRCCCP Archive)

The population census of 1875 shows that Germir was much larger than Tavlusun. Of the recorded 1214 houses, 203 were Muslim, 398 were Armenian and 613 were Greek. (Cömert, 2014) The traditional and agricultural production spaces in the village, such as *bezirhane*s (buckthorn and/or linseed oil presses), pottery workshops, ovens and kilns, and the accounts of travelers, such as that of Vital Cuinet (1892), who visited the village in 1888-1890, indicate that a busy commercial life existed. Traditionally Greeks were involved in trade and marketing, and Armenians in crafts, including goldsmithing, tailoring, carpentry and construction. (Nikolaos, 1856; İmamoğlu, 1996, p: 120) Despite the commercial activity, the greatest income bringing agricultural production in the area was *cehri* (buckthorn), a plant used in dyes, for which the number of *bezirhane*s provide ample proof. Buckthorn was grown in 42 *kıt'a* (*c*. 250m^2) gardens and there were 35 *bezirhane*s in Germir in the 19th century. (Cömert, 2014; Gökdağ, 2010, p: 352) There were four schools, four pharmacies, 12 doctors and 35 shops in Germir as well. (Gökdağ, 2010, p: 354) The historic site area today contains two Greek and one Armenian churches, two mosques, two *bezirhane*s, one *hamam*, two bakeries, a group of old book sellers, one school, two fountains and one bridge listed in the national inventories. (KRCCCP Archive; Kırık, 2019, p: 127).

These two villages with similar demographic and social structures as well as similar production activities but different morphologies were both effected by the political changes at the turn of the last century. Although the rights of the minorities were strengthened with *Tanzimat* (Reorganization) and *Islahat*

(Reform) edicts, the land and population losses of the Ottoman empire continued with *Tehcir* (Relocation) Law, which resettled Armenians in the Middle East. Greeks were enforced to leave following the Turkish War of Independence in 1924 during the *Mübadele* (Population Exchange). Compared to the numbers in the 1875 population census, the settlements were mostly abandoned by mid-20th century. The development of industrial areas in Kayseri and other cities increased the rate of rural migration, leaving the historic villages mostly deserted.

The Commission on Exchanging Foreign Place Names (*Yabancı Adları Değiştirme Komisyonu*), founded by the Turkish Ministry of Interior Affairs in 1940, changed the name of Tavlusun to *Aydınlar* (intellectuals) and that of Germir to *Konaklar* (mansions) according to the historic and cultural characteristics of the villages in 1960. However, the villages regained their names following the applications of their citizens in 1998 and 1999 respectively. (Cömert, 2007, p: 11; Cömert, 2014, p: 16)

3.3. Spatial Analyses

The village settlements developed according to the continental climate characteristics are formed of masonry houses built with tufa in a manner similar to the settlements in the geographical area around Kayseri. The floors and roofs are supported by juniper beams and occasional columns. The floors and roofs are covered with large slabs of pumice over the beams, and the flat roofs are covered with earth. The intense commercial activity and the interest of influential and wealthy individuals in settling have resulted in the construction of impressive mansions compared to the other villages in the environs. The dense settlement patterns are reminiscent of a historic town rather than a rural area, with several central squares and long and narrow streets aligned with rows of houses. The sloping topography is utilized to locate the houses without shading and blocking each other. In both settlements the main streets are parallel to the slope with smaller steep and sometimes stepped streets in the other direction connecting them; some of the second type of streets are cul-de-sacs. The generally narrow streets are suitable for pedestrian traffic, and wider connections have been added for motor vehicles. Public squares have developed around major buildings such as mosques, churches, fountains and schools. The historic streets may become as narrow as 2m in certain parts, where the overhead projections are only 1m apart. The streets turn and curve following the topography, and the façades of the houses and projections as well as the high garden walls create a glorious shadow play. The wide house and garden doors and *eyvan*s (*köşk*) on the upper floors bring a rhythm. There are also two *kabaaltı* passages in Germir, where the street continues under houses. (Elagöz Timur *et al.,* 2019) The

morphology of the architectural elements is similar to each other, and the larger mansions have various examples of stone decoration, sometimes Neo-classical in character.

As observed in the other valley settlements around Kayseri, in Germir and Tavlusun, there were no specific neighborhoods or house types designated for an ethnic or religious group; they are all similar in architectural design and characteristics. The two-story stone masonry houses with flat earth roofs are cubic in form. The service spaces on the lower floors overlooking the street have either only small overhead windows or no openings. The upper-floor living rooms and projections are well-illuminated spaces with large windows; there are also *eyvan*s, which function like balconies. (Elagöz Timur *et al.,* 2019) The projections differ in shape, location and supports from Germir to Tavlusun: In Germir timber supports are more common under wooden floor beams whereas stone supports appear to be more common in Tavlusun. (Baturayoğlu Yöney *et al*., 2017) Two different colors of stone are used on the façades sometimes, especially in the voussoirs of the arches. Other architectural elements include inscriptions with dates, owners' names and prayers as well as door and window frames.



Figure 3. Germir Streets



Figure 4. Tavlusun Streets

The plan types in both settlements are also similar. Although some houses have garden gates as well, most houses are directly entered from the street. In Germir some houses are up to 2m above the present street level whereas in Tavlusun the entrances are at the same level as the street. The entrance is through a courtyard or hall, to which the doors of the service and living spaces at the lower level open. The lower level spaces include the kitchen, which is named *aşhane*, *tokana* or *ocak*, stables and storage rooms as well as winter living rooms. The central entrance spaces usually lead to a garden opposite the street direction and houses the open stone staircase leading to the upper levels. The open or central *sofa* on the upper floor is also a circulation space, leading to the summer living and bed-rooms and *eyvans*; the *sofa* itself may be used as a daily living room as well. (Elagöz Timur *et al.,* 2019)

Different construction techniques have been identified in the historic settlements, the existing buildings of which are mostly dated to the 19th and 20th centuries: Chronologically the oldest of these appear to be carved spaces. These *in*s or caves were probably first carved as houses and living spaces but following the construction of masonry buildings they were reduced to store rooms, kitchens, stables and pantries. These spaces carved into the bedrock are sometimes located on one side of the courtyard or garden or they might be underneath the house; in this case, the stone masonry houses are built directly on the bedrock without foundations. The floor systems of the houses are usually based on the use of timber (juniper) beams. In wider and larger rooms a central beam may be supported by timber columns. Sometimes stone vaulted spaces (*tol*) are encountered; these are not vault systems structurally but are, instead, formed of a series of stone arches. The cladding of the timber beams and the rib-like stone arches are both light stone slabs (pumice). The middle and later 20th century interventions include reinforced concrete floors and skeletal systems but these are not considered a part of traditional construction systems.

Different types of stones may be used in construction. The basements and foundations are made of basaltic tufa, which is stronger and more durable against the effects of water. The grey, light-brown or pink andesitic tufa is the most common building stone. The cladding stones, called *sal taşı* are light tufa, such as pumice. On the roofs, these are covered with earth. The staircases are also made of stone and slabs similar to cladding stones are more common. The floors of the projections are carried on timber beams as well; the projection supports underneath may be timber diagonals or if stone supports are preferred then the uppermost part of the console is made of timber. (Baturayoğlu Yöney *et al*., 2017) The arches, lintels and water sprouts are all made of stone. Except for the floor beams and occasional columns and lintels, timber is used as a cladding

material on the interiors of walls and ceilings and for built-in furniture in the living rooms. Metal elements are limited to exterior doors.

3.4. State of Preservation and Historic Monuments

Although the general morphological characteristics of the settlement and the relationship of the houses to the topography and building lots do not appear to have changed in the last century, the political and demographic transformation resulted in abandonment and deterioration. Most of the Armenians and Greeks left during the population movements between 1915 and 1925. The abandoned buildings – houses, commercial and public spaces – were vandalized and some of them were eventually destroyed due to lack of maintenance. Today, the population of the villages is still sparse and elderly as most of the younger population have migrated to the big cities, and most of the houses are used seasonally in summer, most of the owners living in nearby apartments in the city through the winter. The ratio of inhabitable houses in Germir is 42% whereas that of partially destroyed houses which require heavy restoration interventions is 30%. (Aks, 2017, p: 80) The ratio of inhabitable houses in Tavlusun is 32% whereas that of those which require heavy restoration interventions is 35%. (Aks, 2012, p:68) The rest of the buildings are in ruins or completely lost.

The changes in climate, the decrease in water flow of the stream and the lack of people to care for the land are some of the factors that threaten the natural heritage of the valley and sustainability of the rural heritage landscape. The agricultural production activity has changed and lost some of its most characteristic products such as *cehri* (buckthorn) and linseed, which once brought the greatest income.

There are several designated historic monuments in the settlements. Although restored at different periods, abandonment and vandalism have caused the deterioration of community buildings such as churches, schools and *bezirhane*s. In Germir, two mosques, one school and one *bezirhane,* all listed in the national inventories, are restored and in good condition whereas one Armenian and two Greek churches, one bridge and one *hamam* are unused and in ruins. In Tavlusun, the registered buildings include three mosques, still in use, and one Greek and one Armenian churches, one Greek school, two mansion *hamam*s, five fountains and two bridges, which are no longer in use. (KRCCCP Archive)

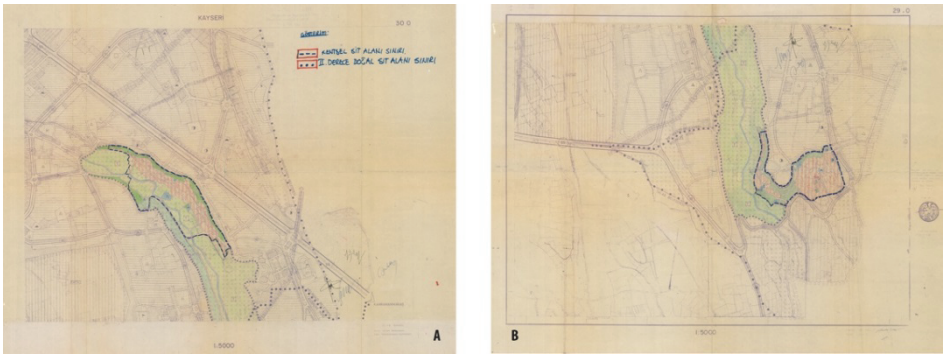

Figure 5. Germir and Tavlusun Urban Sites and 2nd Degree Natural Sites Boundaries / 2011 (KKVKBK Archive)



Figure 6. Germir and Tavlusun Historic Sites and New High-rise Buildings

3.5. Administrative Regulations and Preservation Decisions

With the decision of the Kayseri Regional Council on the Conservation of Cultural Property, dated 24.12.1993 and numbered 1643, Germir and Tavlusun settlements have been designated as historic urban sites and the part of the Derevenk Valley between these two settlements and the other natural resources around the settlements have been designated as natural sites in the second degree. The first public activity and investment in this respect was the authority given to the *İller* (Provinces) Bank of Turkey by the Kayseri Metropolitan Municipality for the acquisition of an urban conservation plan.

The "transition period conservation guidelines and use conditions" were determined one year later with the decision of the KRCCCP, dated 29.12.1994 and numbered 1806. As the urban conservation plan process could not be completed on time, the transition period conservation guidelines and use conditions were no longer valid. With the Turkish Act No. 648 in 2011, Germir – Tavlusun Natural and Historic Urban Site was divided with the removal of the

natural property to the jurisdiction of the Ministry of the Environment and Urbanism. Following a period of inactivity, the Ministry of Culture and Tourism determined another set of transition period conservation guidelines and use conditions valid for a year with a decision dated 23.02.2012 and numbered 151. With the removal of the natural site binding them, Germir and Tavlusun physically became two different historic urban sites, and the authorities decided to obtain two separate urban conservation plans rather than running an integrated planning process. Germir Urban Conservation Plan (*Germir Kentsel Sit Alanı Koruma Amaçlı Nazım ve Uygulama İmar Planı*) was ratified by the KRCCCP, with a decision dated 08.02.2017 and numbered 2472. However, Tavlusun Urban Conservation Plan (*Tavlusun Kentsel Sit Alanı Koruma Amaçlı Nazım ve Uygulama İmar Planı*) process was terminated by İller Bank's Spatial Planning Division (*İller Bankası Mekansal Planlama Daire Başkanlığı*), and the decision was announced to the interested parties by the KRCCCP with a document dated 05.07.2018 and numbered 29095.

3.6. Building Regulation Plans

The 1:25,000 scaled urban plan (*Nazım İmar Planı*) for Kayseri was ratified with the decision of the Metropolitan Municipal Council dated 14.07.2006 and numbered 343. All the natural, urban and archaeological sites are indicated on this plan, and the plan notes include the following:

1. The implementations in natural and cultural sites will be carried out according to Turkish Acts. Nos. 2863 and 5226 and related regulations.
2. The boundaries of the natural and cultural sites were determined by the abolished Kayseri Regional Commission on the Conservation of Cultural and Natural Property. The metropolitan urban plan for the city of Kayseri, takes these historic, cultural and natural sites and their conservation into consideration. (Aks, 2017, p: 56)

Turkish Act No. 6360, brought the district municipalities into the control of the Metropolitan Municipality. The new 1:50,000 scaled environmental plan (*çevre düzeni planı*) was completed in 2016, and the 1:25,000 scaled urban plan proposal in May 2017 (Url-1).

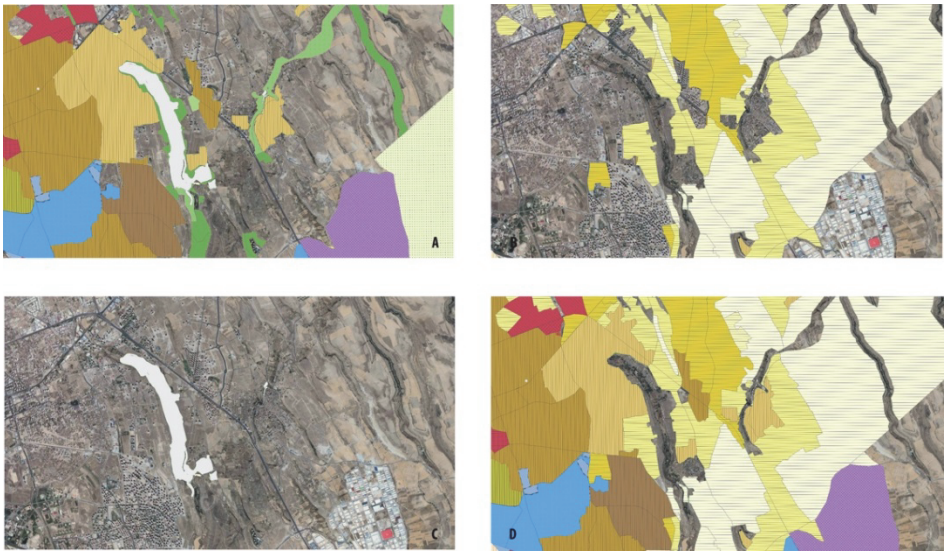

Figure 7. A- Built zones, B- Planned construction zones, C- urban and natural sites, D- All construction zone syntheses (https://cbs.kayseri.bel.tr/, 2019)

The 1:5,000 scaled urban plans and the 1:1,000 scaled implementation plans (*uygulama imar planları*) have no special decisions or notes about the historic urban sites discussed here. The zones surrounding the former Germir-Tavlusun historic urban and natural site area are treated like other urban zones and marked for housing development, parks, and commercial and social infrastructure.

3.7. Effect of Urban Development and Expansion on Tavlusun and Germir

A small city of commerce during the Seljukid and Ottoman periods, Kayseri developed into an industrial center following the foundation of the Republic in Turkey. The city developed in and around the citadel on the plain, the central part of which probably originated from a Roman garrison. The first modern urban plan for the city was prepared by Burhanettin Çaylak in 1933. This plan divided the urban area into two, designating a historic and a new zone. Ankara-Sivas Railroad determined the northern boundary of the city and the train station was supported by two main axes, İstasyon and Atatürk (Hastane) streets in the south, and the development of the Kayseri Sümerbank Textile Factory in the north. (Çabuk, 2012) The results of this plan were already visible in Albert Gabriel's (1931) map.

The second plan designed by Gustav Oelsner and Kemal Ahmet Aru designated industrial areas to the west, and thus, led to the development of the Sugar (1955), Birlik Mensucat (1951) and Orta Anadolu Tekstil (1955) factories in

addition to the existing Airplane Factory (1925) on the south and the Sümerbank Textile Factory (1935) on the north. (Tekinsoy, 2011, p: 38) Following urban plans developed other organized industrial districts and housing areas with high-rise apartments. These developments increased the rate of migration from rural areas to the city center, including migration from other provinces in the vicinity; the urban population surpassed the rural population in 1985. (Url-1) Many housing projects ensued as a result. A total of 17,803 new flats were constructed on the northeast boundary of the city, bordering the Germir-Tavlusun historic urban and natural sites; these include İldem (1995, 5203 flats), Mim-Sin (3600 flats) and Anayurt in Talas (6000 flats). (Tekinsoy, 2011, p: 62) The Mimar Sinan organized industrial district was formed on the northern side of the heritage areas. This was followed by Yıldızevler and Uğurevler neighborhoods, surrounding the Derevenk Valley completely with new development. A new university campus is located on the Malatya road between the historic sites and the new organized industrial district as well as several housing zones. Thus, by 1995, Derevenk Valley was absorbed by urban sprawl and began to deteriorate and lose its rural character. Most of the population moved to new housing areas in the vicinity, and the settlements became predominantly seasonal.

Considering the analyses on urban development, legal and administrative decisions and urban and conservation planning, the historic sites of Germir and Tavlusun are under the threat of urban development. In 1993, when they were designated, they were not yet a part of the urban sprawl but today they have already been absorbed and therefore, controlled under urban plans and building regulations. The relatively inferior physical and social infrastructural conditions as well as the temporary and restrictive "transition period conservation guidelines and use conditions", which remained in use for 25 years, have led to their abandonment and seasonal occupation. Meanwhile surrounding urban development arrested these settlements; in addition to the 17,803 flats in centrally planned housing estates, many individual houses and apartments were built as well. These were followed by the allocation of a new university campus and an organized industrial zone on their periphery. The areas along the Derevenk Valley slopes, which have not been designated as cultural or natural property, have been opened to urban development as mid-density housing zones. It is obvious that the urban plan and the conservation plan are not integrated; while the urban plan focuses on urban development by creating new zones for building, the conservation plan is limited to preserving the cultural heritage in a small defined area by freezing development as no support is provided by other plans and decisions. Similar cases all over Turkey provide one of the major threats to the conservation of historic urban sites on urban periphery.



Figure 8. Land Use of Germir and Tavlusun Urban Sites (http://www.aks.com.tr/)

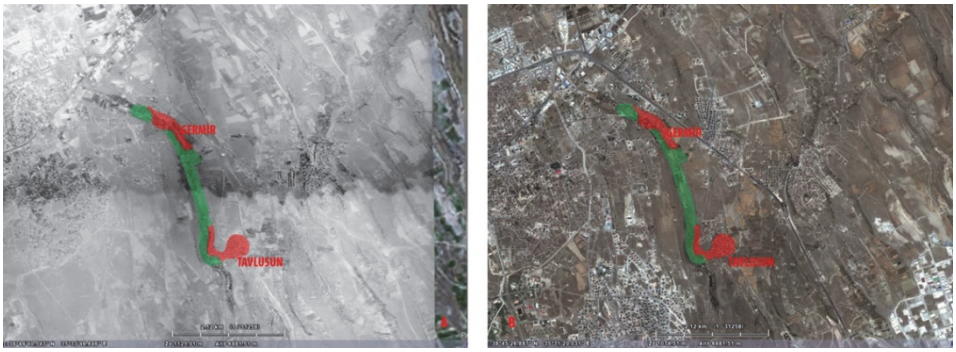

Figure 9. A. Map of the Urban Sites in 1992, B- Map of the Urban Sites of 2020

The new population censuses, on the other hand, show that Germir's population increased from 1392 to 10,080 and Tavlusun's from 455 to 3479 between 1985 and 2018. (TÜİK data) It is obvious that the 2018 data includes a larger area and not just the historic settlements. This apparently uncontrolled population increase in the near vicinity forms a further threat to the conservation areas. The building activity on the boundaries of the historic settlements became a problem during the urban conservation planning process; for instance, in Germir, the "interaction transition zones" (*etkileşim geçiş bölgesi*) around the historic site could not be determined as the existing new development will need to be expropriated and torn down. These new buildings are also problematic in terms of the historic skylines, which now include high-rise apartment buildings. Development on the boundaries threaten the sustainability of the agricultural activity as well, having built up some of the vineyards, gardens and pastures. Thus, the conservation is limited to the designated areas of old houses, making integrated conservation and sustainable development impossible.

4. CONCLUSION

Council of Europe's *Amsterdam Declaration* adopted in 1975, emphasized the role of planning, education, legal and administrative measures in the preservation of cultural heritage, in which architectural, urban and regional planning and conservation are considered together for the first time. Thus, the idea and importance of integrated conservation became the focus of conservation theory and implementation, and national legislations of many countries were re-shaped accordingly. However, in Turkey, the processes of regional, urban and conservation planning remain separated, and segregated, and the definition of heritage sites in the legislation are inadequate considering the typologies that have been defined since UNESCO World Heritage Convention in the 1980s. The separation of the legislation, control and administration of natural and cultural sites in 2011 further aggravated the situation, making the management of complex sites mostly impossible.

Rural heritage sites include cultural, landscape and natural features as well as intangible characteristics. The main threat against these is the fact that such complexity is not addressed by the existent legislation or administrative bodies. The segregated planning splits the conservation areas from buildable urban areas, and the boundaries in between are obscured. Urban plans do not address the existence of such sites within their boundaries or on their periphery, and as a result, such areas are eventually absorbed by the urban sprawl and lose their heritage characteristics and value.

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CONSERVATION OF RURAL EARTHEN ARCHITECTURAL HERITAGE: THE CASE OF MALATYA REGION

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ABSTRACT

Rural architectural heritage has become a subject of frequent debate in recent years as a value that stands out with its unique qualities. This heritage, which is worth exploring in the context of conservation with the use of natural materials, tailor-made designs and unique details, is threatened with rapid extinction. Many reasons such as migration of rural areas due to various reasons, increasing the average age of the population living in these areas, changes in livelihoods and economic conditions are effective in the rapid loss of rural architectural heritage. In this context, the sustainable qualities of this heritage, which is very difficult to preserve, are also destroyed. Today, together with the rural areas that are under protection as the subject of many laws, regulations and meetings, especially the Venice Charter; The existence of many rural architectural heritage is also known.

The earthen settlements that stand out with their authenticity within the rural architectural heritage are the areas that have been lost rapidly due to the material properties and building designs. Conserving rural earthen architectural heritage, which includes many unique features; it is also of great importance in terms of the sustainability of the architectural designs put forward today and in the future. In this sense, as one of the most abundant rural earthen architectural heritage in our country, Malatya is worth examining for its conservation and sustainability. The settlements in the Malatya region, which stands out in terms of rural earthen architectural heritage with its natural, socio-cultural and architectural values, contain a lot of data on the conservation and sustainability of this heritage.

The aim of this study is to contribute to the conservation and sustainability of the rapidly disappearing rural earthen architectural heritage by emphasizing the Malatya region, which is one of the most intense areas in Turkey. Within the scope of the study, the developments in the world and

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in our country for the conservation of rural areas are mentioned; In the light of these developments, the situation of the earthen-dense rural areas in the Malatya region with unique values will be examined and suggestions will be made for the conservation of these areas. Literature researches will be carried out on the subject as a method of study and studies will be conducted in the sample areas with these researches. As a result, it is aimed to contribute to the conservation and sustainability of rural earthen architectural heritage through the examples in Malatya region.

Keywords: Conservation, Sustainability, Rural Architectural Heritage, Earthen, Malatya

1. INTRODUCTION

An analysis of the progress of building construction throughout history reveals that, from the beginning of humanity, the need for shelter has been met primarily to protect and safeguard against harmful external influences. But, it is possible to state that spaces have also diversified and evolved in parallel with increasing needs. In this context, structuring with functions such as production, worship, gathering and trade has gained a different dimension. Accordingly, both in the world and in our country, the closest materials and the easiest techniques that reflect the traditional construction production; many structures with different functions and the settlement textures that contain these structures have started to disappear. This negative situation brought the concept of conservation in architecture to the agenda. The basis of today's understanding of conservation is based on a different point. First of all, it is seen that monumental buildings that have cost to societies are worth conserving. However, over time, not only monumental buildings; the necessity of conserving many modest structures has been understood and steps have been taken for this purpose. Although the structures that are worth conservation lost during the whole process are a lesson in the context of conservation, there are also buildings and settlements whose importance is yet to be understood and whose works for conservation are quite new. These are rural areas and traditional structures forming these areas.

The definition of traditional building is a product of architectural works, which are known as local, indigenous, rural, spontaneous, anonymous, vernacular or unarchitectural architecture; It covers not only the buildings for housing but all the buildings constructed by traditional methods (Bektaş, 2001). Hence, not developed by any expert; The traditional structures that emerge as a result of the location-specific needs and qualities are unique and worthy of protection in these aspects. But, the necessity of conserving these structures and rural settlements consisting of these structures has been understood recently.

Accordingly, it is seen that rural settlements and the identities they reflect are not documented yet in many parts of the world and our country and there are no studies to conserve them.

Many cities in our country, especially in Anatolia, are surrounded by rural settlement areas specific to the region. A limited number of these conserved areas have been documented and brought to future generations through various conservation practices. However, most of them are not documented in any way; some have started to lose their original qualities. In this sense, this situation is also observed in Malatya region which is one of the prominent areas in Anatolia with its adobe architectural identity. In Malatya region where there are rural areas worth conserving with original mudbrick structures, it is seen that there is almost no information and documents about these settlements. The aim of this study is to emphasize the conservation and sustainability of the rapidly disappearing rural adobe architectural heritage through the Malatya region, which is one of the most intense areas in Turkey. Within the scope of the study, mentioning the developments in the world and in our country for the conservation of rural areas; in the light of these developments, the condition of rural areas with earthen density in Malatya region has been examined and suggestions have been made for the conservation of these areas. In this context, the study has been handled within the framework of conservation, sustainability, rural protection and adobe material in rural areas. As a working method, literature studies on the subject have been conducted and investigations in sample areas have been carried out with these researches. As a result, it is thought that the study will contribute to the conservation of rural adobe architectural heritage both in our country and in the world through Malatya region.

2. BACKGROUND OF CONCEPTUAL FRAMEWORK

The conceptual framework of the study constitutes the phenomena of conservation, sustainability, rural conservation and adobe material in rural areas. Hence, firstly, it is thought that examining the general characteristics of these concepts will be useful in the context of evaluating the settlements considered within the scope of the study.

2.1. Conservation and Sustainability

It is possible to take the history of the concept of conservation up to the beginning of the building art by considering that there are a small number of architectural works that have survived in their original form (Ahunbay, 1999). Starting from here, when the conservation activities carried out throughout history are examined, the basic question of the architectural conservation action can be

expressed as to which structure is to be protected and why (Tanaç Zeren, 2010). The question can be answered that physical and cultural heritage should be protected and transferred to future generations because of the elements that determine the identities of rapidly changing people and societies today (Ulusoy Binan, 1994). In this context, it is possible to state that the worn-out architectural heritage has undergone various repairs and conservation in order to survive. However, there are many differences between conservation concepts that have been discussed in the past and present. At the beginning of these differences, the adoption of protection in the past, usually on a single structure scale; Nowadays, this scale has expanded and reached the historical environmental dimension.

The process of transforming the idea of conservation into a scientific field of work began in the 19th century. Especially with the French Revolution that took place in 1789, the interest in the medieval buildings that were damaged increased and studies were carried out for the restoration of these buildings. Thus, the first steps of today's conservation applications were taken. (Kuban, 2000). However, the legal process on the concept of conservation, which began in 1931 with the resolution of Carta del Restauro, was elaborated by the Venice Regulation in 1964 and continued with the Amsterdam Declaration published in 1975 (Madran and Özgönül, 2005). These legal studies, which contain important explanations for the correct orientation of conservation practices, have been supported by many more detailed and inclusive laws and regulations.

When the evolution of conservation concept in the world and the development of applications in this field in our country are examined; It is possible to state that there were works aimed at the restoration and transfer of the buildings to the future, even though it was different from the conservation understanding of the present period, especially during the Ottoman period. Since the Republican Era, increasing works in this field have been detailed in the Law No. 5226 on the Conservation of Cultural and Natural Heritage. In addition, many legal studies in the field of conservation in the world are being followed and evaluated in our country.

Considering the relationship between conservation and sustainability in architecture; firstly, it is striking that sustainable approaches aim at minimizing the natural environment to harm the natural environment. In this context, the concept of sustainability has recently been discussed in architecture, which is one of the leading disciplines constituting the artificial environment. However, these debates and the practices in this field are quite new compared to the developments in the world. Therefore, both in urban Turkey, both located in the rural environment and sustainable buildings which have many attributes

structure has been lost due to lack of work done in that area or is about to be lost. In this sense, while sustainability in architecture contributes to the protection of the structural and cultural heritage of the past, it is thought that the artificial environment to be organized in the future will contribute to the design of the environment in a way that will cause the least harm to the nature.

2.2. Conservation and Sustainability of Rural Architectural Heritage

In the development process of the concept of conservation from past to present, the evaluation of the accommodation places where ordinary individuals live as cultural assets first emerged as a result of the Industrial Revolution at the end of the 18th century (Eres, 2013). Thus, the conservation action on a single structure scale is not only a monumental or symbolic structure; and modest housing. With the rapid migration of the rural population to the cities in the mentioned period, the transformation process started in rural areas as well as in urban areas. This transformation in the traditional rural areas has made it difficult to transfer the original architecture produced by the peasant-farmer society to future generations; For this reason, it has come to be considered as the cultural heritage of the architecture in question (Eres, 2013).

Traditional rural architecture, in the definition of the World Vernacular Architecture Encyclopedia "... includes all houses and other structures built by the public. It was built with the possibilities of the chosen environment and available materials, mostly by the landlord or local craftsmen using traditional techniques. All forms of folk architecture are aimed at meeting specific requirements; it carries the traces of culture, lifestyle, economic activity and values behind these requirements "(Çekül, 2012). In this context, the most important characteristics determining the characteristics of traditional rural architecture are;

- Geographical location and climate,
- Traditions and customs,
- It is possible to state that there are forms of production and consumption (Muşkara, 2017). Additionally;
- Constructing the buildings by the people who are raised by master-apprentice relations,
- Harmonization between natural and built environment,
- Ability to enlarge and develop structures according to needs,
- Characteristics such as shaping building sizes and shapes according to economic data also reflect the general characteristics of traditional rural architecture (Kısa Ovalı & Delibaş, 2016).

While the process for the conservation of traditional rural areas, which has become cultural value with its unique characteristics, is rapidly developing and progressing in the world; it is not possible to say that the rural areas in our country are in a good state of protection (Eyüpgiller & Eres, 2016). Starting from this point, it is thought that examining the development of this process in the world and in our country will be beneficial in order to understand the reasons and results of the developments in this field.

The process of achieving the concept of conservation from the single scale of structure to the historical environment dimension has progressed with the adoption of different studies, laws, regulations and recommendations issued as a result of various activities in this field in the world. In this sense, as one of the first legal works for the holistic protection of historical cities, the Malraux Law enacted on 4 August 1962 in France is an important step in the process. (Okyay, 2001). However, the 62 Preservation of the Identity and Attractiveness of Settlements and Natural Environments 19 organized by the United Nations Educational Science and Culture Organization (UNESCO) in Paris in 1962 and the recommendations adopted after this conference can be considered as an important study for the protection of rural areas. (Eres, 2013).

The concept of historical cultural existence, which is included in the first article of the definitions of the Venice Charter published in 1964, is not only an architectural work; In addition, the statements of a particular civilization, including urban or rural settlements, which bear witness to an important development and historical event, come to the fore with their emphasis on contributing to the protection of rural areas. (URL 1).

It has been observed that the efforts to protect rural areas have increased rapidly since the 1970s. International Colloquium of Folk Architecture organized in these years, Symposium on the Revitalization of Rural Sites and Folk Architecture Examples, Symposium on Built Environment and Complementary Natural Elements, 3rd Colloquium in Vernacular Architecture and Contemporary Life, Rural Architecture Symposium in Regional Planning and Architectural Heritage Colloquium in Rural Planning activities indicate that the 1970s were an important period in the context of the protection of traditional rural architectural heritage (Binan, 1999; Madran and Özgönül, 1999). In 1979, the Council of Europe's recommendation for the protection of rural architectural heritage was stated that this heritage is a value that must be protected (Madran and Özgönül, 1999).

The 1980s came to the fore with an emphasis on the change and destruction of rural architectural heritage (Eres, 2016). The activities such as the Rural Cultural Heritage Colloquium, the Colloquium for the Protection of Rural Landscape, the

Symposium on Architectural Heritage and Rural Development, and the 1st International Meeting of the Principles of Conservation and Restoration of Urban Rural Cultural Heritage in Earthquakes prepared the ground for new discussions in this area (Binan, 1999). However, in 1989, the Council of Europe's recommendations for the conservation and conservation of rural architectural heritage, the built and natural environment are mentioned as two important components of rural architectural heritage; It is emphasized that with the change of agricultural production, the social structure has started to change and consequently the traditional architecture produced by the rural society has entered the process of change and destruction (URL 2). In 1990, the Council of Europe's recommendations on the issue were made to address the inadequate infrastructure and transportation facilities of rural areas, thus reducing the population living in rural areas and making it difficult to protect the built environment (URL 3).

When the activities aimed at the conservation of rural areas in the world in the 1990s are examined, it is seen that the rural architectural heritage and the natural environment together with this heritage are conceptualized as "cultural landscape" (cultural natural environment) and evaluations are made on this concept (Binan, 1999). However, with the recommendations of the Council of Europe in 1995, the relationship between the conservation of cultural natural environment and environmental policies was emphasized. "It is defined as a defined region where the natural environment is determined by special forms of the earth, created by the effects of man and nature, showing the development of the society, its settlements and original qualities in time and space" (Eres, 2016).

The annual Heritage @ Risk reports by the International Council of Monuments and Sites (ICOMOS) indicate that the world's fastest degradation is in the field of rural architecture (URL 4). From this point of view, the problems related to the conservation of rural cultural heritage have been put forward with different activities both in Europe and in many other continents and many decisions have been taken to solve these problems. These decisions include the architectural heritage as well as all human values and the identity of communities; aims to preserve the abstract and concrete whole cultural heritage as a whole (Eres, 2013). In this context, while it is seen that the practices towards the protection of traditional rural areas have increased in developed countries in line with the decisions taken; however, in many countries, it is possible to state that rural architectural heritage has been rapidly changed and destroyed even without documentation.

Architectural conservation process in Turkey, has progressed more slowly in comparison to the developments in the world. It can be stated that the legal

arrangements made during this process started in the second half of the 19th century (Eres, 2016). In the Asar-ı Atika Regulations prepared during this period, houses with historical features were also mentioned as one of the buildings considered as antiquities (Zeren, 1981; Madran, 2002). In this sense, although there is no direct study on the protection of rural areas in the period in question, the fact that houses with historical characteristics are accepted as antiquities regardless of whether they are in rural or urban areas shows that historical houses in rural areas are considered as a value. However, in the Asar-ı Atika Regulations, conditions have been introduced for the protection of the environment of the antiquities. However, these legal studies, which show that the understanding of conservation of the period has gradually developed, have concentrated on the preservation of archaeological artifacts in practice and not to take them abroad; It is inadequate in terms of practices regarding the protection of the built environment (Akozan, 1977; Eres, 2016). From this point of view, it is possible to state that there is not a direct legal study and adequate implementation for the protection of rural areas in the Ottoman period.

As for the Republican Era, it was seen that the Asar-ı Atika Regulations were in force until 1973 with various changes. In 1951, the Supreme Council of Real Estate Antiquities and Monuments was established and many decisions were taken under the leadership of this committee to develop Asar-ı Atika Regulations. (Zeren, 1981). Board Venice Charter in 1967 in Turkey's acceptance of the application, be considered as an important step towards the protection of rural areas in terms of legal process (Durukan, 2004).

With the Law on Antiquities No. 1710 published in 1973, the concept of the site, which encompasses monuments and their environs, rests on a legal basis (Eres, 2013). In the second half of the 1970s, it was seen that the Supreme Council of Real Estate Antiquities and Monuments made decisions to protect urban sites. The first legal studies in which the definition of rural site is expressed separately from urban site are included in these decisions. A-1609, dated 14 April 1979, requires the submission of information and documents related to local building characteristics to the Board in order to determine the temporary settlement conditions in urban and rural sites. (Durukan, 2004).

Law No. 1710 on the Protection of Cultural and Natural Heritage entered into force on 23 July 1983, as the Law on Antiquities was inadequate in the context of implementation. However, this law does not include any definition that evokes the concept of rural sites. (Durukan, 2004). On the other hand, in the law, urban and regional qualities, architectural and art history in terms of physical characteristics, and the characteristics of the environment created by the socio-economic, socio-cultural structuring of the period, reflecting the way of life

together and reflecting the texture integrity of these areas. It can be stated that the definition of urban site includes rural settlements (Durukan, 2004; URL 5). An example of this is to be certified as an urban conservation of rural areas in various regions of Turkey and the integrity of the tissue preparation of the conservation plan can be shown that these regions (Durukan, 2004). One of the key developments for the protection of rural areas in Turkey is 3 October 1985 and approved the Law No. 3534 dated April 13, 1989 European Convention for the Protection of the Architectural Heritage. Some provisions of Article 10, in which protection policies are expressed in this Convention, are as follows:

"1. To include the preservation of architectural heritage among the main objectives in the regulation of rural areas and cities, and to ensure that this requirement is taken into account both in the preparation of regulatory plans and in the implementation of these plans;

3. Facilitate the adoption of protection measures whenever possible in rural areas and urban planning …" (URL 6).

When the mentioned provisions of the convention are examined, it is possible to state that the architectural heritage is evaluated in two groups as rural and urban and both groups are given equal importance (Eres, 2016).

An important application for the protection of rural areas in 2000, Turkey Academy of Sciences (TUBA) and Turkey's Culture Inventory cooperation with the Ministry of Culture are working to establish the system (TUBA, 2001). In the system created, architecture inventory is considered under two headings as urban and rural; In order to better express rural cultural assets, a "rural architecture settlement and building voucher" was created specifically for the subject (Akin et al., 2003).

Turkey ratified the European Landscape Convention held on October 20, 2000 to 10 June 2003 and Law No. 4881 (Eres, 2016). Recognizing that the landscape is an important part of the quality of life for people everywhere in rural areas and outside the city, in degraded areas as well as in high-quality areas, in areas well-known for its extraordinary beauty, as well as in everyday areas; ... with the emphasis on rural areas (URL 7).

Despite the ratification of international agreements in many rural areas of conservation process in Turkey, compared to developments in the world it has been extremely slow. In this context, the evaluation process for the protection of rural areas in Turkey; Although examples such as Şirince, Yörük, Cumalıkızık have been found, it is possible to state that these areas were rapidly lost due to both legal deficiencies and the neglect of many settlements bearing rural architectural heritage value.

3. RURAL EARTHEN ARCHITECTURAL HERITAGE OF MALATYA

3.1. Rural Earthen Architecture

Soil, which constitutes the main component of earthen material, has been the basic material of the structures that people built especially for shelter since ancient times around the world. Despite all the developments in the field of construction today, in the 21st century, most of the people in many areas of the world still live in earth structures. While these structures provide housing for low-income people; On the other hand, environmental protection, energy saving, sustainability, such as the concepts of more and more come to the agenda has become preferred by high-income segments. (Kafescioglu, 2017).

The concept of soil structure refers to all types and components used without firing (Kafescioğlu, 2017). The earthen structure is constructed by using the material obtained by mixing clay, ie clay soil, with plant residues such as hay, grass, bush (Çelebi, 2012). However, in some settlements, earthen structure can be built with sandy, marly and pozzolan soil; In some settlements, it can be stated that the special soils specific to the region are used in the construction of adobe (Kafescioğlu, 2017). In this sense, adobe, which can be formed with soils of different qualities, is defined in various sources as follows:

- "Raw bricks which are formed by pouring the soil put into water with slime in wooden molds mixed with straw and drying in the sun." (Arseven, 1956).
- "Poured into molds for use in masonry and dried in the sun." (Turkish Dictionary, 1974).
- "Straw and slime mixture, primitive and uncooked bricks." (Meydan Larousse, 1972).

Along with the definition of adobe, there are various terms for the production of adobe in our country. Some of these terms can be listed as:

Earthen pit: Places where soil is extracted in order to obtain mud brick.

Earthen mold: A tool usually made of wood to shape adobe mortar. It is also called "full" in some regions.

Cut earthen: give shape to adobe with wooden mold.

Ana: Large block adobe. Kuzu: Small block adobe.

Çaput: Cloth used for wetting and wiping the wooden mold. Çorak: Clay soil laid on soil drips.

Loğ Stone: Round stone used to fix and tighten the roof covered with soil.

Mıhra: Pouring kerpic into molds. Künde: Molded garden wall.

Loda: A pile of adobe blocks. (Çelebi, 2012).

Although there are many building materials in the world, earthen materials have been preferred frequently since ancient times. The reasons for this preference are;

- Economic,
- Climatic,
- Technological,
- Functional,
- Traditional,
- The properties of the equipment. However;
- Easily accessible and inexpensive, especially in areas with low income levels,
- In areas where earthen is used extensively, past production behavior is mainly based on earthen; this situation becomes a tradition,
- Especially in our country, Anatolian people find the earthen building material more healthy than other materials,
- For ease of construction, the earthen material allows everyone to build their own shelter,
- One of the materials that best respond to climatic factors is earthen,
- Minimizing heating and cooling costs by providing natural air conditioning can also be listed as the reasons why earthen is preferred as a building material (Çelebi, 2012).

Earthen is preferred in both urban and rural areas for the reasons stated above. However, both economic activities are intertwined with nature and consequently the functional characteristics are directly affected by natural data; the need to pay more attention to traditional factors; and because the technological data are less effective, it can be stated that the use of earthen is more intense in rural areas than in urban areas. In this context, earthen production is frequently encountered both in many parts of the world and in our country, especially in rural areas in Anatolia.

When the rural areas where earthen material is dense in Anatolia are examined, it is seen that these areas are poor in terms of other natural building materials. In this sense, since the basic building material is soil in the mentioned areas, it is absolutely checked by the people who have been trained with the master-apprentice relationship whether the selected soil is suitable for building production. In addition, two types of additives to be added to the soil, plant

residues (straw, grass, reed, plant stems, pine leaves, tree branches, dry shrubs, etc.) and additives in terms of stones (sand, gravel, etc.) are also constructed. the water is brought into mortar with water. The prepared mortar is used with two different construction systems. These systems can be listed as;

- Massive earthen construction system
- With earthen blocks,
- With beaten earthen,
- With mud brick,
- With mixed earthen.
- Lightweight earthen construction system
- With earthen block filling,
- With cast earthen filling. (Çelebi, 2012).

The main element that gives the above-mentioned systems its name is the wall. It is possible to state that the systems in which earthen is used as the main building material are massive adobe construction systems. Among these systems, it can be stated that the most widely used building construction is the earthen blocks and the massive earthen construction system. Other solid earthen construction systems are more prominent in the construction of elements such as garden walls or in the production of temporary structures. (Çelebi, 2012).

Although earthen material is less emphasized today than many modern materials, it still contributes significantly to the welfare of almost every society. First of all, it reflects the concrete and intangible values of societies due to the intensity of their cultural qualities; however, it contributes positively to social, economic and environmental issues in a natural and cultural context by serving the common goals of sustainable development globally and locally. (Guillaud, 2014). In this sense, it is possible to state that the use of earthen material, especially in rural areas, is an important data in terms of examining the concrete and intangible characteristics of traditional rural architecture.

Turkey, under the influence of civilization which should make both the strategic location has been home to a rich cultural and architectural heritage. In this sense, it is possible to state that our country has a long-established history in terms of rural architectural heritage.

It is possible to find traces of unique rural architectural heritage in almost every region of Anatolia. Part of this heritage, which is made up of local materials and constructions built for needs, consists of earthen structures. The use of soil material in construction together with other natural materials is found in many

rural areas; especially in some regions, soil stands out as the main building material and is used extensively in this sense. These regions can be listed as Kırşehir, Malatya, Elazığ and Van (Çelebi, 2012) (Figure 1).



Figure 1. The regions where earthen is most used in Anatolia (Bahtiyar Karatosun and Olğun, 2018)

3.2. Rural Earthen Architectural Heritage in Malatya

One of the four regions where the most intense of earthen structures in Malatya in Turkey. In Malatya, where many examples of earthen structures have been lost in urban areas, these building examples are still encountered in rural areas. However, many developments in recent years have led to the transformation and extinction of earthen samples in rural areas. In this context, documenting and conserving the rural earthen architectural identity of the region is of great importance. On the other hand, when literature and application studies on the conservation and sustainability of rural earthen architecture in Malatya region are examined, it is seen that the number of studies conducted in this sense is almost nonexistent. In order to shed light on these studies, it is thought that firstly examining the general characteristics of Malatya region will contribute positively to the evaluations to be made in this field.

Malatya is one of the most well-known Anatolian cities. Located in the Middle Euphrates basin, at a point where the strategic paths of the region intersect, Malatya has become one of the main settlements of Anatolia thanks to its geopolitical location. (Göğebakan, 2002).

Malatya is located on the Tohma, Kuruçay and Euphrates valleys and the plateaus and mountains around these valleys located in the Upper Euphrates Section to the west of the Eastern Anatolia Region. Surrounded by Elazığ in the east, Erzincan and Sivas in the north, Adıyaman in the south, Kahramanmaraş in the south, and Diyarbakır in the southeast, Malatya is spread over an area covered with mountains. (Demirbağ, 2013) (Figure 2).



Figure 2. The location of Malatya (It has been arranged with URL 16 and URL 17).

When the literature on Malatya is examined, it is seen that the settlement and its environs are one of the oldest living spaces in human history. Especially in 1908 and after, studies on the history of Malatya increased and the history of the city was unearthed with various excavations. In this sense, Malatya has been used as a settlement area since the Neolithic Age. Malatya, which was the scene of important settlements in Neolithic, Chalcolithic and Old Bronze Ages; Hittite, Assyrian and Urartu periods has continued to maintain its importance. (Ağaldağ, 2016). However, especially during the Assyrian period, the city's name was Melit, Melid, Melita or Melidda; In the Hittite period it is known that Maldiya, Malitâ, Melid and Meliddou (Delaporte, 1940; Kinal, 1962; Honingmann, 1991; Albright, 1992; Oğuz, 2000).

When the architectural development process of Malatya is examined, there are many works that are influenced by different cultures. Many monumental works, especially those built in the 14th century and later, have survived. However, the civil architectural works built during the late Ottoman period and reaching to the present day are of great importance in terms of examining the architectural development process of Malatya.

As in many Anatolian cities with the Republican period, there have been fundamental changes in architecture in Malatya. Malatya, which is among the rapidly growing and developing cities of the region it is located in, has built many buildings with the architectural understanding and styles of the period (Çakan and Olğun, 2018).

Malatya, today as a rapidly developing settlement receiving immigration, is also undergoing architectural changes. In this context, many values were lost in the settlement in terms of architectural development process; however, it can be stated that as time passes new values are gained.

As one of the most abundant settlements in our country, Malatya region has many examples of earthen structures in both urban and rural areas. When the literature related to the region is examined, it is seen that there were many earthen structures in the urban area of Malatya which had different functions in the past; however, most of them were lost before they reached the present day. However, many earthen mansions, examples of civil architecture in the city, were also lost; only some of these structures have survived.

With the decrease of earthen building stock in the urban area in Malatya; earthen buildings peculiar to the region have started to disappear in rural areas. As the reasons for this;

- Abandonment of earthen structures in rural areas due to rural to urban migration,
- The average age of earthen building users in rural areas is high and the elderly population is not able to maintain these buildings,
- The earthen building users do not want to apply maintenance to these buildings periodically and therefore demolish the earthen buildings and build reinforced concrete structures,
- Due to the lack of earthen building master, developments such as the reinforced concrete construction of newly constructed buildings in rural areas can be listed.

The aforementioned reasons have led to the transformation process of many rural areas consisting of traditional buildings in the Malatya region. However, there is no information or document on the many earthenk structures in the region that have been lost or are about to disappear. Documentation and implementation studies on protected rural areas are very few.

In order to examine the general rural character of the Malatya region, two earthen rural settlements located in the wall and central settlements of the region are largely preserved; The Beybağı and Seyituşağı neighborhoods were particularly investigated. These areas, which passed from village to neighborhood status with the law numbered 6360 adopted in 2012 and have the characteristics of a rural settlement, contain many important data in the context of earthen building stock and the conservation status of this stock. In the light of the evaluation of these neighborhoods in the context of rural earthen architecture, it is thought that data will be obtained for the protection of the region in general in this sense.

3.2.1. Beybağı Neighbourhood



Figure 3. Location of Beybağı neighborhood

The Beybağı neighborhood in Darende, one of the settlements in the Malatya region, which can be stated on the wall of the region, draws attention with its conserved earthen texture (Figures 3, 4, 5, 6). In this context, considering the general characteristics of the neighborhood, the population, which was 240 in 2013, dropped to 173 in 2017; Based on this, it can be stated that the settlement population is decreasing gradually. However, it can be stated that the main source of income in the settlement is livestock. While historical data about the settlement cannot be accessed; During the interviews with the villagers, it was stated that the village was founded in the late Ottoman period. When the data on the scale of planning and architecture regarding Beybağı was examined, it was observed that there was no study as a map, but all the buildings in the settlement were built with earthen materials and traditional construction technique. The residential buildings in the settlement are located in clusters consisting of two or more earthen houses gathering around a courtyard. Considering the space setup of these two-storey buildings; with the welcoming space entered from the courtyard and the living area integrated with this space; kitchen, bathroom and bedroom units can be accessed from the entrance to the living area. On the upper floors, which can be reached by a staircase outside, there are usually bedrooms lined up around a corridor. The courtyard is used extensively for most of the day, especially in the summer; however, it is also considered as a workshop where various productions are made. (Figures 7, 8).

When the related literature is examined, no data on the social structure of the settlement can be found. As a result of on-site investigations, it was found that a large part of the village inhabitants lived in the cities; they preferred to be in the

village at certain times of the year. Most of the people living in the villages of the villages are from professional groups such as lawyers and doctors. In this way, most of the inhabitants of the cities continue to repair and use their earthen structures.

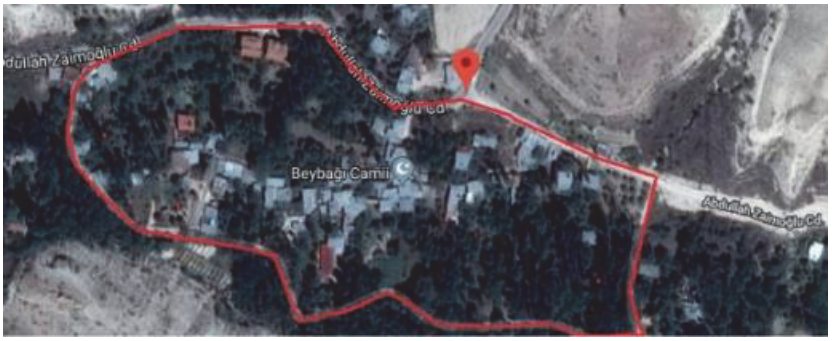

Figure 4. Beybağı neighborhood residential area



Figure 5. Site plan of Beybağı neighborhood



Figure 6. Beybağı neighborhood buildings' construction system analysis



Figure 7. The number 10 house of Beybağı Neighborhood



Figure 8. The number 14 house of Beybağı Neighborhood

As a result of the interviews with the users and the studies carried out in the field, the factors that provide protection of rural earthen architecture in the region can be listed as follows:

- In terms of belonging;
- Knowledge of the local people about the many positive qualities of earthen structures,
- In the cultural context, the use of these structures as valuable heritage from past generations,
- Considering these structures as richness specific to the region,
- Maintenance of earthen structures by users every year,
- In terms of the comfort conditions offered by the buildings;
- The use of earthen structures for holiday and recreation purposes; in this sense, it provides the comfort conditions expected by the users,
- The fact that the indoor temperatures of the buildings are quite low compared to the outdoor temperature in the summer months where the buildings are used in climatic terms.

3.2.2. Seyituşağı Neighbourhood

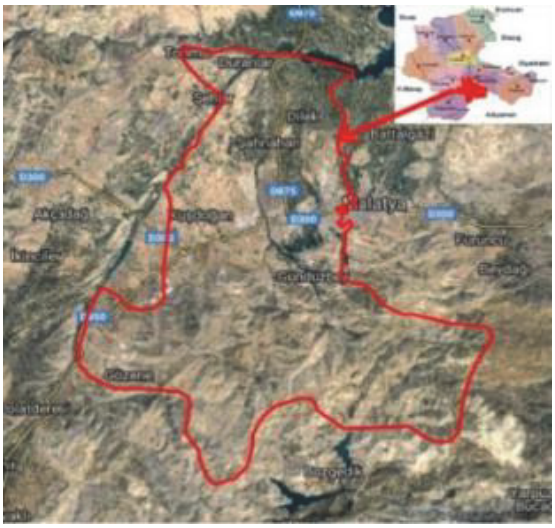

Figure 9. Location of Seyituşağı neighborhood

Seyituşağı Neighborhood, located in Yeşilyurt, one of the settlements in the Malatya region, which can be stated to be in the center, attracts attention with its conserved earthen texture (Figures 9, 10, 11, 12). In this context, considering the general characteristics of the neighborhood, the population, which was 171 in 2013, increased to 207 in 2015; It is seen that it decreased to 185 in 2017. It can be stated that the population of the settlement changes irregularly. However, it can be stated that the main source of income in settlement is livestock.

When the data on the scale of planning and architecture regarding Seyituşağı is examined, it is seen that there is no study as a map, whereas all the buildings in the settlement are built with earthen materials and traditional construction technique; only the building in the cemetery was found to be reinforced. The residential buildings in the settlement are arranged as one or two floors. Considering the space setup of these structures; It is observed that the entrance to the building is provided directly from the street and there are rooms lined up around the corridor, which can be considered as a welcome place. In two-storey buildings, the same fiction is seen on the upper floor. (Figures 13, 14).

When the related literature is examined, no data on the social structure of the settlement can be found. As a result of on-site examinations, it was learned that a large part of the village people reside in Istanbul and rarely visit the village. The majority of the other population of the village is the retired and returning to the settlement.



Figure 10. Seyituşağı neighborhood residential area



Figure 11. Site plan of Seyituşağı neighbourhood



Figure 12. Seyituşağı neighborhood buildings' construction system analysis



Figure 13. The number 10 house of Beybağı Neighborhood



Figure 14. The number 14 house of Beybağı Neighborhood

As a result of the interviews with the users and the studies carried out in the field, the factors that provide conservation of rural earthen architecture in the region can be listed as follows:

- In terms of belonging;
- The local people evaluate the earthen structures more positively in economic terms,
- The use of earthen structure is established as a culture,
- Many of the local people have previously lived in reinforced concrete structures for a long time and this situation is evaluated as negative,
- Regular maintenance of adobe structures by users.
- In terms of the comfort conditions offered by the buildings;
- The use of earthen structures for holiday and recreation purposes; in this sense, it provides the comfort conditions expected by the users,
- The fact that the indoor temperatures of the buildings are quite low compared to the outdoor temperature in the summer months where the buildings are used in climatic terms.

4. CONCLUSION

The efforts towards the conservation and sustainability of rural areas have gained momentum both in the world and in our country in recent years. However, the fact that the studies carried out in our country started quite late compared to the world caused many qualified rural areas to be destroyed before even the certification could be made. In this process, many rural areas were partially conserved. The most important rural areas are settlements with earthen density.

With its many positive qualities, earthen, which is frequently preferred in our country's rural settlements in Anatolia, is a material that can be lost rapidly if the necessary maintenance is not performed. In this context, it can be stated that most of the original earthen structures were abandoned due to neglect or they were demolished to be replaced by reinforced concrete structures.

Located in Malatya in Turkey where most of the settlements density in rural areas is of earthen, earthen architecture identity of the rapidly changing situation, as in other rural areas is concerned. In this context, Beybağı and Seyituşağı rural areas, where earthen structures are conserved to a great extent, have inspiring qualities in terms of transferring these original values to future generations.

Beybağı and Seyituşağı neighborhoods, located in the central and periphery settlements of Malatya, appear as rare rural areas where the earthen building density is high and these structures are conserved to a great extent. Nevertheless, the original space fiction of the houses in the said settlements has been preserved in many buildings; In this context, it makes it worth to examine these areas in terms of providing information about earthen building culture. From this point of view, although it is known that efforts to protect rural areas in our country are behind the developments in the world; The fact that the two rural settlements examined could be conserved in the natural process is an important development in the context of detecting conservation problems and developing suggestions for the solution of these problems. In this sense, the earthen usage is intense and the problems related to the conservation of the rural areas are as follows:

- The decline in the population living in rural areas with the changing living conditions,
- The population leaving the rural areas for various reasons should not return to these areas again,
- In buildings that require periodic maintenance and are generally maintained by large families, today few or old population live and therefore the buildings cannot be maintained,

- Knowing the importance of traditional buildings and the necessity of their sustainability by protecting them; lack of adequately educated population,
- The culture of living has changed and accordingly, living spaces cannot respond to new needs,
- Economical problems.

When the protection and sustainability phenomena reach today, it can be seen that various solutions can be developed for the above mentioned problems. In this context, in order to overcome these problems, the following studies are recommended:

- To analyze the reasons of the population living in rural areas to leave these settlements and to develop solutions for these reasons,
- Elimination of legal and physical problems for residences and other structures that make up the living spaces of the population leaving the rural areas,
- Explaining the importance and protection of traditional structures in many ways with appropriate training methods for users,
- Depending on the changing living culture, carrying out studies to arrange traditional buildings to meet new needs without losing their original qualities,
- Providing the necessary economic support in terms of efficient use of traditional structures and their transfer to future generations.

As a result, traditional earthen structures are important values that should be conserved in our country as in many parts of the world. In this sense, it is considered that the study has pointed out that these values are correctly preserved and transferred to future generations.

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RURAL GENTRIFICATION OR URBAN AGRICULTURE? A CASE STUDY ON SİRKELİ-ANKARA

Ceren ERCOŞKUN*

ABSTRACT

Rural gentrification means socio-economic and spatial transformation of rural areas with decrease in productive population, rural activities and agricultural activities. It brings urbanization of the countryside. Expropriation of local people and rural poverty, unemployment, migration of young population, inaccessibility of basic services are important problems of rural areas. Agricultural production and agricultural land, pastures are lost, rural structures began to be abandoned.

In contrast, some urbanites longing for nature, make urban agriculture, urban farming, or urban gardening in rural areas or urban periphery. Urban agriculture is the practice of cultivating, processing and distributing food in or around urban areas. Urban agriculture can also involve animal husbandry, aquaculture, agroforestry and urban beekeeping. Urban agriculture provides access to nutritious, healthy and safe food. It creates a sense of belonging between urbanites, and farmers in urban-rural space. It also gives a learning opportunity of growing food and makes efficient use of land.

However, land owners have the privilege of altering natural and built landscapes. Inheritance of agricultural land reproduces inequalities. Ownership of agricultural land enables production of symbolic wealth. The migration of middle-class migrants into specific locales changes the locale's physical appearance, social status and socio-demographic composition.

This study aims to put these urban agriculture and rural gentrification paradox with a case study in Sirkeli-Ankara. Sirkeli which was a village turned to neighborhood of Pursaklar district in Ankara. However, the rural activities are still on-going by the villagers and urbanites making urban agriculture. In this context, socio-spatial literature research on rural gentrification and urban agriculture were made. In depth interviews were made with the villagers, urbanites which have weekend houses and making urban agriculture and real estate owners. All kinds of visual and audio material were used to make discourse analysis through multimedia and key highlights are revealed.

Keywords: Rural Gentrification, Urban Agriculture, Sirkeli-Ankara

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1. INTRODUCTION

The world has entered a new era with the development of information and communication technologies. In this new era, the mobility of goods and services flows increased all over the world and in return, consumption and production values increased. Human settlements were the most affected by these changes. Urbanization has become one of the greatest striking phenomena of the twenty-first century. Today, the number of people living in cities exceeds 50% of the world population. This ratio is expected to exceed 68% in 2050. (United Nations, 2018). The production and consumption habits that started to change with the industrial revolution brought about many problems on a global scale. Global warming, rapid destruction of species, melting of glaciers, rapid depletion of natural resources, as well as natural habitats and rural areas are under threat.

Pressure on rural areas in the world and Turkey is increasing and definitions for rural and rural areas are changing due to the factors such as population and demographic changes, mobility of the population, need of housing, increase in demand for nature and recreation areas. In addition, the local administrative system in Turkey has undergone through drastic changes along with Law no 6360 in 2012. With the law, the number of the metropolitan municipalities raised to 30 and all the rural areas in 30 metropolitan municipalities have the status of urban, eliminating the rural-urban distinction. How to plan rural areas with urban status in metropolitan municipalities is another debate.

2. BACKGROUND OF CONTEXTUAL FRAMEWORK

2.1. Rural Gentrification

The rapid population increase in urban areas is a result of the migration of people from rural settlements to urban areas and the population is also decreasing in rural settlements. As a result of this decrease in the population in the rural areas, a new group has started to settle in these areas (especially on the periphery of metropolitan cities) that have not experienced rural production before. Social, physical and economic developments of this group named as newcomers , urbanites or rural gentrifiers are examined by geographers, urban planners and economists under the title of “rural gentrification and this new situation in the rural areas is tried to be explained in various aspects (Scott, 2011).

Dünckmann summarized the social and economic changes in rural areas under four headings:

- Rural areas have shifted from agricultural productivity to post-productivity period (The concept of 'post-productivity' was introduced in the 1990s as an

attempt to explain and theorize changes and trends in contemporary agriculture (McCarty, 2005).

- Rural areas have changed from rural areas to consumption areas.
- Transition to gentrification is increasing in rural areas, which have become settled regions of the middle class.
- Social segregation and differentiation is increasing in rural areas (Dünckmann, 2009).

The concept of gentrification was first introduced by urban societies in 1964 by sociologist Ruth Glass, to explain the purchase of middle and upper class residences in London's workers' quarters, and the changes in urban quality and social changes in these areas.

However, the developments from 1964 to the present day (technological, social, economic and physical) have led to the mutation of the concept of gentrification and to gain different depths of meaning. (Ehrström, 2016).

The first traces of the term rural gentrification were seen in the literature in the mid-1980s. (Nelson, 2018). Firstly, British researchers used this concept to explain the changes taking place in the periphery of cities (Hamnett, 1991) is a term used to describe the changes that occur in the rural areas and the urban periphery under various headings (and still much debated).

The issue was discussed by some researchers in various aspects. Some of the authors put forward a glance in terms of human desires; reaching the nature, peaceful life, recreational opportunities and slow living effort focused on rural settlements. Some authors consider the issue economically and argue that the difference in value between the income generated by the use of rural lands for agricultural purposes and the opening of these areas to residential use and the land rent that will result will direct the rural gentrification processes. Some authors evaluate rural gentrification through population movements and try to explain the change of rural indigenous and urban middle class within the framework of physical and social changes.

Similar changes in rural areas, especially in the periphery of metropolitan cities, as in the United States and Britain, occur in rural settlements in Turkey. The physical, economic and social structures of rural settlements in the urban periphery have started to change.

2.2. Original Value of the Study

With the keyword "rural gentrification", the research conducted in the YÖK database on 20.11.2019 did not reveal any thesis work. When gentrification was searched alone, 20 records were found.

The search for "rural gentrification' in Prequest Dissertations & Thesis Global yields 172 results as of 22.11.2019 (Figure 1). When the graph is examined, it is seen that the number of theses related to the subject has increased especially after 2010. Only 33 of the theses are about urban planning. The number of theses related to environmental sciences is 23. When the search is restricted to doctoral theses only, the number of 172 falls to 125.

Therefore, this contributes to the original value of the study. In the Scopus Database, the literature on rural gentrification increased especially in 2000 and beyond. Many of these studies are listed as articles, book chapters and papers. Most work has been done in the United States and the United Kingdom, then in Canada and Spain.

Finally, of the 174 studies, 159 of which were in the social field, only 31 (11.4%) were in the field of environmental sciences (Figure 5). Therefore, this study will contribute to the literature in the field of environmental sciences and urban studies.

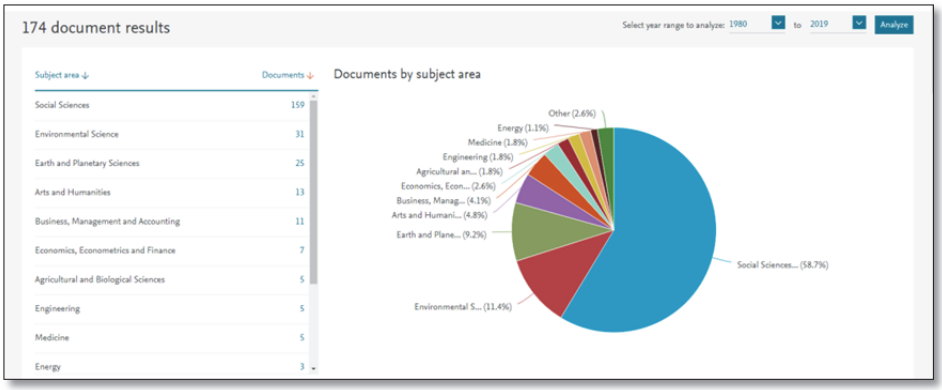

Figure 1. Rural gentrification studies in Scopus database by fields

2.3. Word Cloud

When the keywords of the articles written on the rural gentrification are examined, it is observed that concepts such as rural, urban sprawl, sustainability, consumption, population movements, scale, transformation, nature, healthy food and rent are often discussed in order to understand the subject of "rural gentrification" (Figure 2).



Figure 2. Common keywords of articles on" rural gentrification" in word cloud format

3. METHODOLOGY

The hypothesis of this study is: "Rural gentrification as a result of urban sprawl threatens the sustainability of rural areas".

This study aims to put these urban agriculture and rural gentrification paradox with a case study in Sirkeli-Ankara. Sirkeli which was a village turned to neighborhood of Pursaklar district in Ankara. However, the rural activities are still on-going by the villagers and urbanites making urban agriculture. In this context, socio-spatial literature research on rural gentrification and urban agriculture were made. In depth interviews were made with the villagers, urbanites which have weekend houses and making urban agriculture and real estate agents. All kinds of visual and audio material were used to make discourse analysis through multimedia and key highlights are revealed.

It is based on the use of spatial quantitative data based on field study. In addition to the comparison of satellite imagery on the temporal change of the study area in the city, the population statistics that will enable the comparison of the changes in the economic and social structure of the rural area studied are the main data sources to be used in the study.

4. FINDINGS OF THE STUDY

Sirkeli settlement, which is selected as a case study area, is located in the Pursaklar district in the north of Ankara metropolitan area. (Figure 3). The distance to the Kızılay city center is 33 km. Sirkeli, which has been in town for

many years, lost this feature with the change of the metropolitan law and became a settlement consisting of two neighborhoods.

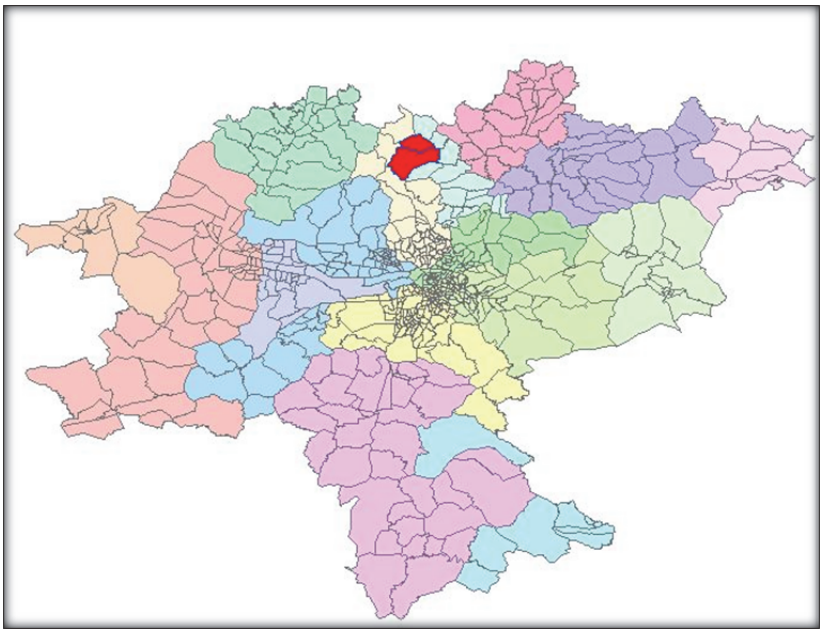

Figure 3. Location of Sirkeli (Yeşilova and Yeşilyurt neighborhoods)

When the population between 2010-2018 is examined, it is seen that the settled population tends to decrease (Figure 4).

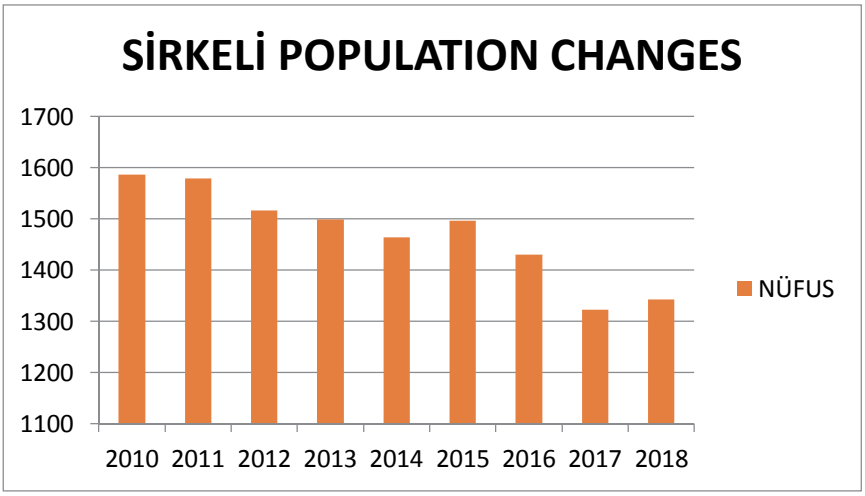

Figure 4. Population change in Sirkeli (Yesilova and Yesilyurt) neighborhood (Source: TURKSTAT).

Selection criteria for the study area are:

- One of the rural areas which is close to Ankara metropolitan area,
- In recent years (especially after the zoning amnesty/peace law) many new developments have occurred in the region (Figure 5,6,7),
- Excessive number of rural areas that have not lost their rural character.



Figure 5. Satellite image of Sirkeli Yesilova and Sirkeli Yesilyurt Neighborhoods in 2006. (Source: Google Earth)



Figure 6. Satellite image of Sirkeli Yesilova and Sirkeli Yesilyurt Neighborhoods in 2016. (Source: Google Earth)



Figure 7. Satellite image of Sirkeli Yesilova and Sirkeli Yesilyurt Neighborhoods in 2019. (Source: Google Earth)

4.1. In-depth Interviews

One of the depth-interviews was made with the real estate agent, M. Eşlik in 26.12.2019.

He evaluates the situation of Sirkeli and changes in land as:

"I am not a native of Sirkeli, I settled in Sirkeli many years ago because of its central location and beautiful nature. There was a very different settlement 20 years ago, we used to catch fish from the creek passing through the village, but today there is no water in the creek. The main source of income was agriculture in those days. Today, this decreased to 20-30% in the settlement. The main subject is urban rent nowadays. In fact, the ratio of people bought land outside the village has exceeded the settled population of the village, and if they behave in an organized way, they can win the muhtar elections in the village. Land prices today are around 130 TL per square meters and these prices do not change much. Depending on the income, some of these newcomers put containers, some make prefabricated houses and others build three-storey villas. Everyone grows fruit trees in their garden and produces natural vegetables".

The other interviewee was a newcomer, M. Kahveci who has built a weekend house in Sirkeli about four years ago. He states that:

"I am the retired high school principal, our main home is in Demetevler. I love the atmosphere of this settlement, I am 75 years old, but I can spade two acres of land by myself. The city is too crowded, unhealthy and difficult to live for the

elderly. When I return to the city, I find the environment overwhelming. The high blood pressure and diabetes of my wife has recovered when we moved here. We grow bean, pumpkin, corn and tomatoes here. I feed four families with these produce. I use a drip irrigation system; I take seeds from the local market. Our house is a 2-storey house with steel construction and I made the lower basement independent unit for my son by taking advantage of zoning amnesty-peace law".

Another interviewee was a newcomer, Ö.Yalçıner who has built a weekend house in Sirkeli about three years ago. She states as:

"We want to take our children to the garden at weekends to integrate with soil and nature, not shopping centers. Since our house is in Yenimahalle district, we searched for a land. As a result of a few suggestions from real estate agents, we liked the Sirkeli settlement north of Bağlum, because it was flat and green, and in 2014 we bought a land of 750 square meters through a real estate agent there. As our child was small, we felt the need for a kitchen, toilet and room to put him to sleep, so there was a need to build a house to meet these needs. We built a single-storey masonry house on a simple ground concrete without foundation, from gypsum blocks, which are alternative building materials. We've had the necessary construction license, and we've been using this house every weekend except for very cold and snowy winter days for three years. This was previously a green poplar, but because the peasants saw the poplar as commercial, they cut it piece by piece and sold it to the citizens as land. Now we have two new buildings as our neighbors. We wanted to grow crops in our garden with the principles of permaculture and we did not touch some poplar trees. In accordance with these principles, in our raised vegetable beds; we use mixed planting and companion plants techniques. We have an herb spiral and we try to irrigate our plants by harvesting rain water. However, as in every garden in this area, we have drilled a well and we use this well for irrigation. Since we are in the village, every afternoon, cattle and cows come to graze. We also occasionally buy raw milk, flat bread, butter and village eggs from the villagers. Neighbor relations with the villagers and the residents of the weekend house such as product-growing conversations and fruit and vegetable exchange, continues. Our two and seven-year-old children are able to recognize fruit and vegetable varieties, planting, hoeing and watering, and have a pleasant time in nature".

The last interviewee was a villager, O. Yılmaz, who is a shepherd as well. He tells:

"I'm a local. I raise livestock. But since I couldn't find many shepherds to run most of my animals, I had to dispose of them. Our work has no daytime, and if the animals are pregnant, they can give birth in the middle of the night. Taking care of the animals, cleaning the oath to give the children and my wife is very hard,

they do not want to do. In addition, all the land is surrounded by wire fence, the land near the village where the animals will graze, is limited, we plant our own forage plants, if we take feed with animals from outside, we have no chance of making money from this business. We have eggs enough ourselves, we can sell milk out. Sewage has just arrived in the village, they have dug all the roads, did not pour asphalt again, waits until the next election, and we walk around in the mud".

Discourse analysis means to search for meaning beyond the word-sentence-text. Discourse analysis is an analytic technique rather than a theory (Salkie, 1995). The important keywords are analyzed as world cloud after these in-depth interviews. It is observed that concepts such as agriculture, nature, no pesticide, native seed, permaculture, happiness and husbandry were the common keywords from these interviews (Figure 8).

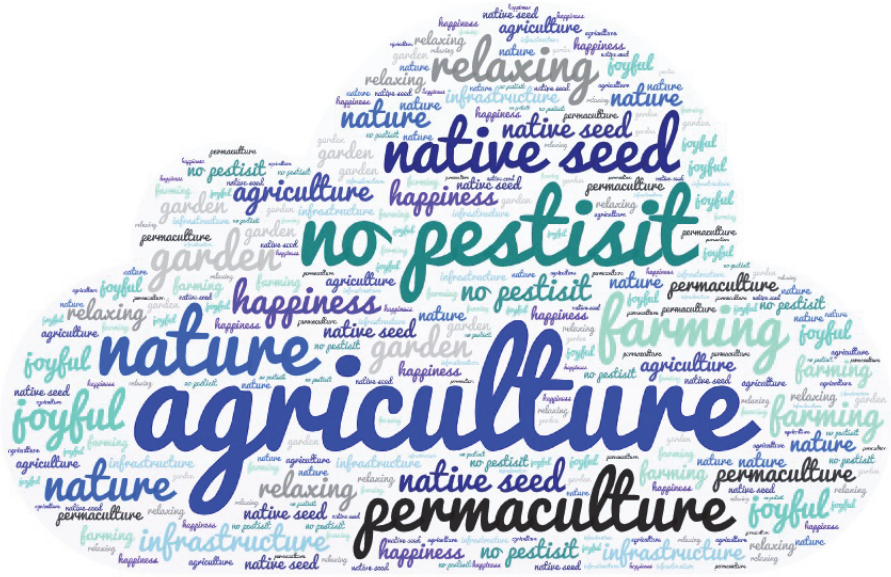

Figure 8. Word cloud of interviews

5. CONCLUSION

Ankara, the capital of Turkey, is experiencing continuous urbanization and complex rural–urban transformation after the new metropolitan law. This study empirically examined the socio-spatial transformation processes in Sirkeli settlement of Pursaklar district to explore principles of the sustainable reconstruction of village space and improve our understanding of rural gentrification from the socio-spatial perspective. Rural gentrification plays a key role in the link between

indigenous villagers and newcomers-urbanites. Indigenous villagers, being the active rent-seekers, contribute to gentrification through a combined effect with Turkey's urban transformation law and new metropolitan law. The villagers' houses or lands were transformed for weekend or seasonal use under land rent surplus. Loose land management and development control, based on zoning amnesty or zoning peace, has provided opportunities for both urbanites-newcomers and villagers to promote rural redevelopment. Based on the existing legal framework, the villagers provide land to earn rent, and the urbanites promote rural gentrification by opening new vegetable gardens or orchards to gain self-sufficiency in food/urban agriculture. Finally, the legal policy is an important factor for the development of rural gentrification, and market power is an important driving force based on the existing legal and demand based framework.

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EXPLORATION OF HERITAGE CONSERVATION ISSUE WITH VOLUNTEER TOURISM

Tuğçe UÇAR*

ABSTRACT

The main motivation of the article is to explore one of the contemporary tourism movement; volunteer tourism and its role in heritage conservation. Modernist tourism activities have been criticized for their consumer and harmful effects on the host destinations by several scholars such as John Urry. Accordingly, relationships between 'tourists' and 'host destinations' are defined as consumer and resources in the modern world. However, the postmodern 'volunteer tourism' concept started to discuss with its concern about the conservation and development purposes of 'travelers' for their 'experienced places'. Theoretically, Edward Soja express; standing points of modernism and postmodernism as well as effects of them to space from spatial, social, and cultural aspects. Through such expositions, this paper makes theoretical contributions about; differences between mass tourism and alternative tourism activities from the volunteer tourism perspective to figure out if the volunteer tourism movement is applicable for sustainable heritage conservation and development purposes.

Keywords: Volunteer tourism, Heritage conservation, Contemporary debate

1. INTRODUCTION

How can sustainable cultural and natural heritage conservation be sustained? Is it possible to minimize the negative effects of tourism and its pressure on heritage sites of urban and rural areas? Can contemporary touristic activities such as volunteer tourism be used for sustainable tool to conservation? Is the volunteer tourism movement so different than other mass tourism industries?

Throughout history, people have been visiting cultural, natural and historical lands. Today, this concept is one of the largest, global, and fastest-growing sectors which is called the tourism industry (UNWTO 2005). Tourism is defined as an activity for visitors who are leaving their daily living areas, for more than a day and less than a year, to travel to different places for several purposes such as holiday, leisure,

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business, health, education (WTO, 1981). As an industry, tourism is a sector that rents beautiful places temporary to customers who have a desire to experience different cultures, histories, and natures. On the other hand, both tourism activity and industry definitions are results in inevitable imprints from vegetation trampling to visitor crowding and recreation conflict on heritage lands (Marion & Reid, 2007).

The development conception of tourism has changed over time. Four main tourism development theories evolved from the 1960s to today. Firstly, Modernization Theory emerged after Second World War and it supported that tourism can be used as a development strategy to generate foreign exchange, increase GDP, attract capital and promote modern western values of life as well as a tool to create brotherhood between nations. At the same time, consuming experiences would fulfill tourists' ego which ends up with the mass tourism movement (Awang & Wan & Zahari, 2009).

Although, Dependency Theory questioned the usage of tourism as a development tool, because, mass tourism consumes resources and exploits local and undeveloped areas with capitalist tools like any other industry. Instead of diminishing the existing socio-economic inequalities within the developing countries, tourism, strengthen them through touristic boarder and its adaptation along traditional structures (Oppermann, 1993, p. 540).

Neo-liberalism affected tourism perception and created its theory. Chain of global events did as an oil crisis and economic depression that occurred from the mid-1970s to 1980s. The state-controlled approaches shifted to the rising influence of the private sector in the tourism industry as well (Milne, S., & Ateljevic, I., 2001). Thereby, the paradigm shifted from modernism to postmodernism, and the power of the nation-state declined (Harvey, 1990).

Private organizations were influenced by globalization and technological developments which created wide variety in leisure activities. Likewise, awareness of consumer and harmful side of mass tourism combined with sustainability concerns of researchers and governments while they were analyzing mass tourism and its negative effects. These developments and analyses had led to a search for, and growing interest in, alternatives (Lyons & Wearing, 2008).

Recently, the last remaining form of tourism development has been raised which is Alternative Tourism. According to its sustainable, individual, nature and culture cared, soft, responsible, green, controlled and small scale features. The term sustainability brings several techniques for tourism concept such as area protection, industry regulation, visitor management techniques, environmental impact assessment, carrying capacity calculations, consultation/participation,

codes of conduct and sustainability indicators which are serious requirements to create an actual sustainable system in the industry (Mowforth & Munt, 2008).

The 'alternative turn' in modernist tourism first started with the development of ecoturism. Later on, other forms of alternative tourism have emerged as well. Volunteer tourism is the new phenomenon for alternative tourism recently. Volunteer tourists who are volunteer to be a part of helpful actions for their holidays or vacations, in terms of, social, environmental and heritage conservation aspects (Wearing, 2002). Volunteer tourism defined as other dimension of postmodern tourism lay weight on the charming concepts such as, alternative, real, ecological and responsible forms of tourism (Uriely, 2003). Although the volunteer tourism concept seems to be an alternative solution of consumer mass tourism perception and aimed to contribute to heritage conservation issues, it is still evaluating a part of the tourism sector.

Therefore, this paper focuses on the phenomenon of volunteer tourism and its contributing and consuming effects on heritage conservation tools. That is why, consumer tourist perception and challenges of heritage conservation subjects are determined as important and problematic issues. Also, the volunteer tourism concept evaluating as a tie between. To make a theoretical contribution, Postmodern Geography perception of Edward Soja and Consumer Modern Tourists' perception of John Urry will be explored in this paper to lighten the way of seeing volunteer tourism and its heritage conservation aspect.

2. RELATIONSHIP BETWEEN TOURISM AND HERITAGE CONSERVATION

Tourism activities and the conservation of heritage values in touristic places are highly related to each other in sustainability terms. It is often argued that the tourism industry has harmful and consumer effects on host destinations, while, current trends in tourism continue to move towards the increasing objectification of tourism in the search for global profits. The paradigm shifts between modernist mass tourism and post-modernist alternative tourism are important subjects to enlighten the efficiency of these approaches on heritage conservation.

2.1. Consumer Aspect of Tourism

John Urry is one of the key thinkers who have a sociological background on space about globalization, mobility, relational geographies, and structuration theory subjects. Also, his books which are The Tourist Gaze and Consuming Places are made investigations about tourism and consumer side of this industry. This section of a paper will be lighted his perception and outputs about tourism.

According to Urry's Tourist Gaze book, tourism is simply about consuming goods and services in host places. Related activities generate pleasurable experiences

for tourists from different scenes of landscapes or townscapes while harming the values of those destinations. He claims that the tourist lifestyle is different from those typically encountered in everyday life and it is out of the ordinary. Even if, in different societies, especially within different social groups in diverse historical periods, the tourist gaze has changed and developed, tourism stayed as a marker of status and being a part of a modern system. He states that "Not to 'go away' is like not possessing a car or a nice house" (Urry, J., 1990).

Additionally, in the Consuming Places book of Urry, there is a The Consumption of Tourism section. This section is mainly about how tourism consumes the places out not only its cultural, historical, and natural resources and services but also its social dynamics. Although there is a clear intention to return 'home' within a relatively short period, tourist gaze consumes the features of landscape and townscape which separate them off from every day and routine experiences. This reflects the perception of being modern, and destination places need to cope with a mass character of the 'tourist gaze' with particular results which are dirt, noise, destruction of natural and cultural heritage, overcrowding, over construction, and consumption at the end (Urry, J., 1996).

Modern people from all the different social types believe that vacation from out of their ordinary life to different cities or countries for some time for rest is a “need” and prof of their “status”. Relatively, within the John Urry perspective, it is possible to observe that tourism activities are mostly focused on leisure. Meanwhile, tourists consume; cultural, historical, and natural resources as well as services and social dynamics of touristic places with mass tourism approach.

2.2. Changes in Heritage Conservation

The previous part of the research was mainly about consumption features of tourism and John Urry`s perception. “What is being consumed?" and "Where are touristic places?" are the main questions to link between tourism and tourist places which are natural and cultural heritages in terms of this paper. Beside tourism development theories, approaches to cultural and natural heritage conservation changed overtime.

Natural and cultural assets of places have always been attractive and valuable to people and governments as well as their protection for various reason. Before the Second World War, every county deal with heritage conservation issues in their ways. After the war and disaster of it, UNESCO (United Nations Educational Scientific and Cultural Organization) established to determine and conserve world heritage with the purpose of global awareness in 1945. However, there were no technical standards and global limitations for heritage conservation. Then, ICOMOS (International Council on Monuments and Sites) was established

in 1965, to, evaluate historical, cultural, and natural site areas and develop legal and technical researches for Venice Agreement members of UNESCO. Also, HABITAT I meeting arranged in Vancouver in 1976, from a more general perspective that evaluates only cultural, historical heritage. Nevertheless, HABITAT evaluates this as a part of the urban and rural area part, as well as 1996 Istanbul HABITAT II (Dağıstan Özdemir, 2005).

Recently, HABITAT III added their issue papers "Urban Culture and Heritage" topic in 2016. This issue paper defines threats to urban culture and heritages and proposes in line with 2030 Agenda for Sustainable Development, which recognizes the need to strengthen the efforts to protect and safe ground the world's cultural and natural heritage as a dedicated target of Sustainable Development Goal 11 (target 11.4). Socio-Cultural Urban Framework policy units define several approaches. These policy approaches are generally about developing master and strategic urban development plans, establishing programs and education platforms, increasing public awareness and participation (habitat3.org). However, activities and tools for sustaining awareness and participation have not been defined yet.

Heritage conservation approaches have been changed with time as well. While modern heritage conservation activities are regulated with legislations and institutions, postmodern and recent protection policies focus more on increasing public awareness and participation. Therefore, volunteer tourism concepts and relative activities give the image of a potential tool for the conservation of heritage lands.

3. VOLUNTEER TOURISM AS A TOOL FOR HERITAGE CONSERVATION

In postmodern life, growth in 'conscious consumption' increased. Consumers have thought about their purchases concerning such factors as organic foods, environment friendly, and human rights. Such conscious effect tourism for the growth of ethical tourism considerations, codes of tourism conduct, types of tourism. (Mason and Mowforth 1996).

The volunteer tourism concept raised in recent years with conscious consumption. The relationship between volunteering and tourism is the primmest dynamic of volunteer tourism as an alternative tourism type in terms of helping an issue in the place to visit for the travel time. Different than other tourism types, volunteer tourism activities include tourists or travelers who have willing and passion for conserving and protecting natural and cultural heritages for their host destination. Therefore, its potential for being a heritage conservation policy tool is outstanding.

3.1. Volunteer Tourism

The definitions of the term of volunteer tourism has begun to be popular in the academic and popular literature for decades. This new form of alternative tourism has variety of names: "volunteer tourism" (Henderson, 1981), "volunteer vacation" (McMillion, Cutchins & Geissinger, 2006), "service based vacation" (Ellis,2003) and "voluntourism.

According to Wearing, volunteer tourism can be defined as a form of tourism that makes holidays useful and involves tourists who volunteer to fund and work on conservation projects around the world. Volunteer tourists can be defined as persons seeking a tourist experience that is mutually beneficial that will contribute not only to their individual development but also positively and directly to the social, natural and economic context in which they are involved. Also, they have a desire to make a difference in the world and put something back into the natural or social environment (2002).

Volunteer tourism satisfies a need for tourists who want to travel with a purpose and make a difference during their holiday, enjoying a tourist experience with the benefit of contributing to others (Chen, L. J., & Chen, J. S., 2011). Volunteer tourists prefer to be wildlife up close, interacting with local communities, and meeting new people. In some cases, the tax deductions also make volunteer tourism more attractive. This genre of travel has been most popular among Western Europeans, Australians, Poles, Japanese, and North Americans (Brown and Morrison, 2003).

Studies about the nature conservation programs show that volunteer tourism participants have not only a nature base context with leavings legacy purposes, but also they look for the basic needs of relaxation, and pleasure-seeking (Cassie & Halpenny, 2003). Involvement, awareness, and performances in volunteering and conservation activities are variable between volunteer tourists. Also, contribution, trip duration, skill requirements create a different type of volunteer tourist category such as shallow, intermediate, and deep (Callanan & Thomas, 2005). Regardless of their purpose and performance, volunteer tourists supply workforce and labor for heritage lands while conservation tourism visitors pay to work as participants on conservation projects (Cousins, 2007).

Non-governmental Organizations (NGOs) have the crucial role to link between volunteer tourists and local communities, at the same time, some of them contribute to the further scientific field research through the use of volunteers. Also NGOs use volunteer tourism as a development strategy in undeveloped countries. (Conran, M., 2011). The United Kingdom has one of the largest and most known examples of the conservation volunteer tourism industry. Almost ten thousand people went on a conservation holiday in 2005. (Cousins, 2007).

Thanks to, internet, the distribution of information and can be a useful research tool to find organizations across the globe offering volunteering holidays. For instance, Real Gap, a company set up under the name of The Work and Travel Company in 2000, is now one of the largest of these organizations in terms of volunteer numbers and offers hundreds of gap year experiences catering mostly to those between sixth-form and university. Similarly, Blue Ventures is a marine conservation not-for-profit organization set up a research base in Madagascar. Volunteers work with local scientists to collect data at monitoring sites and survey the ecological health and status of coral reef habitats. (Cousins, 2007).

3.2. Postmodern Version of Tourism or Conservation Policy Alternative?

The evolving processes of tourism and heritage conservation approaches look mostly positive; eco-friendly, aware, participatory, responsible, equal, sharing, and so on. However, is it possible to assume that alternative tourism types such as volunteer tourism do not have any flaws? Is it purely dependent on innocent purposes? Most importantly, is it working?

Space more than the time that hides consequences from us. Making geography, more than the making history that provides the most revealing tactical and theoretical world of postmodern geography. Postmodernism as the third spatialization that is a cultural and ideological reconstruction, a changing definition of the experiential meaning of modernity, the emergence of a new, postmodern culture of space and time (Soja, E.,1996).

Changes responds to the particularities and possibilities of the contemporary moment via science, art, philosophy, and programs for political action (Soja, E., 1996) as well as tourism development in the manner of this paper. Likewise, volunteer tourism can be evaluated as a postmodern way of tourism because this concept also includes cultural and ideological reconstruction and changing the meaning of modernity with mass tourism approaches.

According to Soja, the reconstructed ontology of human social patterns uneven regional development. The process of the social production of space and what socially produced can be socially restructured and transform (Soja, E. 1985). The shift between modernist mass tourism to postmodernist alternative tourism can be evaluated as the retheorization of space in social theory. Also, Soja claims that geographical uneven development in societies organized primarily around capitalist social relations. Contemporary retheorizations is nothing more than a reinterpretation of geographically uneven development (1985).

Modern tourists might have good willingness and awareness, symbolic boundaries between art, high culture, academy, on the one hand, and everyday life and

popular culture on the other, are dissolving (Urry, J., 1995) similarly with postmodern tourism movements. International and national money and capital flow did not disappear, nor did the pressure of industries and capitalist visions of them on the places, even if there was some significant restructuring in their organizations (Soja, E., 1985).

If tourism is being a part of being modern and mass tourism activities as consuming the spaces (Urry, J., 1995), modernist tourism approaches can be evaluated mostly abusive. Developments on technology and conscious consumption of tourists lead to a rise in alternative tourism approaches that have a more different understanding than the dynamics of Urry's aspect. In terms of volunteer tourists, they do not desire to be a part of leisure-based events and consume cultural and natural heritage. On the contrary, they have a desire to be useful for their destination, the environment, and society. However, these improvements do not change the fact that they are still tourists who support the flow of capital and being a reason for uneven geographical development. It is just a restructured version of the global economy that is constantly evolving and shaping.

4. CONCLUSION

Cultural and natural heritage lands are both irreplaceable sources of life and inspiration. Likewise, cultural and natural heritages are legacy from the past, what we live with today, and what we pass on future generations(unesco.com). In that manner, it is considerable and sustainable to link postmodern heritage conservation policies with postmodern approaches to tourism activities. However, it is arguable that the tourism industry and its capitalist effects stronger than the passion for heritage conservation. That is why the volunteer tourism concept evaluated deeply in this paper to contribute a theoretical understanding of the subject.

There is a lot of organization, institution, approach, and movement that have a purpose of cultural and natural heritage conservation such as UNESCO, ICOMOS, HABITAT that is taking the role to create awareness and policy on this very issue. Recent conservation policies point out the importance of public awareness and public attendance to conservation activities. That is why the volunteer tourism concept explored to determine the alternative activity for conservation policies. Even if volunteer tourism is willing to contribute to the conservation issue, there needs to be more accurate, global, and appropriate solutions.

In conclusion, mass tourism is depending on the abuse of the heritage lands without awareness of tourists. However, volunteer tourists who are under the

alternative tourism movement, are postmodern and more aware of the corruption and need of the world and societies. However, it is still can be questioned with features of mass tourism as Urry mentioned, even if it is deeply postmodernism. Likewise, Soja supported; postmodernism includes versions of capitalist tools and modernist approaches for all sectors as well as the tourism sector as a whole.

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SESSION 5A

Theme: Transition and Transformation

14 October 2020 Wednesday, 13.30 – 15.00

Chairperson: Prof. Dr. Sugiono SOETOMO

Invited Speaker: Sugiono SOETOMO, Irwan WUNARLAN

The Morphology of the Agrarian Town: Marisa – Rural Urban Linkage that Change the Rural Life to the Urban Agriculture Life

Mohammad Mehdi AZIZI

An Analysis of Population Settlement Trend in New Towns: The Case Study of Pardis New Town, Iran

Şeyma SARIARMAĞAN, Mustafa VAR

Transformation of Landscape in the Historical Process

Dalya HAZAR, Sevim Pelin ÖZKAN

Urban Growth of a Mediterranean City from the Fringe-belt Perspective

Araf Öykü TÜRKEN, Serkan PALABIYIK

The Effect of Urban Growth on Land Use: A Case Study of Balıkesir

THE MORPHOLOGY OF THE AGRARIAN TOWN: MARISA
Rural Urban linkage that change the rural life to the urban agriculture life

Sugiono SOETOMO*, Irwan WUNARLAN** *

ABSTRACT

Urban rural theory has been born with characters Mc Douglass and Terry Mc Gee, who are part of the new paradigm regional development for developing countries.(the New Paradigm of Regional Development, United Nation of Centre of Regional Development,2001).

However, many research activities are carried out in high urbanization areas. Even Terry Mc Gee saw urban villages in the context of a metropolitan city in his research in Jakarta (1991).

In our research, we want to look at a region that is far from urbanization, a small city on the island of North Sulawesi, one of the Republic of Indonesia's big islands, outside Java, where the national capital is located.

In a very rural area of a provincial town where cities cluster, the town of Marisa grew from a village center to eventually become the capital of a district, the city has corn, coconut and fish products which are an economic powerhouse (LQ di atas 1).

In the development of the city, the city's morphological structure, both the land use pattern and the distribution of buildings, can conserve agricultural areas. And here is the secret why Marisa remains a city that can continue to develop its agricultural potential as a basic economic factor for the city. The base economy exports these agricultural products to various big cities and even abroad. From the results of these exports, life develops with happy facilities. Trade and service activities grow, making Marisa a City and an agricultural city that maintains the city's sustainability.

Export activities are formed with the existence of national transportation facilities in roads and ports because Marisa city is a coastal city.

Two types of morphology keep agriculture conserved. The potential is very valuable so that the spatial model must be preserved in the city master

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plan and become a model for agricultural, urban spatial planning. As for the part of the city that offers separate urban development with both morphological typologies,

So an urban-rural linaculty of Ekage phenomenon occurs on a truly remote regional scale, so it does not occur like Java Island with metropolitan cities to small cities and continuous urban, rural areas.

This has become a model for developing areas outside Java with a small population area, during which President Joko Widodo was developing various infrastructure and investments in domestic and foreign areas outside Java, particularly in eastern Indonesia.

Keywords: urban rural linkage, agriculture, morphology

1. INTRODUCTION

Mc Dauglas and longer have sparked the relationship between urban and rural areas in dealing with metropolitan developments and the context of globalization in this decade by Terry Mc Gee, (2001). To bring strength from the bottom together up to meet global powers. Mc Dauglas made a diagrammatic model that is very well known in terms of urban-rural (Regional Networks Rural-Urban interdependence; diagram 1). A model to replace the top-down approach model of the Growth Industrial Diffusion Model system. (Mc Douglas,1998).

The context of Urban-Rural linkage develops as a more advanced strategy than agropolitan, which looks more at urban development in rural areas.

Urban power which becomes rural consumption and vice versa, even in every layer from the level of the cities of national centers to secondary areas to small cities, the condition of urban-rural linkage is developed so that there is comprehensive urban-rural throughout the national territory, a strategy that brings rural forces into the context of globalization and other.

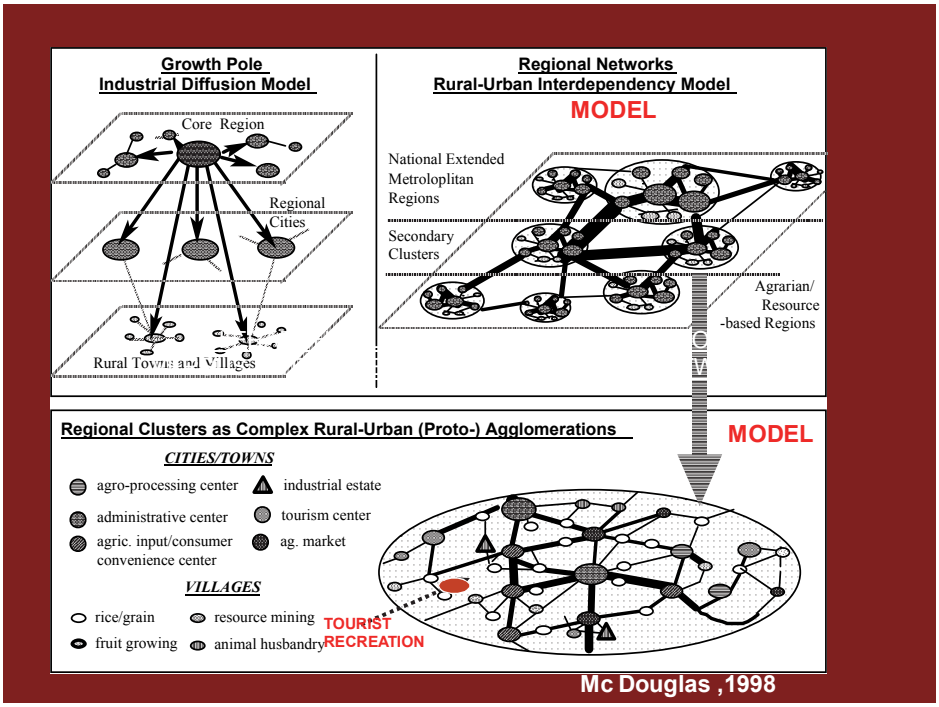


Figure 1. Growth Pole, Regional Network and Regional Clusters as Complex Rural Urban Agglomeration Model

However, the model shows that rural areas are still co-opted by urban areas, namely urban activities, and consumption, even though rural areas receive income from the city. What must be guarded is the local villagers, their education must be encouraged. But education that has been controlled by the local population. Do not modern forces that can destroy the traditional rural ecology. The planning concept or model must be described in detail, namely, social, cultural, economic, and political relations at the field level.

The model made by Mc Douglass is more applied to areas where the urbanization process is high and spread within an urbanized region. How metropolitan cities, big cities, medium cities, to small cities quickly penetrated rural areas. How will rural areas enter into urban consumption? Agents of globalization are rapidly moving into rural areas. This will bring rural power under urban strength, but it does not go directly to the metropolitan area. This flow continues to bring the power of small and medium cities to the metropolitan area as a global city.

In the framework of the theoretical model mentioned above, in this paper we will precisely examine the relationship between rural and urban areas in a small town that grows from a village with a surplus of agricultural products. The village is

progressing and growing independently by exporting agricultural products for urban living needs. The urbanization of the region in the area is still very low, the city is located outside the island of Java, where Java is the center of the national population.

Marisa, a small town is located on the northern island of Sulawesi (Celebes), located far from the island of Java. Indonesia is an archipelago with a huge area, with an area length that can be almost the same as the distance between Paris and Istanbul. Sumatra is the major islands in the western tip, Kalimantan and Sulawesi, in the center, and Papua in the west of Indonesia. And the island of Java is not included in the 4 big islands. The island of Java where thenational capital city of Jakarta (population of 9,607,787 in 2010) is located and the major cities of the provincial capitals are located (4 large cities over 1.5 million inhabitants), many cities under 1 million inhabitants up to small town under 0.5 and a huge urban-rural area. On the island of Java, a small island with an estimated population of 60% of Indonesia's total population, which represents 268,074,000 people in 2010. Java Island has an urbanization rate of 40% to 59%. It is an agricultural, horticultural place that has a very high history and rural culture and diverse so that in Java developed a huge urban rural area. (desakota)

The urban-rural network theory, as in the diagram above, is suitable for the Java Island area. Whereas the islands' condition, which is much larger than Java Island, has a small population and is more concerned with forest and mining plants' production. The study of Regional Planning and urban character in these large island areas outside Java is very lacking. Meanwhile, the theory developed in books is more about urbanization areas such as in Java.

So our research tries to find out the findings of problems and the potential of regions with local resources to develop urban poles based on local potential. The horticultural agricultural sector, such as in Java, has not developed much outside Java, but forest-based agricultural products such as copra in Sulawesi are huge.

During the Joko Widodopresident administration from 2014 until the current second period, the politic of distribution of development on a large scale was carried out very vast outside island of Java. Infrastructure development such as seaports, toll roads, airports, and various basic agricultural facilities such as dams and others have been built in many major islands of Indonesia since 2014. In fact, starting in the second year of Joko Widodo's administration, large rice fields' development has begun to be built. on the island of Kalimantan, the development of industrialization of nickel mining productsand the tourism sector, and other foreign and local investors' sectors.

So the Sulawesi island research regarding urban and regional planning is needed to anticipate government development programs outside Java. The island of Sulawesi, which is almost twice the island of Java, has a population far less than the island of Java. Marisa City is located in North Sulawesi, namely, in the province of Gorontalo. Marisa's city began to grow from the fishery sector, which has pioneered the relationship between the village and other cities by the sea. And in this small town, the people export copra and maize, some of which are processed into oil, which can be marketed to big cities and even abroad, after the construction of national, regional roads and several small ports. The village center developed into a town, and industrialization in the city was only a few coconut oil factories and warehouses for copra and corn demand for export. Marisa's small town is located far from the cluster of cities around the capital city of Gorontalo Province. (seeth map)

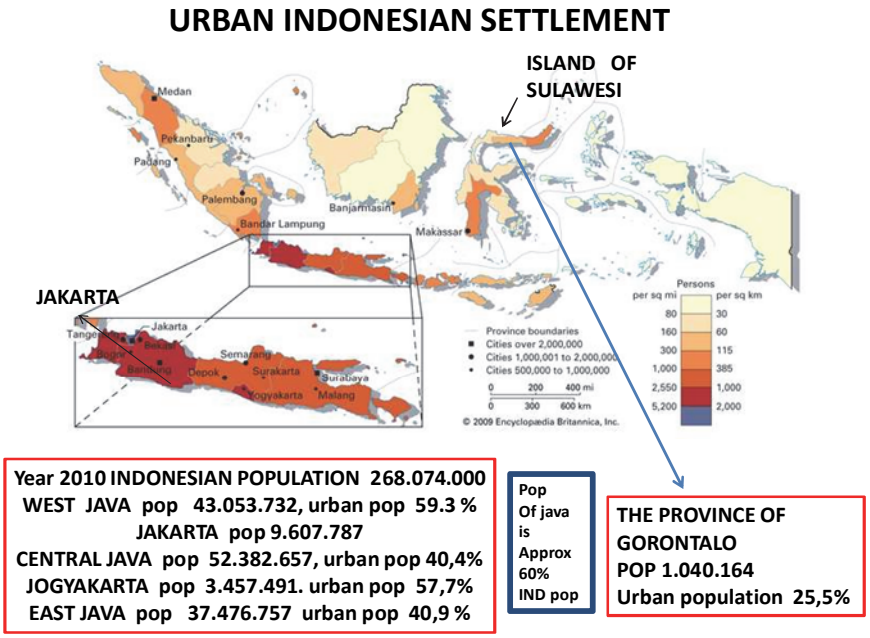
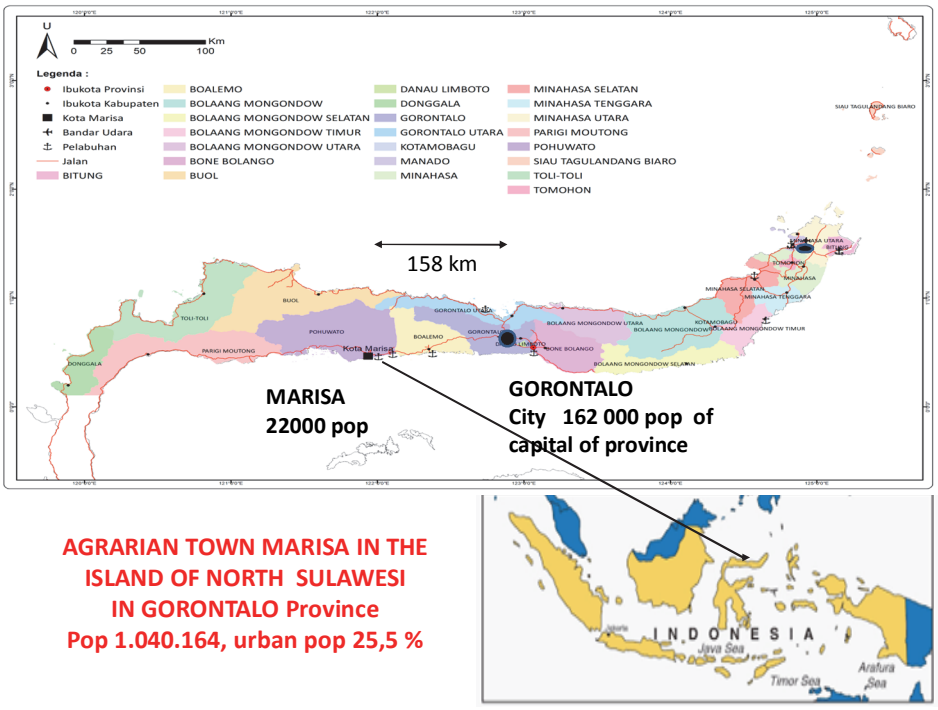


Figure 2. Urban Indonesia Settlemen Source Statistic National Indonesia



AGRARIAN TOWN MARISA IN THE ISLAND OF NORTH SULAWESI IN GORONTALO Province
Pop 1.040.164, urban pop 25,5 %

Figure 3. Agrarian town Marisa in the Island of North Sulawesi at Gorontalo province, Indonesia

1.1 Research objectives.

The purpose of our research in the city of Marisa is to find a potential form of spatial and building morphology, how the town can grow together, and depends on the agricultural sector that requires agricultural land. Urban life always creates land-use changes that are needed to be used as the location of buildings. Simultaneously, the land is a place to grow coconut plants, which are also economically needed for urban development costs. So here, the problem of land use and building morphology is important so that the agricultural sector can be conservated.

How can farmers who own copra farms develop with a level of life that develops into urban life ?

How can export activities be carried out easily in foreign countries?

1.2 Research Methods:

Research methods with a positivistic philosophy that begins with deductive power find temporary answers or determine variables. Statistical quantitative

data and mapping were obtained, and through visual, physical observations and qualitative descriptive analysis were carried out. Finally, the form of space and activities in the context of morphology can be found.

2. MARISA TOWN IS A TOWN THAT GROWS FROM AGRICULTURE PRODUCTS

Marisa village is located on the beach facing the southern sea (see map)

With an area of 5985.60 Ha. Growth began with the settlement of fishers from immigrants from the Bugis, a tribe in South Sulawesi. Historically, Bugis immigrants who developed the fishery sector became the forerunner to the growth of Marisa's population settlements. They live by fishing voyages and selling them to various big coastal cities in the south of Sulawesi. Since the beginning, Marisa has been in touch with big cities through a network of shipping and fishing activities. So that the activity of the export-import process has continued with the life of fishermen settlement. More and more Bugis migrants developed the agricultural sector, corn, consumed as a staple food. Indeed, corn in ancient times became the staple food of the Sulawesi region. Besides that, there was transmigration from Java not far from Marisa. They developed horticultural crops and rice that supplied vegetables to the Marisa area.

From the fishing settlement in Marisa, which then grows on the local road heading north. The meeting of the local road with the national, regional road built by the Indonesian central government in 1980, which traverses from the east starting in the city of Gorontalo to the west, creating a hub of activity. This node is a growth point where settlements begin to develop.

It is the national road that makes the development of corn and copra export activities. Land on the island of North Sulawesi, especially along the coast and towards the north, has developed coconut tree forests since the Dutch colonial era. In the era since the Dutch colonialism, copra was actually exported, but the export did not grow the people's economy but to the colonial government.

With this national road, exports of corn and copra to major cities have so far occurred in and outside the country.

The development of the coconut oil industry and warehousing and a small port has also developed in Marisa. With the busyness of being an exporting area for agricultural commodities and trade and service activities that also occur in Marisa to meet life's needs, urban life is formed.

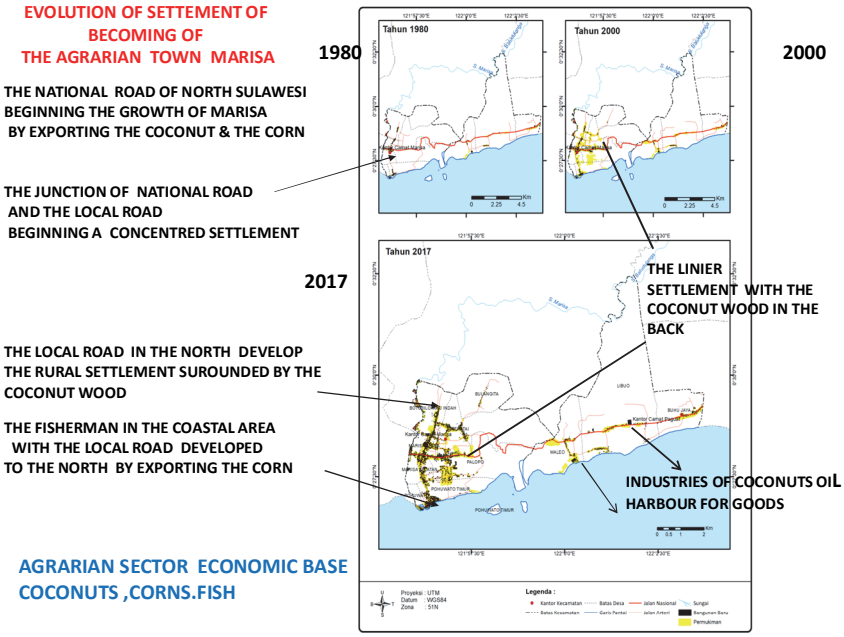


Figure 4. Evolution of Settlement of Becoming of the agrarian town Marisa

3. THE DEVELOPMENT PROCESS OF MARISA

EXPORT OF COMODITIES AGRICULTURE
copra,corn and fish from the town of Marisa

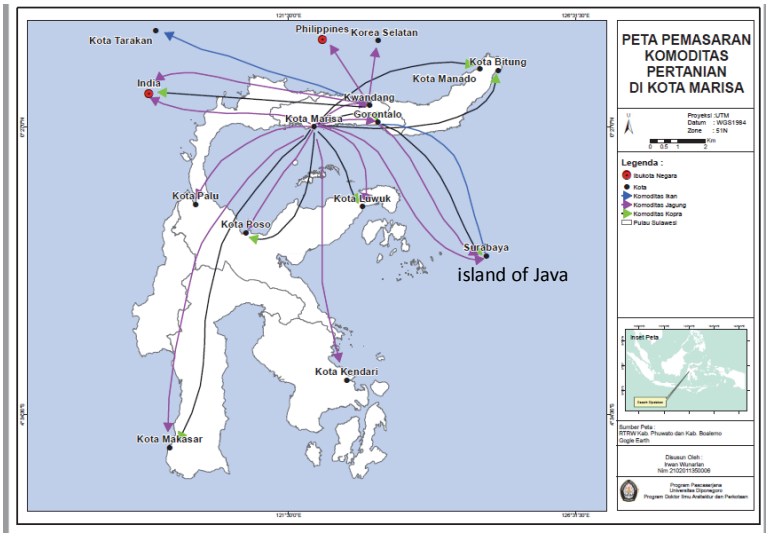


Figure 5. Export of Comodites Agriculture : copra, corn and fish form the town of Marisa to anthor city

In the development of exports of raw agricultural products and semi-finished goods for the industry in the form of coconut oil and corn, these activities become the economic base for the town of Marisa. The value of the product has export power. (LQ economic base values: copra 1.86; corn 1.86 and fisheries 1.27). Seeing the LQ value above, which is far above one, it means that the commodity is high export. The export power means bringing money to Marisa and this power is used for the cost and development of settlements and cities. The cost of agriculture here is very cheap because it does not require planting costs such as copra in the form of plantations or extensive coconut forests, only corn plants with agriculture without irrigation only use rain as seasonal crops, as well as fisheries in raw exports.

The GRDP value of these agricultural commodities is still very dominant . It can be seen that the LQ value of the trade, hotel, and restaurant sectors is also above one, meaning that these activities exceed a large area. Seen in simple terms with economic indicators, the city of Marisa has high agricultural activities, primary agriculture becomes an export commodity, and on the other hand, in Marisa, the urban entrance is hotel services, trade, and development from the government sector because finally, Marisa became the capital of the district (regency). Indication of urban life. Building construction can be seen from the development of the construction sector's value in GRDP very high. The export economic pattern of the Mirasa sector and the development process by the government make the town physically and socially occur. The population continues to flow in looking for work to make the big city of Marisa.

The above can be seen in the image in the diagram:

"From an agrarian economic base to urban life" (see fig)

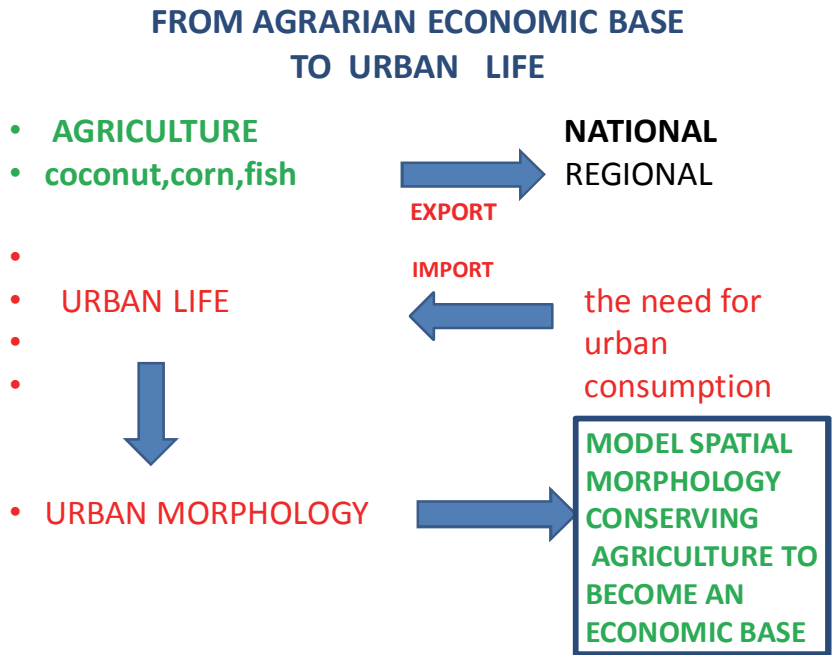


Figure 6. Agrarian economic base activity to urban life

4. MORPHOLOGICAL FINDINGS OF AGRICULTURETOWN THAT CAN PROTECT THE AGRICULTURE SECTOR

In the development of the morphology of the distribution and grouping of buildings, we can see that the national highway is the axis for the formation of export activities (basic economic activities) where we see that all commodities both on the north and south of the national highway are sent to the axis of the highway for export. The city's morphology describes the economic pattern of the agricultural base with the axis of the road as an export route for agricultural commodities. This situation canbeseen in the figure below.

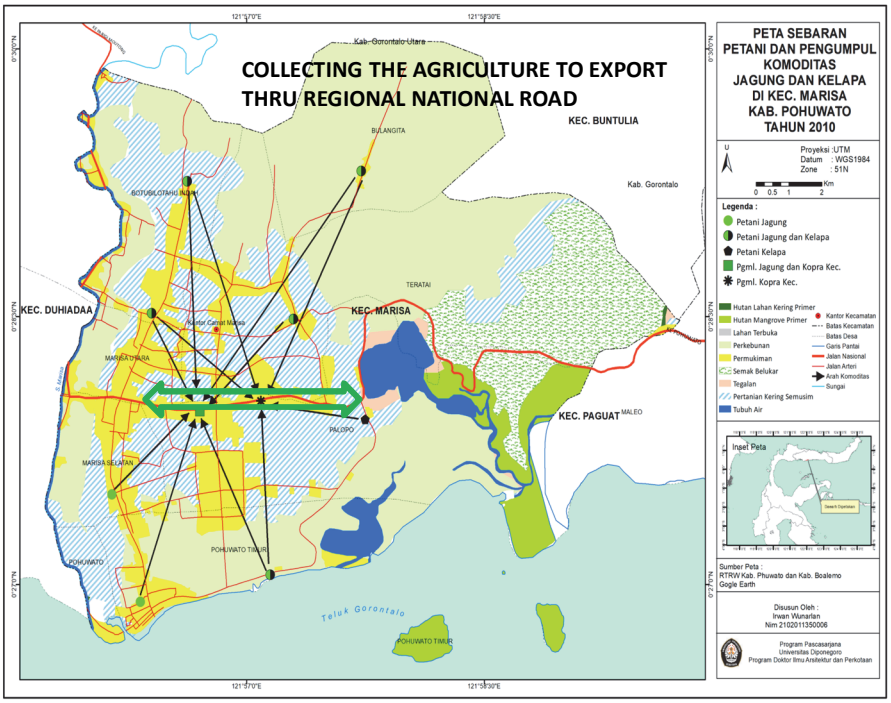


Figure 7. Collecting the agriculture to export thru regional national road

And then, we will see how the structure of the morphological pattern forms the area of urban development and the development of the conservation of coconut and maize plants . So that the growth of Marisa a town that produces buildings can conserve agriculture as the city's economic base commodity, which makes dualism between urban development and agricultural conservation going well. Here is the key that an AGRICULTURAL TOWN can exist simultaneously: Urban development and agricultural conservation as important factors in protecting the economic base.

The development of the city of Marisa can be seen in the map below (fig).

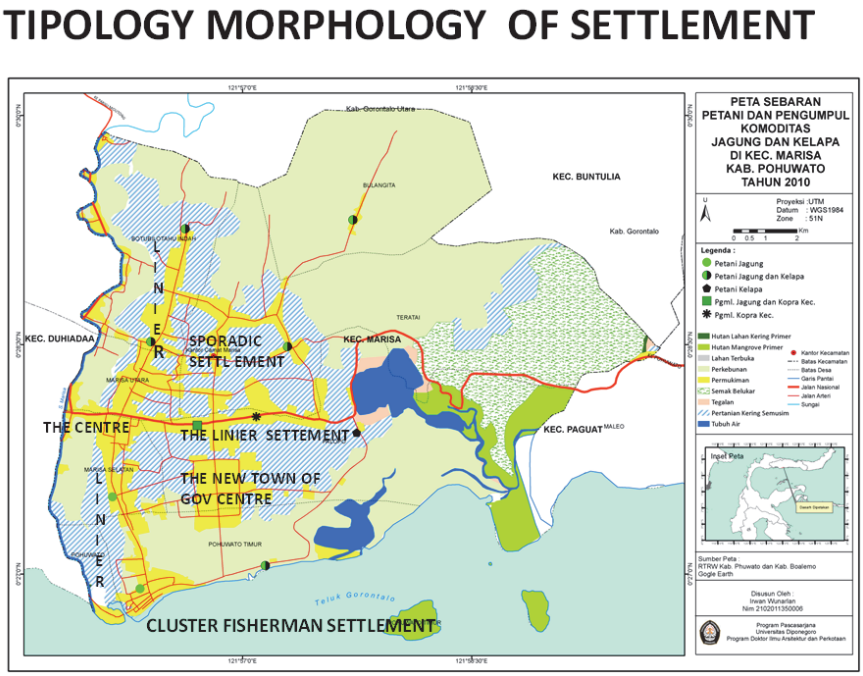


Figure 8. Tipology Morphology of Settlement at Marisa Town

Eventually, the city developed into two parts : one to the south of the National Highway and one to the highway. In the southern part, there is an urban settlement developed by the center at the intersection of the local road and the National Highway, the development of a new city built by the provincial government as a facility for the regency capital administration and agglomeration of fishing villages and tourism facilities on the beach.

As for the northern part of Jalan Raya Pembangunan, rural, coconut forest and corn plantation, it is here that we can find a linear agglomeration along the National highway and behind it is a coconut tree forest. And the development of the north developed settlements that spread within the coconut forest and corn plants.

To the north of the National Highway is an urban development that still protects the coconut and maize forests. There are two typologies of morphology: one typology in the form of linear agglomeration along the national highway, which serves as an export route, and another typology in the form of the distribution of houses in coconut maize gardens. Both typologies are urban findings that protect agriculture. Meanwhile, the south of the main road development is a development like normal national urban settlements. Many coconut plants exist behind houses, but in their development, they have become urban buildings.

So from the results of the analysis, two major types of morphological typology can be found: one part of the typology, which is the development of urban space, and one part of the typology of agricultural space, which still accommodates the development of agricultural conservation model settlements in urban development. (See pictures)

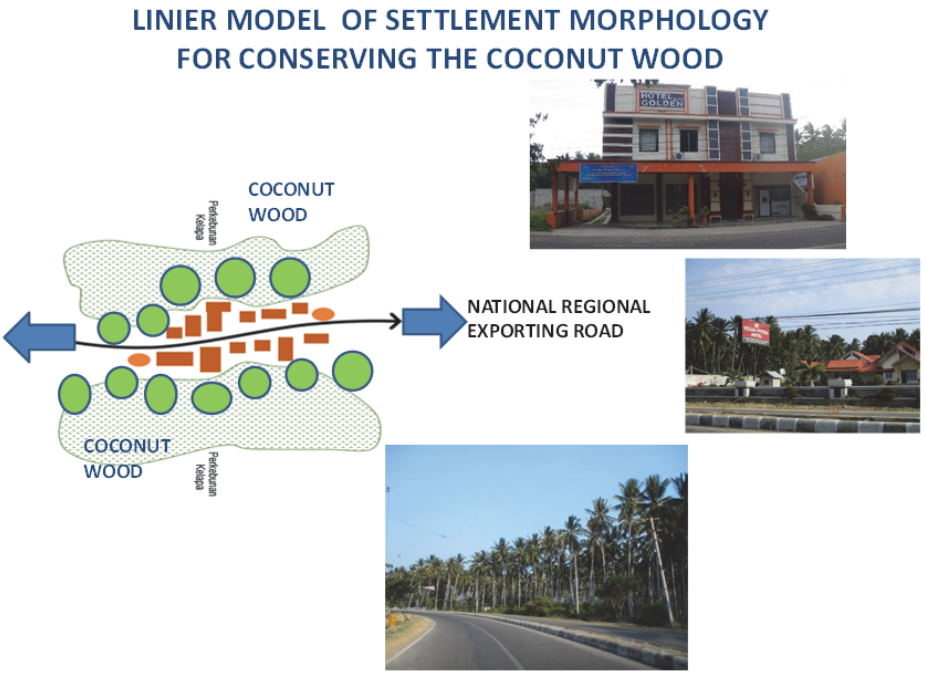


Figure 9. Linear model of settlement morphology for conserving the Coconut Wood

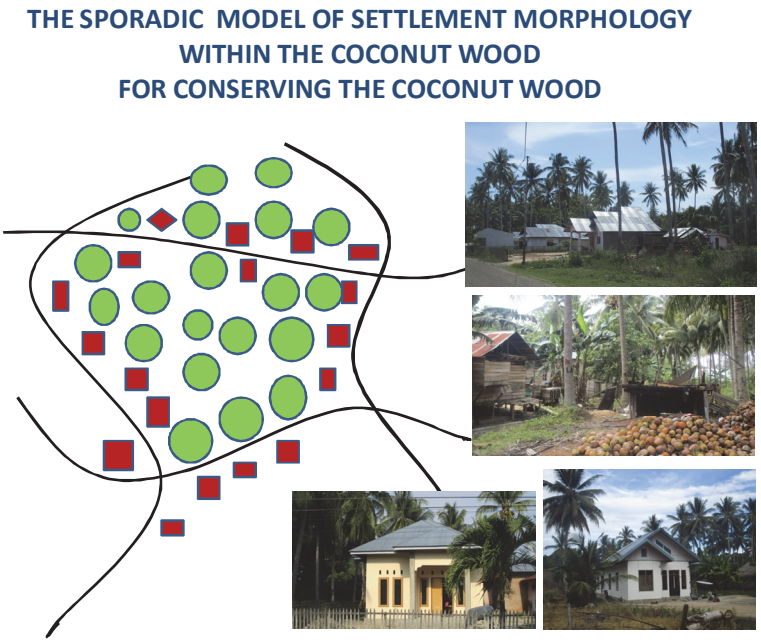


Figure 10. The Sporadic Model of Settlement Morphology



Figure 11. Local goverment centre cluster at Marisa town



Figure 12. Industry and storage, port of copra and corn at Marisa town

5. CONCLUSION

Briefly and taken by a very valuable student studying phenomena in the small town of Marisa. Experts have never observed the current urban, rural theory. Most of them are preoccupied with the process of urbanization and globalization. Indeed, the trend towards urbanization and the global economy has created global cities.

However, the problems associated with the large urbanization process resulted in theories. However, Indonesia's vast area consists of many islands, a huge area, a population of more than 220 million, a concentrated population, and urbanization on Java. To solve urbanization and development and good equity, empty areas must be done on how to foster development there, so not only studying in low-income areas and high urbanization is misleading for Indonesia. Lessons learned from Marisa's city, with its small population growing into urban areas, the strength of rural-urban relations on a broad level, even abroad. The strength of local potential which has global power from agricultural products that are not only mining products. The relation between rural and urban areas must be studied, and regional facilities such as ports and roads are less complicated facilities but grow export power.

In the implementation of two contradictory types, namely between agricultural land use and the use of urban land that produces buildings, the key is the

morphology and land use pattern itself. So the microarchitectural factor is the key to the conservation of agriculture as an economic basis, and the land is built as urban development.

So the land use typology and urban morphology must be used as the basis for making SPATIAL so that there are no patterns of space for our theoretical models.

HOW TO PROTECT MODELTYPOLOGY WITH LINIER AND SPORADIS MUST BE STRENGTHENED IN DESIGNING AN AGRICULTURAL CITY STRUCTURE THAT HAS OTHER FORM OF A CITY.

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AN ANALYSIS OF POPULATION SETTLEMENT TREND IN NEW TOWNS: THE CASE STUDY OF PARDIS NEW TOWN, IRAN

Mohammad Mehdİ AZİZİ*

ABSTRACT

Global experiences of new towns show that they have different goals and objectives, such as decentralization of large cities, providing housing, rearrangement of regional growth centers, creation of new patterns for settlement, new investing as well as job creation. One of the most important planning policies in Iran has been the establishment of new towns that initiated in 1985. The policy addressed a wide range of objectives leading to the development of considerable number of new towns. As an example, based on the new towns policy of 1985, four new towns were established in Tehran metropolitan area to meet the growing population of the city, including, Pardis, Hashtgerd, Andisheh and Parand. This paper has focused on one of the key questions regarding the projected population growth and settlement. While the population of many existing cities located nearby areas increased dramatically, the new towns failed to settle their projected population. This research has used several variables to compare the conditions of Pardis new town and its peripheral urban centers. The methodology of this study is "comparative analysis" in which the population growth trend of Pardis New Town, comparing population settlements of its peripheral area. The results show that Pardis New Town has not been successful as much as other settlements located in its peripheral area. Most of existing and informal new settlements located in its peripheral area have faced dramatic population increase during the development of Pardis new town, such as Boomehen city. Several reasons can be raised for the failure of population settlements, including, extensive bureaucracy in the process of land allocation in new towns, lack of infrastructure and public facilities, lack of coordination between various governmental organizations and lack of a clear policy towards employment issue. The new towns policy was mainly designed in isolation from other policies, such as planning at the regional scale and growth centers strategies, neglecting integrated development plans.

Keywords: New towns, Peripheral urban centers, Settlement, Pardis New Town, Tehran.

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1. INTRODUCTION

Historically, the construction of contemporary new towns in Iran began about 70 years ago when the new company town of Abadan was developed in the south-west of the country based on oil industry requirements. However, the most important policy towards the establishment of new towns was initiated in 1985, leading to the development of considerable number of new towns. The main reason for the initiation of this policy related to the tremendous population growth rate. From 1976 to 1986, the annual growth rate in Iran reached 3.9 per cent, one of the highest rates in the world. New urban areas were likely to be characterized by spreading shanty towns formed largely without basic services (see Azizi, 1995 and 1998). Therefore, the establishment of new towns policy was one of the policies aimed to counter the population growth of larger urban centers. Between 1985 and 2002, 17 new towns were planned, and are currently under construction (NTDC, 1999 and MHUD, 2001). The number of designed and implemented new towns in Iran is very high, compared to many other countries, setting many issues for discussion.

Designing and constructing relatively large number of new towns in a short period of time has led to several complicated problems. The most important question is whether the creation of new towns on such scale is necessary in the country and whether the population extent and lapse of time is necessary" (NTDC, 1990, p 11, Etemad, 1999, p.4, Zanjani, 1990; Ardeshiri, 1999). A main question can be that whether the established new towns have reached their projected population, comparing their peripheral urban centers. The objectives of this study are: 1) providing a clear picture of the population settlement trend, using the case study of Pardis new town comparing unplanned peripheral settlements; 2) examining the reasons of the failure of this new town in terms of population settlement trend. Pardis new town is one the most important new towns in Iran located some 25 kilometers east of the capital, Tehran. The paper contains four main sections. The first section gives a brief literature of new towns experiences in some developed and developing countries. The second section gives an overview of new towns established in Tehran metropolitan area. The third section discusses and analyses the effectiveness of the policy implementation in the case study area. Finally, concluding remarks are presented in the last section.

1.1. An Overview on the New Towns in Tehran Metropolitan Area

Four new towns have been established in Tehran metropolitan area to meet the growing population of the city (for Tehran city profile see Madanipour, 1999). These new towns are Hashtgerd, located some 65 kilometers to the west, Parand, 30 kilometers to the south, Andisheh, 30 kilometers to the south-west and Pardis,

20 kilometers to the east (Figure 1). Their projected population varies from 150000 to 500000 (Table 1).

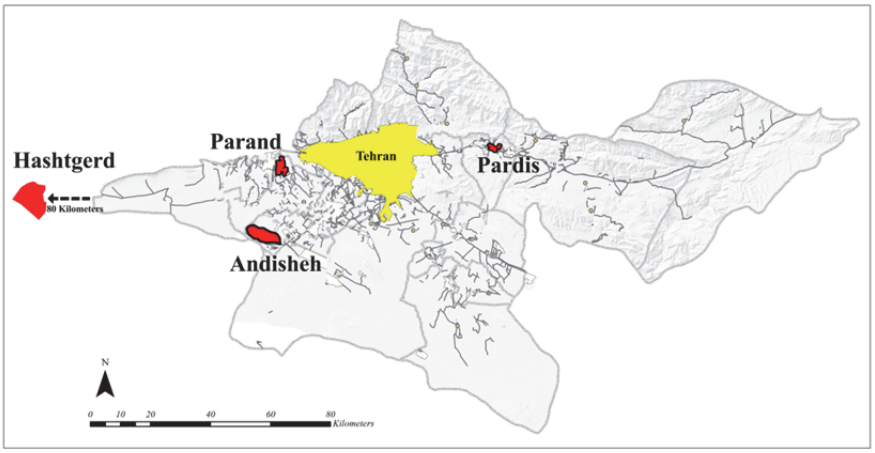

Figure 1. The location of four new towns in Tehran metropolitan area

Table 1. Initial data and information about the new towns in Tehran metropolitan area (Source: NTDC, 1990, p. 9-10.)

	New town	Initial Proposed Area (h)	Distance from the edge of Tehran (k)	Initial Projected Population
1	Hashtgerd	4,000	65	500,000
2	Andisheh	1,000	30	150,000
3	Parand	3,400	30	300,000
4	Pardis	3,000	20	300,000

2. A BRIF LITERATURE REVIEW ON NEW TOWNS

Many new towns experiences can be found in both developed and developing countries. Ebenezer Howard and his advocacy of garden cities in Britain in the early twentieth century are now recognized as the originator of the new towns movement. However, the most recent developments are mainly based on the need to accommodate urban growth. New towns are also established for various other reasons: to implement decentralization policies and relocation of existing population, to provide a capital; and to accommodate specific large projects (see Rodriguez-Bachiller, 1986). Examples of new towns can be found with different approaches and objectives. For example, in Britain, new towns policy played a crucial role in establishing new settlements. It was to channel the pressures for growth of London (Hall, 2002, p. 107-110). Other examples of new towns

experinces can be found in the Western Europe, the Scandinavian region and in the U.S. (see Nottmeyer cited in Lejeune, 1996, p.191; Krier and Kohl cited in Lejeune, 1996, p.185; Hall and Ward, 1998, p.91; Hall, 2002, p. 175, Madanipour, 1996, p. 209-210)

In developing countries, several examples can be found. In Venezuela, for example, large new towns with populations of over 300,000 have been constructed to serve as growth centers and accommodating growth alternatives to Caracas (Turner in Golany, 1978, p.250). In Turkey, it is discussed that new towns are not necessarily successful in preventing the development of informal settlements (Mahmud, and Duyar-Kienast, 2001, p.272 and Dundar, 2001, p.391). For new towns policies in Saudi Arabia see Anis-Ur-Rahman and Tarek Ali Fadak, 1991, pp.172-178. In Malaysia, new towns were often developed as small industrial centers In African region, several new towns have been developed for the purpose of attracting large-scale industries mainly related to the process of agricultural produce, such as Huambo New Town in Angola (Turner in Golany, 1978, p.250-270). In the Middle East, Egypt's new towns policy is believed to have been a major contributor towards meeting several objectives, such as increase in the demand for high density housing, better sanitary conditions, efficient urban infrastructure, improved housing opportunities, managing overcrowding and spontaneous developments in large cities (Feiler in Shidlo, 1990, p. 128; Feiler in Shidlo, 1990, p. 134 and Acioly Jr cited in Jenks and Burgess, 2000, p.130).

While new towns can respond to the needs of increasing levels of urbanization and urban growth, many problems exist with the strategy (Logue cited in Kehoe, 1976, p.41; Schaffer and Thomas in Golany, 1978, pp. 22-23). Based on the characteristics of new urbanism and smart growth ideas which initiated in the 1990s, Hall (2002, p.206) notes that "*the new urbanists argue for a more sustainable urban form, different from garden cities or new town: a design that is human-scale and walk able, with varied land uses and good public spaces. They stress ordinances to reintroduce traditional kinds of neighborhoods – examples of which can be found in California*".

Generally, various goals and criteria are used for judging new towns policies, such as high quality model of town planning; economic feasibility & development flexibility; physical functions; compatibility with local history, culture and environment. As discussed in the introductory section above, Iran has experienced considerable new towns developments during the last three decades. This policy presents a challenge to Iranian urban and regional planning and this paper can be a contribution to this subject.

3. METHODILOGY

There are several specific questions arising out of the Iranian new towns policy objectives and its implementation. As noted before, this paper has focused on one of the key questions regarding the projected population achievement as well as a comparison with their peripheral urban centers. Several factors may affect the success or failure of population settlements in new towns, including geographical location, distance from the main city, employment opportunities, public transportation, as well as land and housing prices in their main cities.

This research has used several variables to compare the conditions of Pardis New Town and other urban centers located in its peripheral area (Figure 2), using the following variables:

1. Comparison of the population of Pardis New Town and its peripheral urban centers,
2. Comparison of the migration rates to Pardis New Town and its peripheral urban centers, 2006-2016,
3. Comparison of the migration rates to Pardis New Town and its peripheral urban centers, 2006-2016,
4. Comparison of the emigration from Pardis New Town to other places,
5. Number of constructed dwellings in Pardis New Town and its peripheral urban centers, 2006-2016,
6. Provision of infrastructure and public facilities.

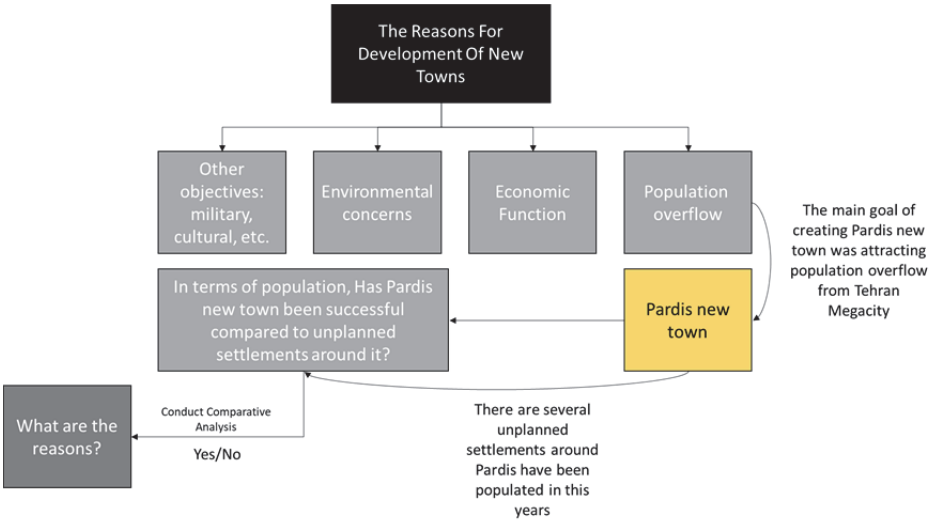

Figure 2. The conceptual framework and process of the study

4. ANALYSIS AND DISCUSSION

As mentioned before, the construction of Pardis New Town began in the late 1980s. The beginning phase of the implementation was under a land development project with some 250 hectares of land, yet its master plan had not been prepared (Table 2). Population settlement in Pardis New Town began in early 1990s. As Figure 4 shows, the population of the town reached from 490 persons in 1986 to 73363 persons in 2016. Based on the new town first master plan approved in 1993, the projected population was 200000 for the year 2016, while the latest national population census of the country in 2016 indicates that its population reached to 73363 residents in 2016, about one third of the projected population (Figure 4).

Table 2. Pardis New Town data after the approval of its master plans (Source: NTDC, 1999).

Approval date	Projected area in 1985	projected area in master plan	projected population in 1985	Projected population in master plan
1995	3000 hectares	2000 hectares	300,000	200,000

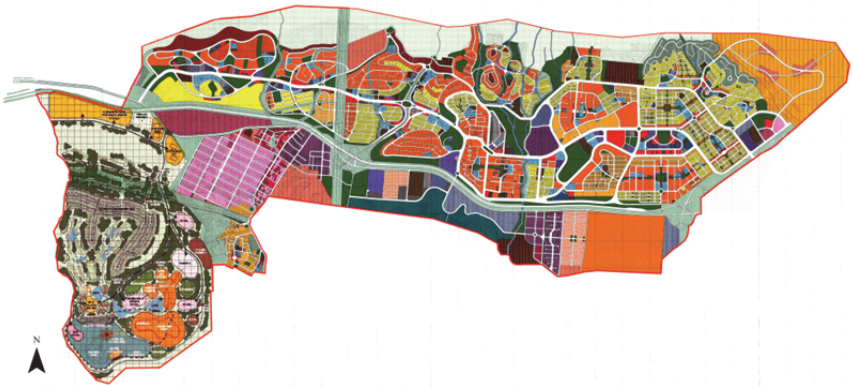

Figure 3. The latest Pardis New Town Master Plan, approved in 2005 (Source: Peikadeh Consultants, 2005)

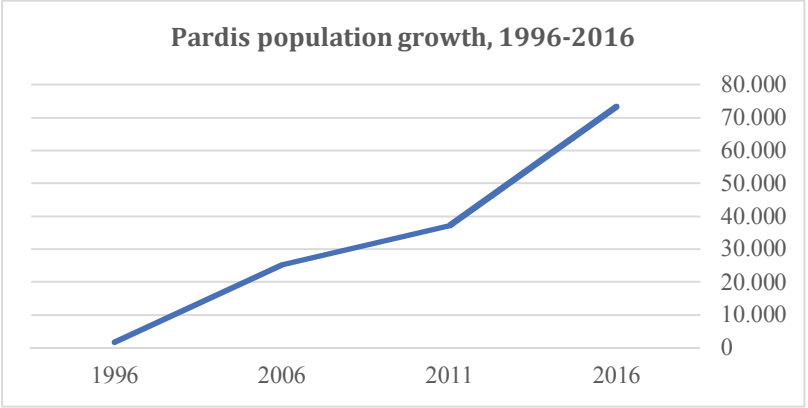

Figure 4. Trend of population growth in Pardis New Town, 1996-2016

4.1. Process of population settlement in Pardis New Town and its peripheral urban centers

Three major urban centers located in Pardis New Town peripheral area, including the cities of Bumehen, Rudehen and Damavand. The city of Bumehen is closest city to this new town, attached and side by side (Figure 5). This city has been one of the most rapidly growing cities in Tehran province in recent decades. The population of this city was only only 7142 people in 1986, but it increased to 79034 in 2016. The second city is Rudehen, some five kilometers distance of Pardis. The population of this city was 6674 people in 1986, reached 28533 in 2016. The third city is Damavand, a historical city located some 20 kilometers in the east side of the new town. The population of this city was 15309 people in 1986, reached 48380 in 2016. The population of these two cities with a relatively historical background has been steadily growing over the last few decades. However, as Figures 6 and 7 show, major fluctuation population growth rates are seen for the new town comparing the other three urban centers.

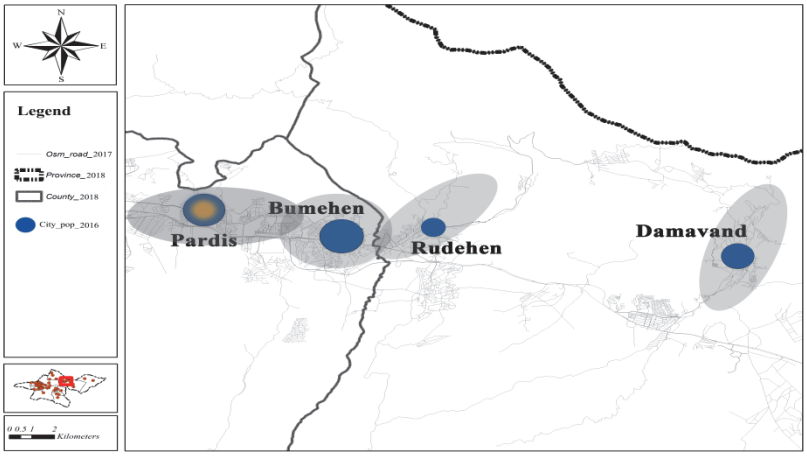

Figure 5. The location of Pardis New Town and its peripheral urban centers

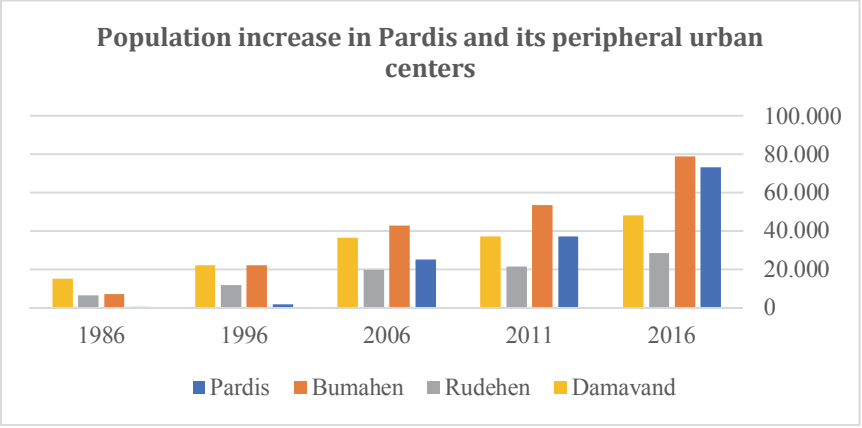

Figure 6. Comparison of the population increase in Pardis New Town and its peripheral urban centers

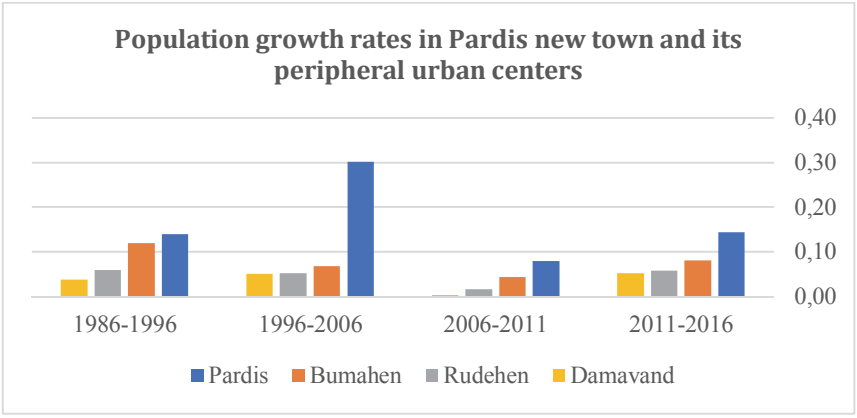

Figure 7. Comparison of the population growth rates in Pardis New Town and its peripheral urban centers, 1986-2016

From migration point of view, the figures of the new town and its peripheral urban centers were compared. Figures 8 and 9 indicate that Pardis new town and the city of Bumehen have again different situations in migration, comparing the other two cities. Pardis and Bumehen have had abnormal situations and remarkable migration rates. While the cities of Rudehen and Damavand have had normal rates. This issue is also seen from emigration point of view (Figures 10 and 11).

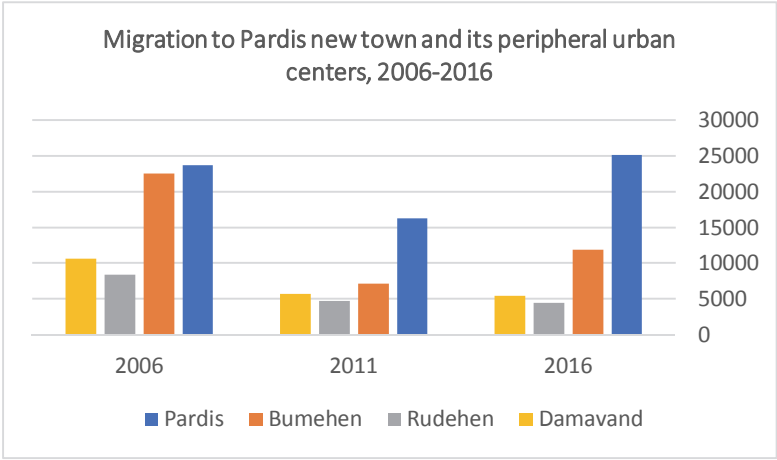

Figure 8. Comparison of the number of migrants to Pardis New Town and its peripheral urban centers, 2006-2016

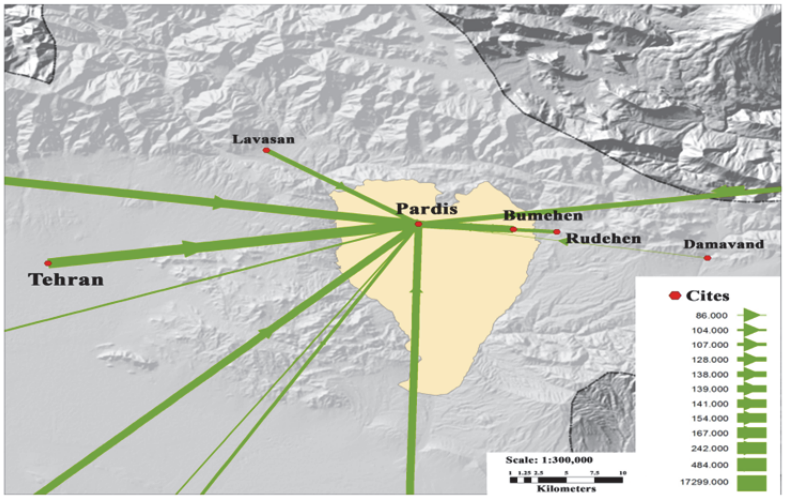

Figure 9. Migration from other places to Pardis New Town, 2011-2016

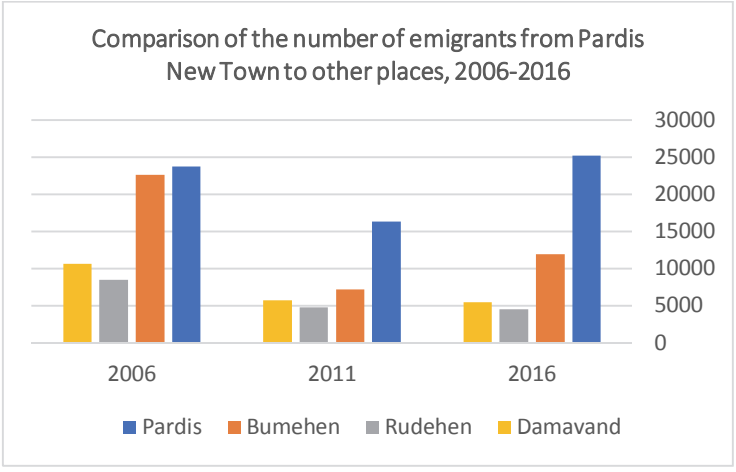

Figure 10. Comparison of the number of emigrants from Pardis New Town to other places, 2006-2016

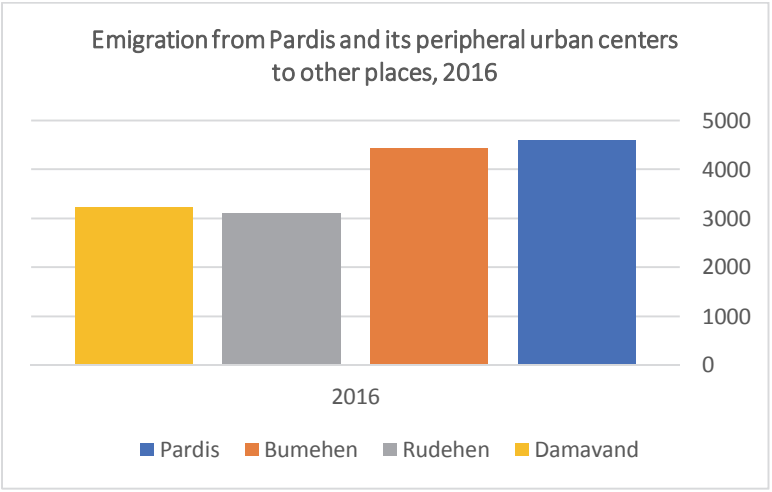

Figure 11. Emigration from Pardis and its peripheral urban centers to other places, 2016

Several factors may affect the success or failure of the projected population settlement in this new town. The first factor relates to land subject. According to the policy, land for all new towns was provided through public land acquisition; using free national lands that have been in the government possession (see Azizi, 1998). However, allocation of cheap land to housing corporations and other developers confronted extensive bureaucracy. Second, the lack of employment opportunities has been another key factor in the failure of population settlement in new towns in. Regarding employment issue, it is notable that Iranian new towns can be divided into two groups. Some new towns initially were established to respond to the accommodation needs of the previously established industrial areas. Therefore, these types of new towns had not a serious problem from employment point of view. For other new towns, a specific zone was prepared as an industrial zone to provide new jobs for the new residents. For Pardis new towns too, a specific zone provided which then named as Pardis Science and Technology Park. Provision of housing and infrastructure issues are discussed below

4.2. Provision of housing in Pardis New Town and its peripheral urban centers

One of the key aspects in the analysis of new towns can be the process of housing construction and residential settlement. Housing construction in Pardis New Town began in early 1990s. The first phase of the new town was developed and the settlement started in the mid-1990s. Figure 13 shows some images of housing construction process and Table 3 shows the number of completed and

under construction dwellings together with the number of residents in 2001. These show the steady growing of housing construction and residency in the new town in the early years. However, these figures changed later. Figure 12 shows almost similar processes for the new town and the city of Bumehen, but different figures for the two other cities. The number of constructed dwellings for the new town as well as the city of Bumehen dramatically increased. Nevertheless, the major challenge here is the difference between population settlement and the amount of housing supplied. The amount of constructed dwelling does not match the number of population and residents. For example, the number of residents in 2016 was 73363 people, while the number of provided housing was 23709. With an average family size indicator (4 persons), it indicates that there was over 5000 inhabited dwellings. Furthermore and importantly, more dwellings are under construction in the new town (Figure 12). It is expected that when undergoing housing dwellings are completed and habited, new towns' population would considerably increase.



Figure 12. Some images of Pardis New Town (Images by author)

Table 3. Number of dwellings (completed and under construction) and number of residents in 2001 (Source: Calculated from NTDC, 2001)

	New town	Number of completed dwellings	Number of residents (persons)	Number of under construction dwellings
3	Pardis	3,740	17,520	16,745

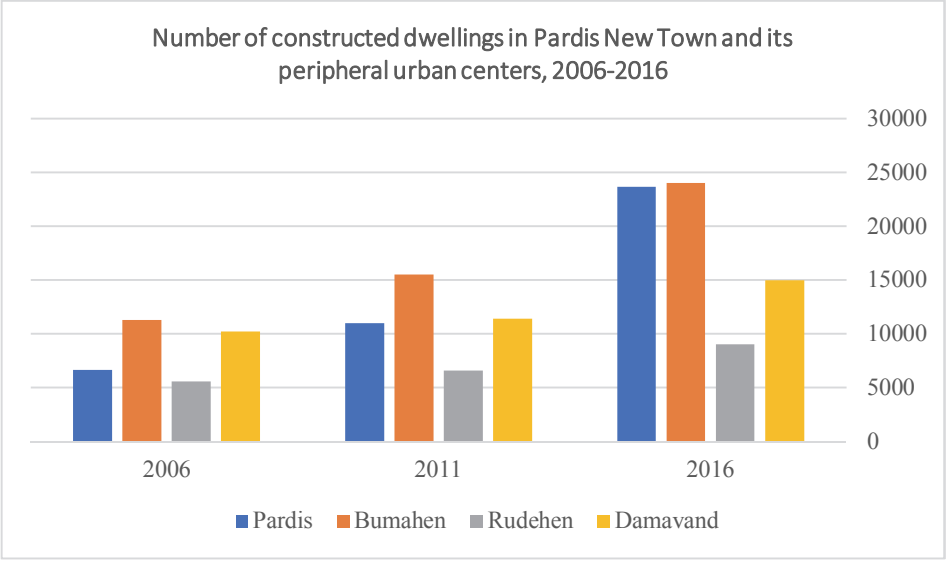

Figure 13. Number of constructed dwellings in Pardis New Town and its peripheral urban centers, 2006-2016

4.3. Provision of Basic Infrastructure and Public Facilities

As it was mentioned before, construction of all new towns was started by a land development project as a first neighborhood. In these neighborhoods, basic infrastructure (such as water, roads networks, electricity and sewage systems) as well as public facilities (such as educational, health, green, cultural and commercial spaces) were supposed to be provided. According to the experiences and available information, basic infrastructures projects have been provided for land development projects, but provision of public facilitates confronted serious problems. It is notable that based on the government policies and regulations, a user pays system applied to the provision of these services (see Azizi, 1995 and 2000). Lack of coordination between various governmental organizations for the provision of public facilities was among the main reasons for this problem. Until 2001, lack of a coherent and integrated law for creation of new towns may be

seen as one of the most important problems. According to this law, all ministries, governmental institutions and corporations must cooperate in the development of new towns. Furthermore, lack of efficient public transportation, such as metro lines, can be other factor affected in less population settlement.

5. CONCLUSION

Global experiences of new towns establishment show that they may have different goals and objectives, such as decentralization of large cities, providing housing, especially for low income people and creation of new patterns for settlement. Iranian new towns policy intended to respond to the remarkable population increase of the large cities as well as to meet the requirements of the newly established industrial projects. This research aimed to analyze this policy from mainly spatial planning point of view. It concentrated on the comparison between residential settlement process in new towns and their peripheral urban centers, using the case study of Pardis New Town located in Tehran metropolitan area. Existing data and information show that the trend of population settlement in Pardis New Town has been less than the projected figures. Several factors affected the failure of the new town in population settlement in this town in spite of massive housing supply, such as employment opportunities, lack of public facilities and public transportation.

The new towns policy in Iran was mainly designed in isolation from other policies, such as planning at the region scale and growth centers strategies. In other words, the position and stand of the established new towns has not been defined in the context of urban and regional planning of the country. The policy has neglected integrated development, particularly considering the site selection criteria. Lack of urban life in new towns is seen as the most important weakness in planning and designing of these towns. Availability of suitable jobs and providing infrastructure and public facilities have key role in the success of new towns. The establishment of new towns must be defined in the context of spatial planning at both national and local levels.

ACKNOWLEDGEMENTS

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TRANSFORMATION OF LANDSCAPE IN THE HISTORICAL PROCESS

Şeyma SARIARMAĞAN*, Mustafa VAR*

ABSTRACT

Spaces are always formed by societies according to the social, economic, political and belief values of the time. Like buildings, landscapes also take shape according to different functions and purposes within the scope of these values. With this study, it is aimed to examine the symbolic and functional values of the landscape by evaluating the change of the landscape in the historical process. It has been examined how landscapes are produced periodically in the history of humanity, depending on the social, cultural and economic structure. In the study, verbal and visual data were evaluated in the analysis process by using literature data from primary and secondary sources, and findings were obtained. According to the data obtained from the study, although the landscape exists with the history of humanity, it has evolved from the garden scale designed for private purposes in the first periods of history to the design of urban areas for the whole society / arrangement of public lands. Landscape, with its social, economic and environmental dimensions, has become an indicator of modernity, which is a solution to the problems of every period. It is seen that the landscape, which is an integral part of humanity, will continue to develop and transform within the framework of the interaction in the context of time-space.

Keywords: Landscape, time-space, transformation.

1. INTRODUCTION

The combined effect of driving forces such as urbanization, accessibility, globalization, and disaster, albeit different in each period, causes people's perceptions of nature to change. For this reason, it is observed that the way of using and shaping the landscape changes with the value of the landscape every period (Antrop 2005). The change of the landscape is continuous because it is the result of the interaction of dynamics between the natural and cultural forces

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in the environment. Although the landscape has a complex structure consisting of unique natural and cultural combinations in various geographical regions, it is constantly changing due to internal and external factors. Although internal factors can be controlled at the local level, external factors are mostly indirect and international economic strategies and actions at different policy levels are effective on external factors (Antrop 2000). The landscape takes shape according to the complex history and lifestyle of a region, and the cultural diversity in the regions in the historical process causes rich landscape diversity.

According to Henri Lefebvre (2014), every society that was born in history has shaped its own spaces with its geographical, political and social characteristics. Society builds these places through labor, war and revolutions, politically and diplomatically. According to Lefebvre (2017) Ritmanaliz, the formation of time and space consists of cyclic and linear repetitions. Cyclic repetition comes from nature; days, seasons, monthly cycles, etc.; linear repetition comes from social practice, hence human activities; The monotony of actions includes imposed structures. According to David Harvey (2003), understanding the connections between economic, political and cultural processes is possible with time-space definitions. He expresses the destruction of spatial boundaries, that is, the destruction of space in time, as a time-space compression. The landscape undergoes symbolic and functional changes over time by intertwining changes at the local scale with capitalism, globalization trends, time-space compression, consumption, identity, technological and scientific discoveries (Terkenli 2005). The concept of landscape and its perceived reality is a registered cultural object that changes according to the perception frameworks of space and time (Cauquelin 2007). In this study, evaluating the transformation of the landscape in the historical process; How landscapes are produced periodically in history is examined.

2. PERIOD OF LANDSCAPE

According to Marc Antrop (2005), it is necessary to understand three periods in order to understand the landscape. Firstly; It is the traditional landscape before the 18th century. The second is; industrialization and the process from the 19th century to the second world war. Changing lifestyle and thinking on land and environment; It forms the landscape of the industrial revolution, where the traces of the past are diminished and irreversible breaks exist. As the third; It is the landscape formed after the world wars with the increase of globalization and urbanization. These landscapes are called post-modern new landscapes.

2.1. Traditional Landscape

As stated in historical sources, the first place where mankind established a settled civilization is lower Mesopotamia. The reason for this is the existence of fertile

alluvial soils carried by the Euphrates and Tigris rivers and that these lands provide people with the opportunity to farm; Due to the annual floods of the river, the first communities in history made the Sumerians and Babylonians an obligation to fight nature. The city of Babylon in Lower Mesopotamia gave the first garden example in history. As seen in Figure 1.a, hanging gardens of Babylon were built that covered the royal palaces. These gardens are in the form of a roof garden or a roof garden, and there are some lodges and pergolas that are generally made of bricks. Another of the ancient civilizations is the Egyptian Civilization developed in the valley of the Nile. Elements of monumental character are included in the Egyptian landscaping, this majesty of ideas, It has been applied wherever it can display splendor and power. Symmetrical layout, high walls and magnificent trees are seen in the temple and the king's gardens (Gültekin 2001). In this period, the desire to reach the sky is supported by high temples and magnificent landscape elements.

Ancient Greek culture was born with the combination of Egyptian, Aegean and West Asian cultures. Urban texture, ecological conditions, social life of the people and religious beliefs are the most important factors in shaping the Greek landscape. For this reason, garden arrangements were made in parts of the city such as Agora, Gymnasium, Hippodrome and Temple (Figure 1.c) in ancient Greece. Especially as seen in Figure 1.b, the city square (Agora) is the squares where the people are shaded under big trees. In Ancient Rome, which was founded on ancient Greek culture, the example of home and garden was taken from Ancient Greece. Tree boulevards, geometric water channels, sculptures, columns are common. As a continuation of the agoras, it has turned into forums with theater, bath and circus areas (Gültekin 2001). Symbolic landscape elements such as wide boulevards and road afforestation and sculpture are seen to increase in ancient Rome.



Figure 1: a. Hanging Gardens of Babylon (Mesopotamia), b. Ancient Agora of Athens c. Temple of Hephaistos Garden (Athens)

When the Roman Empire broke up in 330 BC, the Eastern Roman Empire (Byzantine) was born in the east and the Western Rome was born in the west. While the capital of Byzantium was declared Istanbul (Constantinople), on the

other hand, the empire was affected by eastern culture due to trade and war in Asia. Byzantine gardens are highly influenced by Persian gardens. Byzantine gardens resemble imitations of Persian carpet patterns (Jellicoe 1975).

When it comes to Islamic gardens, the first thing that comes to mind is Turkish gardens in Central Asia and India, and Iran and other Arab gardens after Islam. The most important of these they are gardens of Spain, and as seen in Figure 2, elegant thin columns, horseshoe triangular or circular arches, tiled floors, and steadiness and simplicity are also present in architecture. Spanish gardens are dignified and calm places. The sense of privacy prevails in the garden features; introversion is a general feature of Islamic gardens. The usage style of water in Islamic gardens draws attention. Water is a landscape element for muslims that they can put their hands in and play with (Akdoğan 1974). Islamic gardens stand out with their elegance, simplicity, privacy and calming effects. The effect of the longing and dream of a paradise garden in the understanding of Islam is seen in the garden space.

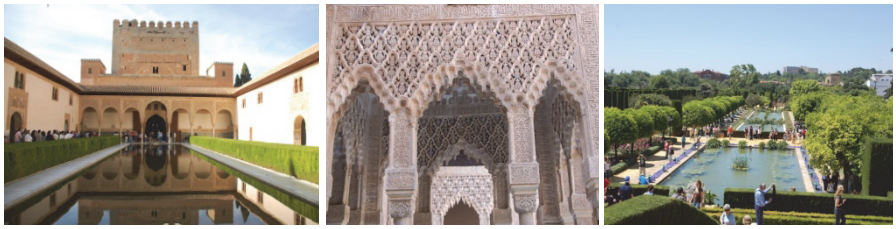

Figure 2: a.b. Alhambra (Andalusia, Spain), c. El Cesar (Spain)

After the collapse of the Roman Empire, medieval cities have an organic urban texture suitable for human scale and natural conditions, topography and climate. Narrow and winding streets; Adjacent regular residences and back gardens are visible along these streets. Since the city is clustered around the church and the cathedral, it has always been considered with large squares (Mumford 2007). In the medieval period, squares are landscape elements used as an important public space where urban life is maintained as a part of social and economic processes.

In medieval cities, narrow and cramped streets, deprived of green and irregular urban structure are observed due to being surrounded by ramparts as seen in Figure 3.a due to protection concerns. In Medieval Europe, which has a closed economy, vegetables and fruits are grown to feed only in small areas between buildings and herbaceous plants for diseases. As seen in Figure 3.b, the monastery gardens, pools, terraces, fruit and vegetables serve as a recreation with the parts where medicinal plants are grown. (Laurie 1976). In this period, private gardens were not given much space due to the limited time in other parts of the society except for very wealthy people for pleasure and pleasure

(Var, 2015). In the Middle Ages, monasteries and castle gardens (Figure 3.c) are gardens with courtyards where daily and special activities are held.



Figure 3: a. Osnabrück (Germany), b. Monastery Gardens (Germany) c. Castle Gardens (Cardiff)

A new Islamic power developed in West Asia during the Mongol Empire; Seljuk Empire. There is very limited information about the quality of Turkish-Islamic garden art during the reign of Anatolian Seljuks. The reason for this is the ban on painting in the understanding of Islam. While the Seljuks collapsed, the Ottoman Empire emerged as a new state. The Ottomans conquered Istanbul in 1453 in a short time (Evyapan, 1974). With the conquest of Istanbul, the Middle Ages closed and the New Age started.

Between the 15th and 19th centuries in Europe, social and urban changes that form the foundations of the industrial revolution are observed in the periods described as Renaissance and Baroque periods. In the 15th and 16th centuries, the Renaissance period is the age of art as well as the information age. It is based on the perspective of ideal city, ideal person, ideal society. In the Middle Ages, there was fear of nature due to religious belief, but the idea of approaching nature was developed in this period. Renaissance gardens emerge in accordance with this idea. In this regard, the city of Florence leads the way with its special artist staff (Oldham and Ray 1980).

The emergence of the Renaissance gardens was revealed by the active work of architect Leon Baptista Alberti. Alberti considers the garden together with the building (Villa) architecture. Villa d Este (Figure 4.a) in Tivoli and Villa Lante (Figure 4.b) in Bagnania, made in Italy in the mid-16th century, are important works (Gültekin 2001). Despite the possibility of war in the future, strong love of nature could not prevent people from spreading outside the city walls. In parallel with the increase in culture and wealth, the love and curiosity of villas has increased and villas have gained importance as living spaces where tranquility and happiness can be found with their beautiful gardens. The first Renaissance villas were originally built in the vicinity of the city's fortress walls and on fairly flat terrain. However, the polluted air of the city, various chaos, and most importantly, the concern for protection from epidemic diseases, especially from

the plague, gradually attracts the villas to the hills and areas overlooking the landscape (Var 2015). Cultural landscapes were built after the Renaissance; villas, palaces and castles were used as indicators of wealth and power; ordinary landscapes are hardly covered (Preece, 1991). As seen in Figure 4.c, in the Renaissance period, an effort to create a conscious order and aesthetics against the natural structure of the Middle Ages is observed. It is desired that the landscape in the city form an integrity with the surrounding buildings.



Figure 4: a. Villa D'este (Tivoli, Rome), b. Villa Lante (Bagnaia, İtaly), c. Medici Villa Castello (İtaly)

During the Renaissance, Hyde Park in London, which was designed as a hunting area for the Royal in 1536, was opened to the public by Charles I in 1637 (Porter 2000). In the same period, it is seen that areas used for different purposes in Europe were transformed into city parks.

When we look at the landscape and garden art in Istanbul after the conquest of Istanbul, the first palace built by Sultan Mehmed the Conqueror in Istanbul after the conquest is the "Old Palace", which is a high hill, located in the area where Istanbul University is located today. The Old Palace is seen in the center of the city, surrounded by four-corner high walls as seen in Figure 5.a. As seen in the second volume of Hünername, as seen in Figure 5.b, a deer with green horns collapsed in blood with the arrow shot by Sultan Süleyman and a high red painted fence of the palace at the back are seen, there are cypresses and flowering trees in the garden. It can be stated that the garden of this palace is not very small, since special sections can be allocated for this kind of hunting games (Atasoy 2002).



Figure 5: a. b. Old Place Garden

The Ottomans established many palaces and gardens after the 15th century. The most important of these is Topkapı Palace. The palace consists of five courtyards. The courtyards consist of squares where great ceremonies are held, pavilions, paths with trees, gardens where vegetables and fruits are grown and adorned with bushes and flowers (Atasoy 2002). Turkish landscape art is a combination of formal and informal order, the feeling of being close to the ground, a closed courtyard system, a place for animals in the garden and giving pleasure and peace. Topkapı Palace has planning features in which Turkish landscape art features are seen (Bekar 2016). It is seen that palace gardens are intertwined with nature, unpretentious, simple, with love and respect for nature, and based on the longing for paradise in the Islamic belief.

In the middle of the 16th century, Turkish gardens showed great improvements by preserving Iran's traditional understanding of gardens. Plants such as tulips and hyacinths unique to the Turks attracted attention and admired by foreigners (Johnson 1979). In the 17th century, the effects of the Grand Style French gardens can be seen in the palace gardens. Palaces and gardens were built in various parts of Istanbul, including the Bosphorus and the Golden Horn, in a short time known as the 18th century Tulip Era (1703-1730). The most important of these is the Sadabat Palace and Garden, which was established on the plain of the Kağıthane valley, seen in Figure 6a. As seen in Figure 6.b, Kağıthane valley has been used as a promenade and a picnic area in Istanbul (Eldem 1977).



Figure 6: a.Kağıthane Sadabat Place b. Kağıthane Promenade (Picnic Area)

Renaissance innovations are exemplified by Italian garden art with large style gardens and chateau, royal gardens and villa experiments in France. The French large style garden approach that emerged in the 17th century spread to Europe over time. In the French grand style garden approach, geometrical order, regular axes, vistas, water surfaces, sculptures come to the fore (Figure 7 a.b.c) (Gültekin 2001). It is seen that garden architecture came to the fore in the field of landscape and landscape architecture from the 16th to the 19th century.



Figure 7: a. Versaille Palace (Paris), b. Harrenhousen Palace (Hannover), c. Schönbrunn Palace (Austria)

This period, known as the Baroque period with magnificent structures and landscapes in the 17th and 18th centuries, is a period when Renaissance plans were implemented. Building and garden elements in the Baroque period; There are formal order, radial axes, perceptibility at a glance, circular lines, transition from architecture to nature, the perception of space reaching eternity, unity of measure between the building and the garden (Bekar 2016). Washington D.C. As seen in Figure 8.a.b.c, in L'Enfant Plan (1791) prepared for It is seen that it entered the city in its parks and gardens that are not open to the public, and in the Baroque period, the buildings and landscapes in the city became a means of demonstrating power.



Figure 8: a.b.c. L'Enfant Plan Wastington (1791)

In the 18th century, the Ottoman state entered a period of decline, and western influences are observed in the palaces and gardens. In the 19th century, Dolmabahçe Palace, Beylerbeyi Palace, Yıldız Palace, Emirgan Mansion and Woodland were shaped by western influence. In the 19th century, baroque-influenced axes and symmetry, and garden arrangements that attach importance to plant shaping, are seen through western consulates, which are effective in palaces, mansions and pavilions (Yaltırık et al.1997). Although Dolmabahçe Palace, Beylerbeyi Palace and Yıldız Palace have the landscape features, they have a westernization effect under the influence of Renaissance and Baroque (Bekar 2016). In this period, it is seen that the functional use of the landscape has decreased and there are more aesthetic applications. In the Ottoman period, the landscape is generally shaped within the framework of social life and religious belief.

2.2. Landscapes of the Revolutions Age

With the start of an economic transition in England in the 18th century, the transition from labor to machine-based production, the development of the textile industry, new iron making techniques, refined coal for energy began to be used. This fuel promoted the transportation of goods and people through the development of steam power, railways and ships, which greatly increased production capacity. One result of this technological progress has been the uncontrolled growth of cities. However, the physical and institutional infrastructure of the cities is not ready for urban growth, which has caused poor living conditions. As shown in Figure 9.abc, air pollution due to coal-fired factories, polluted drinking water, diseases caused by hazardous waste and solid waste management, narrow streets filled with animal corpses and manure, insufficient roads for the transmission of goods and services, airless and lightless residences problems such as dangerous and unethical working conditions and excessive income inequality have emerged (Eisenman 2013).



Figure 9: a. Manchester (England), b. Yorkshire (England), c. Hamburg (Germany)

The mass production of modernity, commodification, new technologies, and the concentration of capital have led to the emergence of new urban regions and social movements. Thinkers like Le Corbusier, Ebenezer Howard, and Frank Lloyd Wright have been representatives of some of the spatial approaches in which these changes occur. Corbusier's skyscrapers in the park, Howard's Garden Towns and Wright's Broadacre City offer alternatives to the dysfunctions of the medieval urban form disrupted by industrialization (Young 2016). Another of the various urban movements to correct the changing urban structure with the industrial revolution is the Beautiful City Movement, which is the most effective in America. The aim of this movement has been to provide social and physical recovery by planning green areas in cities as well as physically renewing the cities. In the 19th century, parks are seen as natural shelters for the problems of industrial cities. Central Park in New York (Figure 10.a) was first planned by Olmsted by examining the parks in Europe and was built between 1857 and 1861. The Beautiful City movement in the early 20th century resulted in the construction of numerous parks (Steiner 2008). In Boston, which coincides with

the same period, Back Bay Fens (Figure 10.b) forms the city's drainage system connecting the green areas of the city in the city (Corner 2006). During this period, parks responded to human demands such as recreation, environmental quality, and physical and social activity (Pankhurst, H. 2010). As seen in Figure 10.c, with the park movement that started with Olmsted, many parks and romantic sub-cities were implemented in America.



Figure 10: a. Central Park (New York), b. Back Bay Fens (Boston), c. Prospect Park (Brooklyn)

2.3. Post-modern New Landscape

World wars took place due to the increase in the need for raw materials and colonialism in the world with the industrial revolution and resulted in the destruction of European cities. During this period, parks were used as evacuation, first aid areas and to prevent the spread of fires. After the World Wars, the period of physical and social restoration started in the cities. Cities are undergoing transformation with the renewal of the city that was destroyed during the restoration, the relocation of industrial areas outside the city, and the use of the remaining old areas as green areas. One of these works is the project of transforming the old industrial and slaughterhouse areas in Paris into city parks. "" 21 for a former Paris slaughterhouse of about 51 hectares. 1982 Park de la Villette competition was opened with the name "City Park for the Century" (Waldheim 2006). According to the winner of the competition, Bernard Tschumi, the lifestyles and needs of the 21st century urbanite are different from the 19th century urbanite (Tschumi 1983). Landscape allows the solution of physical and social problems in the city in this period.

The dynamics and breadth of modernism reveal their own stress factors, and the global conflict in the markets at the end of the world wars, the centralization of science and technology, the attachment of social controls to institutions, and criticism of alienation in new metropolises led to post-modernism (Young 2016). After the second half of the 20th century, with the rise of socio-ecological awareness in the world, the development of computer technology, and the "Design with Nature" work of Ian Mcharg, published in 1969, an important breaking point was experienced in the landscape. It is stated that the biophysical,

social and economic characteristics of the landscape should be evaluated in a holistic manner (McHarg 1969). In the second half of the 20th century, a more holistic approach towards landscape management is seen and interdisciplinary studies are aimed.

In the 21st century, the concept of landscape is changing due to environmental and global awareness, developing tourism and identity creation, and the rural pressure of urban sprawl. Landscape creates an alternative cross-section in contemporary urban planning, with the ability to conceptually organize places, regions, ecosystems, networks, infrastructures and large urban areas. This paradigm, defined as landscape urbanism, was introduced in 1997, and today, successful examples are seen in recent years, which see the dynamics of the landscape as an alternative to architectural blocks. In the High Line (Figure 11.a) project in New York in 2008, it was transformed into a city park by preserving the identity of the old railway. Fresh Kills Lifespace (Figure 11.b) is the project of rehabilitating the old waste storage area planned to be completed in 2035 and transforming it into a city park (Corner 2006). Nord Steelworks Park (Duısburg), former coal gas plant and its environs transformation project Gas Works Park (Washington) (Figure 11.c), military air superstructure Downsvıew Park (Toronto) et al. are examples where the landscape allows for change and transformation (Waldheim 2006). In this context, today it is seen that the landscape is a pioneer in the renewal of public land management (Cauquelin 2007).



Figure 11: a. High Line (New York), b. Fresh Kills Lifespace (New York), c. Gas Works Park (Washington)

Landscape urbanism, urban space organization; regulating the economic, political and social future; seeing urban areas as self-regulating spaces; It is an approach that suggests the use of public landscape areas. Landscape has layered, anti-hierarchical, flexible and strategic features in all urban activities (Waldheim 2006). The pressure of globalization from the 20th century to the 21st century creates awareness on local identity and regional diversity. Various attempts are made to create new spaces and these areas are urban spaces that can adapt to the changes of contemporary cities and citizens. In this context, landscape urbanism is the production of urban flexible areas by superimposing

the ecological, economic, social and political regulation values of the landscape. These are studies in which natural ecologies, infrastructure, social and cultural layers of the city are integrated. It is aimed to design areas with identity, long-term economic gain, natural permeability in urban areas.

3. CONCLUSION

In the medieval period, especially due to social, economic and religious beliefs, the landscape in the city was used in a smaller scale, organic and functionally to meet daily needs. With the Renaissance period, it is seen that it has a more organized and more artistic and aesthetic structure. In the Baroque period, which is a continuation of the Renaissance period, there are magnificent and large landscape arrangements. With the industrial revolution, the infrastructure of which was prepared with various inventions during the Renaissance period, physical and social problems in cities are increasing rapidly. After the industrial revolution, urban parks emerged as a response to the pollution in the city, the increase in the need for people to use the city, social and physical needs, and as a remedial practice. Urban parks, which were used for various purposes in early Europe, were transformed into a park movement with Olmsted. When we look at the landscape applications of the Ottoman period in Istanbul, the first thing that comes to the fore is the palace gardens. Landscape art, which started under the influence of eastern garden art, shows the characteristics of Turkish-Islamic garden art. After the 17th century, under the influence of the age of science and art in Europe, the westernization effect is seen in the palace gardens.

In the last century, it is seen that various landscapes have been designed in order to increase human and environmental welfare in cities whose quality of life has decreased with the increase of urbanization, industrialization, globalization and accessibility. This approach, called landscape urbanism, is seen to be a guide in the planning of physical, social, economic and ecological processes targeted in urban planning. In this context, it is known that the landscape was born symbolically and was accepted in the early periods. Landscape began as a long-awaited image that could be realized with a garden approach. Over time, political, scientific and technical researches on land arrangement put the purely aesthetic concerns of the landscape perception into the background and revealed the necessity of public land arrangements (Cauquelin 2007). In this study, where we examine the change of the landscape periodically, it is seen that the landscape allows change and transformation in every period. It is seen that landscape has gained a universal value by periodically transforming from a private garden design scale to the design of large urban areas for the whole society.

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URBAN GROWTH OF A MEDITERRANEAN CITY FROM THE FRINGE-BELT PERSPECTIVE

Dalya HAZAR*, Sevim Pelin ÖZKAN*

ABSTRACT

Urban fringe belts are crucial entities for ecological sustainability as they are frequently the urban heritages, ecological corridors and buffer zones that protect natural areas. Fringe belts are also potential public spaces that usually contain open green areas, institutional areas and industrial heritage sites. The study aims to identify the fringe belt formation and modification process during the urban growth of İzmir, which is a western Mediterranean port and the third metropolitan city of Turkey. Comparative map analysis is the main research methodology of the study by focusing on the historical maps, aerial photos and master plans. In addition, consolidated fringe belts of İzmir are digitized by ArcGIS tool in order to assist in proposals for a common green belt policy within the urban planning and design strategies and the commons literature, which may improve the quality of life and ecological sustainability of the city by protecting the fringe characteristics. Thus, the study suggests that urban fringe belt planning within the green belt policies, green infrastructure and commons management strategies should be necessity to eliminate the capital-promoted alienation and enclosure processes.

Key words: Urban growth, urban morphology, fringe belt, commons, İzmir

1. INTRODUCTION

Urban fringe belts are the former urban peripheries that are embedded within the city during the historical development process. In contrast to densely built up areas, fringe belts are the potential green belts and public spaces. However, as a result of the rapid population increase at metropolitan cities, fringe belt sites are often regarded as potential new development areas. Eventually, the unique characteristics of the fringe areas and the historical identity of the city may be damaged in the process called the 'fringe belt alienation' (Hazar & Kubat, 2015).

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The first comprehensive definition of the fringe belt is that it is *"A belt like zone originating from the temporarily stationary or very slowly advancing fringe of a town and composed of a characteristic mixture of land-use units initially seeking peripheral locations"* (Conzen, 1969). Fringe belts can be defined as urban entities, which orient the city growth and have the potential to be planned as green belts and public spaces (Barke, 1990).

Open green areas, urban farming, industrial uses (including industrial heritage sites), institutional uses, sport areas, low density residential areas (e.g. villas, squatter housing) and recreational areas can be included among the fringe belt land uses. Open green areas include urban parks, urban forests, orchards, recreational areas, waterfront infill areas and common spaces, which are significant for the urban memory. Institutional uses include military areas, religious buildings, utilities, public buildings, campuses and water treatment facilities. Industrial heritage includes old industrial zones, warehouses and empty/vacant land (Barke, 1982).

The property ownership structure in fringe belt development is also significant. Squatter housing development on the common public land and agricultural land is especially visible (Vilagrasa, 1990; Carter & Wheatey, 1978). However, there are contradictory views about whether the squatter houses are the fringe belts or not (Vilagrasa, 1990; Ünlü, 2013). Therefore, in this study, the squatter houses are categorized as belonging to a 'pre-alienation phase'.

The development of research about fringe belts can be categorized into four themes: spatial, economic, social and planning. From the late 1990s to the present day, several studies explain the potential interrelationship between fringe belts and integrated planning and design policies (Whitehand & Morton, 2004); urban landscape management (Kropf, 2001; Whitehand, 2005); urban ecology and sustainable development (Hopkins, 2004).

Urban fringe belts are divided into three categories according to their time of emergence, their distance from the city center and their relationship with the fixation lines: the inner fringe belt (IFB), the middle fringe belt (MFB) and the outer fringe belt (OFB). The inner fringe belt is the oldest fringe formation around the historical core, which has the city walls as a fixation line (Conzen, 2009).

Middle fringe belts emerge closer to the city centers if the city growth is relatively slow; however, they usually emerge far from the center and in relation with the fixation lines. They have less continuous and more scatter plots than the inner fringe belts. They usually have less road networks and larger plots with open and green areas (M.P. Conzen, 2009).

One of the best examples is the urban green belt of Birmingham city (UK), which provides the survival of the scattered but well-defined Edwardian middle fringe

belt. Middle fringe belts have less development pressure than the inner fringe belts; however, they eventually modify. For example, some of the middle fringe belts of had been alienated to new development areas with a particular negative affect on urban ecology (Whitehand & Morton, 2003).

However, the Edwardian middle fringe belt of Birmingham, which emerged in 1910-1920 (after the WW1) still exist due to the green belt policy since the 1960s. The green belt and highway have become the fixation lines that limited the city growth (Ducom, 2003).

The study aims to describe the fringe belt phenomenon and investigate on the fringe belt development process of İzmir, a Mediterranean port city, by historical-geographical survey methods such as comparative map analysis. The study also suggests that fringe belts are crucial urban entities, which may limit and/or orient the urban growth and should be involved in the green infrastructure projects (e.g. Urban Green Up, Peripheral Ecological Parks) of İzmir Metropolitan Municipality. In addition, fringe belts include possible areas to constitute a more comprehensive green belt planning in the future planning and design policies.

1.1. Development of Fringe Belt Research

The development of fringe belt research can be categorized into four themes: spatial, economic, social and planning (Whitehand & Morton, 2004; Ünlü, 2013). The first theme is the emergence of the fringe belt phenomenon from a spatial perspective between 1936 and the mid-1960s, which was first recognized by Louis (1936) in a study of Berlin and later explored by M.R.G. Conzen (1960) in his studies of Alnwick and Newcastle upon Tyne as the foundation of a morphological urban growth theory. Conzen (1960) identified the fixation lines as key morphological elements in his study of Alnwick and Whitehand (1967) elaborated the concept by associating the inner and middle fringe belts with fixation lines, which are the barriers to the physical growth of a city.

The second theme involved the interrelation of fringe belts and the bid-rent theory (Alonso, 1960) as well as the building of a cycles model and innovations in transport (Whitehand, 1972) from the mid-1960s until the late 1990s. The dynamics of building slumps and fringe belt emergence, growth, adaptation, modification and alienation processes are examined mainly by urban geographers.

The third theme of fringe belt dynamics is strongly linked to the changing locations of social groups and changes in the socio-physical structure of the city (Ünlü, 2013). Fringe belt alienation in squatter houses, changing locations of the former residents, gentrification and the development of new housing areas are the examples of the social stage.

The fourth theme of research, from the late 1990s to the present day, is focused on the potential interrelationship between fringe belts and integrated planning and design policies (Whitehand & Morton, 2004); urban landscape management (Kropf, 2001; Whitehand, 2005); urban ecology and sustainable development (Hopkins, 2003). Eventually, the fringe belt phenomenon is taken as a potential tool within integrated urban planning, urban design and land management strategies (Gu, 2010; Ünlü, 2013; Hazar & Kubat, 2015). It has mainly been used to understand urban landscape transformation in cities with a long history to provide a basis for more coordinated decision making in urban planning (Whitehand & Morton, 2004).

The green belt policies can be promising for protecting the fringe belt characteristics and urban ecology, which continue existing in spite of the urban redevelopment pressure. However, the survival of the fringe belts in the future is in question due to market demands and pressures and lack of consciousness among decision-makers. Urban fringe belts are usually relevant to several governmental organizations, NGOs and related professional actors, which results in a harder decision-making process due to the different opinions and the frequent ignorance of the decision makers of urban morphology and planning. Thus, taking the fringe belt phenomenon into account as an historical-geographical structure of the city during the urban planning and design processes is necessary to prevent fringe belt alienation (Whitehand & Morton, 2004).

The fringe belt concept has recently been elaborated through its interrelations with urban design, planning and sustainable management strategies and its cultural dimension (Kropf, 2001; Hopkins, 2004; Whitehand & Morton, 2004; Whitehand, 2005; Gu, 2010; Hazar & Kubat, 2015).

The fringe belt research in Turkey is only recently developing and is of a limited quantity: (1) comparison of the fringe belts of Istanbul and Barcelona (Hazar, 2012; Hazar & Kubat, 2015); (2) IFB analysis of Mersin (Ünlü, 2013); (3) IFB analysis of Istanbul (Hazar & Kubat, 2016; Kubat & Hazar, 2018); (4) analysis of the fringe belt concept in multi-nuclear metropolitan cities (Ünlü & Baş, 2016); and (5) effects of fringe belts on the spatial growth of cities (Kaya & Akdemir, 2019).

2. URBAN GROWTH OF İZMİR FROM THE FRINGE BELT PERSPECTIVE

2.1. Historical Development of İzmir

İzmir is a Mediterranean port city on the western coast of Turkey and the third largest metropolitan city in the country with its population of approximately 5 million (TURKSTAT, 2019). Throughout history, İzmir has always been an important center of sea trade and civilization and has hosted many civilizations such as the

Sumerian, Egyptian, Assyrian, Babylonian, Hittite, Cretan and Greek. İzmir has become one of Anatolia's most outstanding trade, art, culture and commercial centers and a symbol of modernization and hospitality, including different cultures such as Levants, Rums and Balkans (Aksoy, 2001).

According to the 1914 population census in the Ottoman records, there was a total population of 1,568,451 in İzmir, which used to be the metropole of the Aegean. However, there was a serious population loss during the Independence War between 1919-1923 and most of the city was burnt. Afterwards, a regular increase in the population has taken place with a peak in the 1990s due to the late industrialization and concomitant rural-urban migration.

As a result of the late industrialization of Turkey, growth of the cities in the industrial age have been relatively slower than the cities in Europe and United States and rapid growth cycles have only been experienced since the 20th century (Ünlü & Baş, 2016). In addition, the strict borders between the rural and urban areas have disappeared by the intermeshing economic activities of globalization, which poses both potentials and threats on the rural-urban fringe, which is a multifunctional and dynamic zone (Gallent et.al., 2006).

The rural-urban fringe or the urban periphery that differs from the dense urban mass offers an area for alternative usages, similar to the urban fringe belts. It offers the possibilities of alternative recreative and agricultural land uses for urban citizens. However, rapid urbanization pressure has increased due to several legislations and the planning policies at the urban fringe belts have rendered sustainable development and commons management (Hazar, 2018). Eventually, urban sprawl management, rural-urban migration and decreasing life quality have become the major problems that need to be solved in Turkey (Tekeli, 2004).

The historical development of İzmir can be separated into four main periods: Ancient İzmir (3000-300 B.C.), Hellenistic, Roman and Byzantine Period (300 B.C.-1081 A.C.), Seljuk and Ottoman Period (1081-1923), and Republican Period (1923-Today). Before the proclamation of the Republic of Turkey, a huge fire broke out in İzmir, which resulted the destruction of almost half of the city. Eventually, the public improvements and planning regulations took the lead in the Republican Period and the primary aim has become the reconstruction of the damaged areas and the transformation of the city into an important national economic center (Table 1).

Table 1. Historical development of İzmir (edited from Aksoy, 2001).

Historical Period	Development Process / Outcome	Fringe Belt Elements
3000-300 B.C. / Ancient İzmir	Smyrna, mythos, Amazons / Historical city, site-town	Monumental stone fountains, king tombs, temples
300 B.C.- 1081 A.C. / Hellenistic, Roman and Byzantine Period	Alexander the Great, coastal town, settlements on Kadifekale / Mediterranean port city, trade and culture center	Cemetery, temple, Agora, castle, stadium, theatre, Pagos walls (Kadifekale), bishopric
1081-1923 / Seljuk and Ottoman Period	Multi-economical and functional city, agriculture and trade economy / Pre-industrial Mediterranean port city	Cemetery, fountain, clock tower, mosque, Sarıkışla military barrack (Fig. 1)
1923-Today / Republican Period	Industrialization, Independence War, great fire, development acts, planning regulations / Migration, metropolitan city	Squatter housing, new MFB formation after the fire: Kültürpark



Figure 1. Sarıkışla Military Barrack, 1865 (APIKAM, 2018)

2.2. Planning Practices of İzmir

İzmir experienced six citywide planning practices during the Republican Period which correspond to the major events in the political and socio-economic history of Turkey. The planning history of İzmir can be categorized into seven historical periods (Table 2).

During the economic stagnation period between 1939-1948, there was a building slump, nevertheless the new squatter houses emerged. There were not many new construction efforts except several institutional constructions and attempts to enlarge the port and complete the airport, all of which have become part of the new fringe belt formations. In the postwar era, İzmir became one of the top migration receiving and rapidly urbanizing cities in Turkey. In the 1950s, the city has become a metropolitan center, while the squatter houses enlarged parallel to its industrialization (Aksoy, 2001).

Table 2. Planning practices of İzmir (edited from Kaya, 2002).

Master Plan	**Approval / Outcome**	**Fringe Belt Elements**
1925-1933, Danger and Prost Plan	1925 / Partial implementation, master plan	MFB formation: *Kültürpark*, park and international fair, FB modification (barracks and prison into urban park), FB alienation (housing)
1949, Le Corbusier Plan	Not approved / Remained as a legal document-guide	FB modification and alienation (squatter houses), FB formation (Hospital, Central Bus Station, enlargement of the port and airport)
1952-1957, Aru, Ozdes and Canpolat Plan	1955 / Partial implementation, master plan, action area plans	FB formation (industrial developments and warehouses, health, education, sports facilities), FB alienation (squatter houses at the periphery), FB modification (demolition of *Sarıkışla barrack*)
1960, Albert Bodmer Plan	Not approved / Remained as a legal document-guide	FB translation (moving small-scale industry and heavy industry), FB formation (railway connection between industry and the port)
1972-1978, Metropolitan Planning Office Plan	1973 / Partial implementation, large scale projects	FB formation and translation (new industrial region: *Aliaga*)
1980-1990, IMM Plan	1989 / Master plan, revisions	FB formation (university campuses at the periphery, new airport, national park), FB alienation (squatter houses)
2012- Today, IMM Plan	Revisions, workshops, strategical reports, EU projects, EU networks	Potential FB formation and modification by GI strategies, Horizon2020 urban green up project: urban fringe parks workshop

Due to the proximity of the port and several industrial areas, several fringe belt land uses such as warehouses and factories were located at the IFB. Later, these

industrial developments and surrounding housing areas sprawled towards the periphery, which triggered the city growth beyond the municipality borders (Kaya, 2002).

In 2012, the 1/25,000 scale İzmir Metropolitan Plan, which is currently being implemented was prepared within the new Municipality boundaries with numerous partial and revision plans. Some of the continuing planning efforts of the İzmir Metropolitan Municipality (IMM) aims to develop strategical plans within the regional scale in relation with the basin-based planning and strategic planning by combination of the IMM, Universities and the İzmir Development Agency. The plan revisions of the 1/100,000 scale master plan by the Ministry of Environment and Urbanization, 1/25,000-1/5,000 and 1/1,000 scale master plans by IMM and district municipalities are still ongoing.

Since the last two decades, the urbanization processes in Turkish cities have become much more dependent on the construction projects in favor of the re-production of capital and land rent by the neoliberal urbanization strategies such as 'competitive city' and 'brand city' (Penpecioğlu, 2013). Moreover, Turkish planning regulations have easily been affected by politics, legislations, bills, development amnesties, financiers and the lack of interinstitutional coordination, all of which may negatively affect the fringe belts, which are hardly visible for the decision-makers. However, the legal suits by the professional chambers, NGOs and citizens struggle to slowdown the implementation of the partial revision plans and related alienation and enclosure processes especially on the commons, open green areas and public spaces, included in the urban fringe belts.

3. URBAN FRINGE BELT DEVELOPMENT OF İZMİR

3.1. Fringe Belts of İzmir

İzmir has a multi-nuclear settlement pattern with sub-centers (e.g. Alsancak, Karsiyaka, Bornova) and seaside and rural peripheral districts. It can be said that there is a relatively fragmented MFB formation along the railway and highway, which can also be defined as an 'umbrella fringe belt' similar to the model of Mersin (Ünlü & Baş, 2016). İzmir does not have a specific fixation line like a city wall; therefore, the IFB formation is less contiguous. There is a linear type of fringe belt development along the waterfront infill areas similar to Mersin, which also connects the IFB and the fringe belts of the sub-centers with the help of the IZBAN railway and highway. The waterfront infill areas have become the integral part of fringe belts associated with Sahil Boulevard, Kordon infill recreation area and Kültürpark.

Several old industrial areas around Halkapınar central train and metro station have been turned into institutional and educational uses (e.g. Historical Gas Factory Culture Center, FactoryLab Workstation). The Historical Electricity Factory has been protected from being alienated by a shopping mall and residence project with the help of the courts, law suits and protests and recently has been bought by the Municipality for a culture center project. Similarly, another contentious residence and shopping mall project on a large triangular vacant plot called the 'Basmane Hollow' at the south adjoint of Kültürpark has been cancelled after the legal cases and civil protests. Recently, attaching the Basmane Hollow to the Kültürpark and enlarging the urban park is being discussed among the Kültürpark Platform that brings together the NGOs, professional chambers, citizens and local governors. In this context, it has the potential to become an area of fringe belt expansion in the future.

The city-wide fringe belt development of İzmir includes several land uses such as port, industrial areas, military areas, cemetery, recreational areas and stadium in IFB; train station, urban parks, recreational areas, stadium, hippodrome, cemeteries, military areas and squatter housing in MFB; and cemeteries, recreational areas, industrial areas, military areas, university campuses, sewage, organized industrial zone, free trade zone, fair, airport, low density secondary houses and squatter housing (pre-alienation phase) and waterfront infill areas in OFB. The port hinterland especially contains warehouses and industrial areas along the railway. However, the pressure for commercial and residential activities at the city center has restricted the IFB expansion.

3.2. Fringe Belt Planning and Design as a GI Strategy

Although the green belt policies are not adopted as frequently as in Europe, IMM has taken several promising steps such as the 'Green Infrastructure (GI) Strategy of İzmir' (2017) and the 'Urban Fringe Parks Exploration Workshop' (2019). Positioning the urban fringe belt concept as part of a common green belt policy within the GI strategies is crucial in order to sustain the fringe belt characteristics, biodiversity and ecological sustainability. Fringe belts are often important urban heritage features, urban ecological corridors and places for less constrained movement by urban populations (Gu, 2010), which also provides the qualifications of the GI strategies.

The GI idea has emerged in Florida (1994) and in the Europe agenda (2004) through claims that the ecological systems are crucial parts of the infrastructure. GI is an approach that provides for the improvement and management of the rural and urban biodiversity within a broader ecosystem approach; improves air quality, water and ecosystem products and the services capability of nature;

strategically plans the connections between the high quality natural, semi-natural and urban systems; and helps to maximize environmental, economic and social benefits (IMM, 2017; EPA, 2019).

There is an urgent need for GI systems in İzmir in order to connect the city center and the peripheral districts by transportation and public systems; to constitute adequate blue/green infrastructure systems; to coordinate with the relevant implementation projects (e.g. heat island elimination, smart farming, ecological corridors, flood elimination); to constitute a nature/climate sensitive database and mapping; to constitute international and interinstitutional relations; and to perform the sustainable energy action plan, sustainable local development and smart city strategies (IMM, 2017).

There have been specified five main zones and several ecological corridors in İzmir including streams and canals that have been specified for the potential green belts: (1) İzmir Gulf and central shore, (2) urban pattern, (3) first green belt, (4) peripheral districts, (5) second green belt (IMM, 2017). The Meles stream and delta (Bayrakli) is an especially crucial ecological and historical region.

These areas within the GI strategies include industrial heritage, waterfront areas (e.g. lake, wetland, delta, stream, dam), seashore, transportation networks, green areas (e.g. urban forests, parks, market gardens, agricultural lands, children playgrounds, hobby gardens, recreation areas, cemeteries and sport areas), military zones, squatter areas and relevant urban renewal areas, all of which are also included in the fringe belt land uses (IMM, 2017).

Green belt policies within the urban fringe belt planning has the potential to constitute contiguous green zones, which are crucial for resilience to climate change and catastrophic events and for improving the biodiversity and ecological sustainability. Eventually, many fringe belt areas (especially OFBs) contain the ecological commons with extensive open and green areas. Thus, the fringe belt planning can be a potential urban sprawl management strategy of İzmir. However, it is crucial to underline that there is not a formal green belt or fringe belt planning in İzmir yet.

In this study, as a planning and policy proposal we suggest a green belt axis in relation with the fringe belts and the ecological corridors in İzmir (Figure 2). In addition, we made a more detailed fringe belt analysis in the old city center, Konak (Figure 3) and linked it to the proposed green belts of IMM by possible routes including museums, neighborhood parks and historical mosques (Figure 4).

Another aspect of the urban fringe belt planning can be the 'commons management'. Commons are categorized as tangible or intangible spaces of public use and collective ownership that belongs to the society providing free

access (Santos Junior, 2014) and consist of two types: ecological commons (e.g. air, water bodies) and civic commons (e.g. streets, public spaces) or public goods (Ostrom, 1990).

Especially the older IFB and/or MFB areas can particularly include urban common spaces important for the urban memory as the fringe belts are the urban entities that are shaped by various historical and cultural processes, all of which forms the characteristics of the urban memory. Eventually, situating the urban fringe belt planning within the GI strategies may help to prevent the destructive processes of enclosure movements on the commons and the alienation of the urban fringe belts, which are roughly comparable.

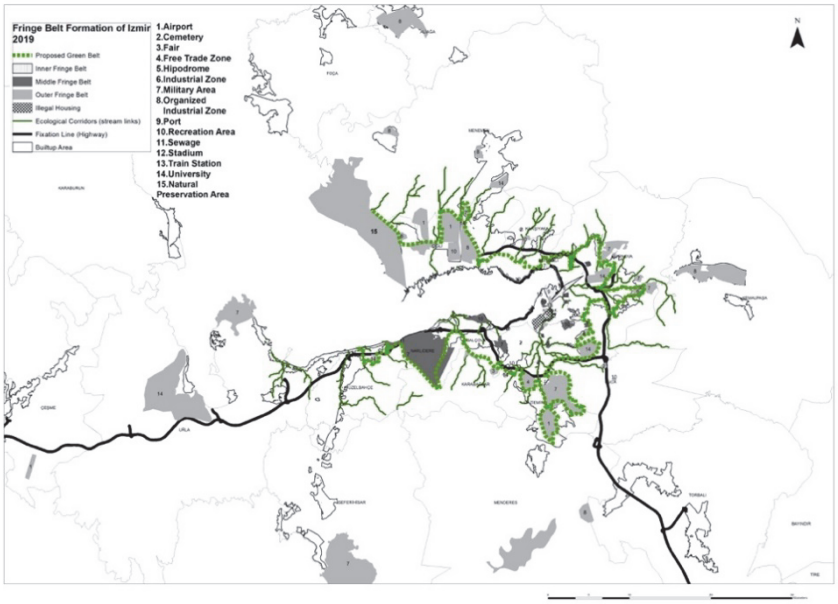

Figure 2. Fringe belts and proposed green belt axis of İzmir

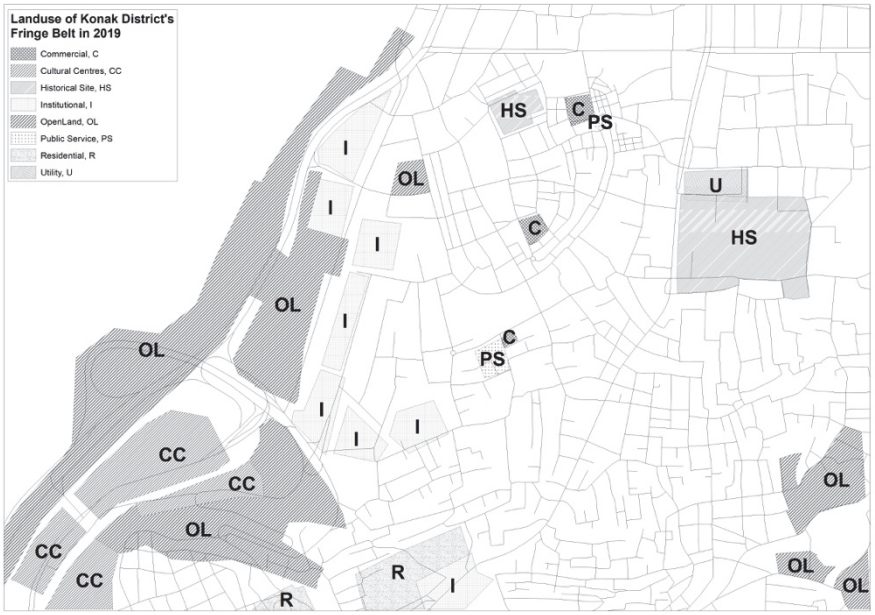

Figure 3. Fringe belts in Konak, İzmir

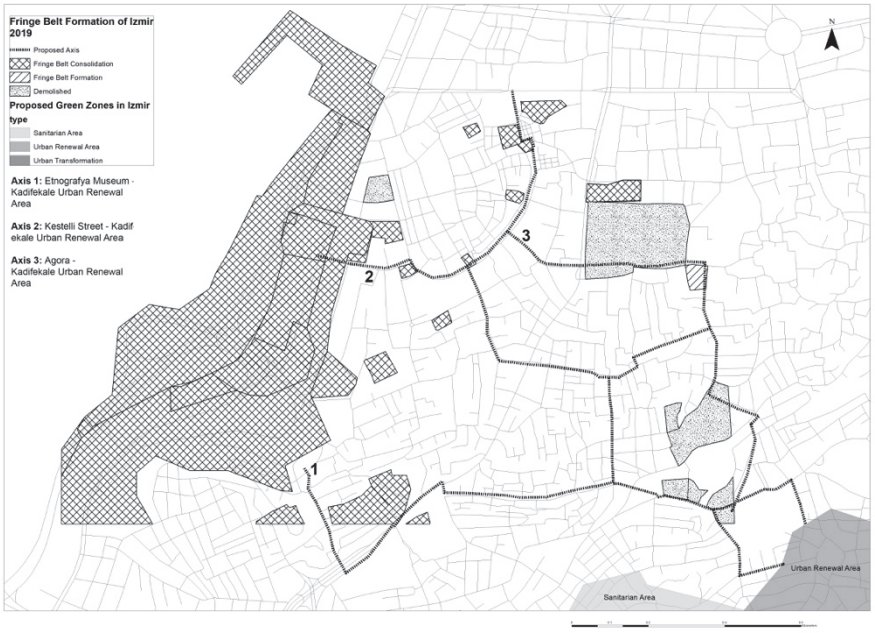

Figure 4. Fringe belts and possible interrelated axis with proposed green belts in Konak

4. CONCLUSION

In this study, we suggest that urban fringe belt planning within the green belt policies, green infrastructure and commons management strategies should be necessity. Eventually, urban fringe belts can be a part of a combined and contiguous green belt, especially at the OFB and the rural-urban fringe. Fringe belts in İzmir are primarily determined in order to prevent alienation by neoliberal policies and capital-promoted urban regeneration projects.

The sustainability of the fringe belt areas by refunctioning them as recreational and institutional uses at the industrial heritages (e.g. public parks, culture centers), warehouses, commons (e.g. urban farming) and green infrastructure strategies (e.g. green belts, ecological corridors) in favor of the public interest is strongly recommended.

Urban fringe belt planning is of great potential in the planning and design policies to sustain the common good and urban ecology and to eliminate the capital-promoted alienation and enclosure processes. Thus, it can be a crucial tool within the GI strategies. In future studies, a more detailed analysis of the urban fringe belt development of İzmir is projected in relation with the planning and design policies.

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THE EFFECT OF URBAN GROWTH ON LAND-USE: A CASE STUDY OF BALIKESIR

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ABSTRACT

Burgess defines the urban growth as "the expansion radially from its central business district by a series of concentric circles", and he mentions that social, economic and geographical conditions are shaping these circular systems. In this context, although different dynamics and models exist between countries and regions, similar parameters are used for the morphological examination of the development of urban space.

In the scope of the research, Balıkesir was examined in detail through the urban growth process, land-use changes in the urban fringe. Differentiating urban pattern and peripheral land-use have been evaluated from the viewpoint of the Conzen. The findings were obtained through a comparative analysis of historical and current city maps, satellite images, archive records.

According to the analysis conducted in Balıkesir, it is seen that the geographical factors such as Çamlık Hill, Çay stream bed and the transportation strategies (railroads and highways) played an active role in shaping the city's macro form. Conzen, while examining the city of Alnwick, mentions urban fringes and peripheral land-uses, which includes functions such as industrial areas, institutions, community services, small houses etc. These kind of areas are thresholds of urban space and make the historical development of the city legible. Although it is not possible for a town like Balıkesir to contain all the morphological phenomena, it is observed that peripheral land-use of the town has changed with urban growth. Especially during the Republican period, the urbanization and industrialization policies implemented and increased the investments in the city, industrial buildings such as Cement and Cotton Weaving Factory and military areas were established in the large areas around the urban periphery. At that time, the urban cemetery in the southeast of the city was transformed into a recreational space. Balıkesir developed around the historic center until the 1950s, after that, new settlement areas were formed, and the city

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continued to grow in the north and southeast direction with the effect of increasing population. This situation made essential the change of functions in the urban fringe and necessitated the relocation of small-scale industrial buildings and some social services to outskirts of the current city. As a result of the study, land-uses in urban fringe should be seen as essential elements in the structure of city, planning policies should be established with the awareness of urban fringe, and function change decisions should be made through the understanding of quality urban space rather than economic concerns.

Keywords: Urban growth, urbanization, land-use change, urban fringe.

1. INTRODUCTION

Urbanization, in a narrow sense, is an expression of a situation in which the population of the city has increased, and the urban space has expanded physically, and life has gained heterogeneity. In this context, the factors that cause urbanization are classified through economic, technological, political, and socio-psychological reasons (Keleş, 2015). The urbanization rate in Turkey has increased with migration from village to city in the 1950s. In this period, the industrialization policies implemented by the state affected the macro form of many Anatolian cities. These dynamics formalized land use in urban space, and the distribution of new residential areas and industrial uses determined the growth direction of the city. In the urban area, which has a certain density, the land has become a scarce resource, and speculation about the city has been based on land use and exchange values (Kılıçarslan, 2018). Although the urban growth processes are examined with similar parameters, each city has an original value in terms of its historical, physical, spatial, and cultural characteristics.

Within the scope of the research, the city of Balıkesir was examined through the factors such as the geopolitical position of the city in the Southern Marmaras, urbanization policies put forward during the Republican Period, the structure that changed with the metropolitan law (Güney, 2018), the relationship between the city and the university. Afterwards, the morphological change of the city is detailed through the change of land uses and its relationship with the urban periphery.

Unlike the rising trend in metropolitan cities, Balıkesir has developed a single centered pattern for a long time. In the development process, the residential areas of the city were enlarged with the opening of the lands around the central business area. With the growth of the city, lands that once had the rural-urban character on the periphery became a part of the city. Some of the land-uses in this region such as; cemeteries, low-density residential areas, industrial zones,

institutional areas, etc. (Karaulan & Kubat, 2018, s. 306) have been relocated or intensified, while others have continued to function and created congestion in the city center. This situation led to the redefinition of the urban periphery in the rural and urban intersection as the city continued to develop. In this context, the transformation of Balıkesir city center was examined by making comparative analyzes on the plans of Ernst Egli (1944), 1987 Master Plan, and current (2019) land-use maps. The changes that took place in the periphery were elaborated in areas such as the conversion of the cemetery to the city park, the process of shaping the city of the corps, the opening of the factories in line with the policies of the 50s, the re-positioning of the bus stations and small industrial estates, which were repressed by the growth of the city after the 2000s.

2. CONTEXTUAL FRAMEWORK

2.1. Urban Growth and Land-Use Change

Predominant urban typologies examine the built environment as pre-industrial, industrial, and post-industrial, suggesting that each of these periods reveals both the physical space of the city and the dominant social and economic structure (Robson, 1973). Pre-industrial cities possess a compact and socio-economic structure without specialization. On the other hand, in industrial cities, there are developed modes of transportation between cities, large-scale factories, and an increase in the density and number of residential areas. In the post-industrial period, the boundaries of the industrial city become almost unrecognizable with the improvements in domestic transportation and, the gaps of early growth are tried to be filled (Robson, 1973). When explaining urban development, Whitehand (1994) mentions that "if a cross-section is taken from the center of the city to the periphery, it is the expression of the city's temporal journey".

Regarding this, Burgess (1925) conceptualizes the growth of the city through physical expansion, spread as a process, social organization, and mobility. In examining the Chicago, he models the urban development in a diagram which shows the expansion radially from its central business district by a series of concentric circles. Although this graph describes a development specific to American cities, it emphasizes the subsequence of urban sprawl (Burgess, 1925). Indeed, each city has its unique processes, and it is not possible for an organic pattern to same with another development process, but the parameters we use to examine urban growth and their spatial results are categorically similar. In this sense, the urbanization process in Turkey has started much later than in Europe and America, migrations, growth, and industrialization coinciding revealed locale-specific dynamics.

The growth of the city due to the increasing population brings with it the need for housing and urban equipment. So, development processes affect the way urban space is used, and change becomes essential. In this context, land uses vary depending on the construction activities, growth, housing production, changes in land prices, and various socio-economic factors in the city (Whitehand, 1994). This change in the city can manifest itself in the third dimension as well as through the differentiation of functions from inside to outside in the field plane. In these processes, some of the areas used as a residential zone in the city center transformed into commercial use. In previous periods, areas belonging to peripheral functions such as industrial buildings, storage facilities, and sports areas, which are located on the city periphery, start to be seen as urban areas, and this creates changes in land values (Kılıçarslan, 2018, p. 177).

2.2. Land-use in Urban Fringe

Smith (1936) describes the urban fringe as an area just outside the institutional boundaries of the city (as cited in Pryor, 1968). In this context, the urban fringe or periphery refers to the area where urban and rural separation becomes ambiguous. It is a complex transition zone and appears as an essential concept in terms of settlement geography. These areas, which are under the urbanization pressure, generally evolve from peripheral use to urban space. Commonly, land use in the urban fringe is transitive and independent from each other. Functions that require large areas, such as manufacturing workshops, commercial enterprises, vacant and unused land, and industries that need to be located outside the city, are located in these regions (Pryor, 1968, p. 209). Although land speculation may affect the exchange values of the region, such areas should be guided by the influence of zoning decisions and planning strategies. Even so, there are many different disciplinary studies on the land-use change and urban fringes in the literature; this research is based on the urban morphology and fringe belt approaches of the British school.

The term 'urban fringe belt' was first used by Herbert Louis (1936) when examining the wide land uses in urban fringe (as cited in Whitehand & Morton, 2004). In the literature on urban planning, the concept developed in the context of the British school is characterized by parameters such as land use, access, and vegetation (p. 276). These areas, defined by Herbert as “hiatus”, differentiate in the context of urban patterns in the historical process and leave morphological traces that can be called 'fixation line' like the city walls. Afterward, Conzen elaborates the research on the fringe belts and uses the phrase 'a belt-like distribution of land-use unit, which for a reason seek peripheral location has appeared' and examines the city of Alnwick (Karaulan & Kubat, 2018, s. 305). He identifies the relatively

slowly developing belt areas on the urban periphery with functions such as industrial zones, community services, institutional uses (cultural, religious, administrative facilities, etc.) and garden-country houses (Conzen M. R., 1960, p. 58; Hazar & Kubat, 2015; Karaulan & Kubat, 2018; Kubat, 2019). In these areas, the parcels subject to ownership are more extensive, the construction density is low, the vegetative cover is wider (Whitehand & Morton, 2004; Conzen, Gu, & Whitehand, 2012).

These areas also, which acted as physical barriers in the growth process of the city, were examined by Conzen and Whitehand through the concept of fringe belt and categorized as inner, middle, outer, according to the historical period and fixation lines (Kubat, 2019). The general tendency in Europe is that inner fringe belts form morphological zones that begin on the borders of the medieval city or just outside the city walls. In Turkey, the historical process, urban pattern, and development process indicate different morphological characteristics compared to European cities (Ünlü and Baş, 2015). This situation necessitated a local reinterpretation of the assumptions regarding the inner-middle and outer fringe belts.

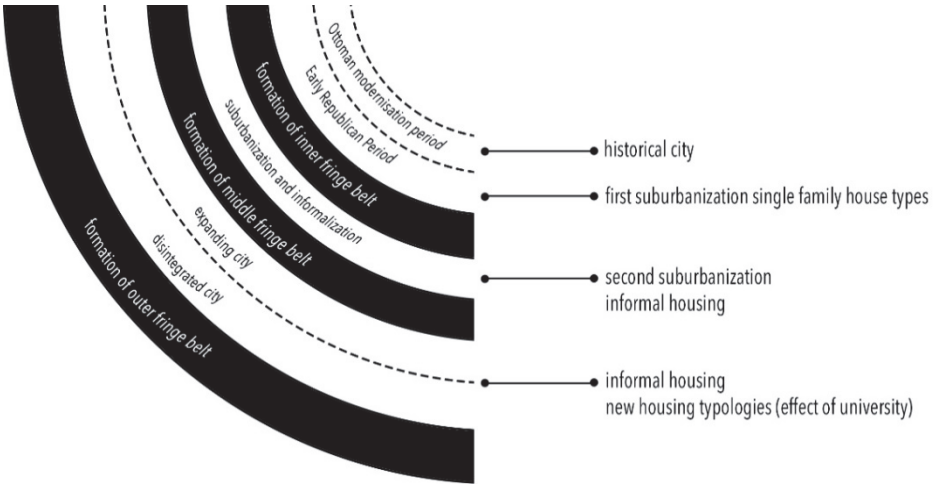

Figure 1: Morphological periods of cities in Turkey (Ünlü & Baş, 2015)

Considering the limited studies conducted in Turkey, urban fringe belts which defined as the threshold exhibits a more discontinuous and fragmented structure. According to Ünlü and Baş (2015), while the formation of the inner fringe belt is based on the historical city and early republican constructions, the suburban and informalized city constitutes the second threshold, thus forming the middle fringe belts (p. 20-21). Especially with the increase in institutional factors such as universities in Anatolian cities, new typologies started to emerge

with the need for housing and these settlements became prominent as a new morphological area in the urban growth pattern (Figure 1).

3. METHODOLOGY

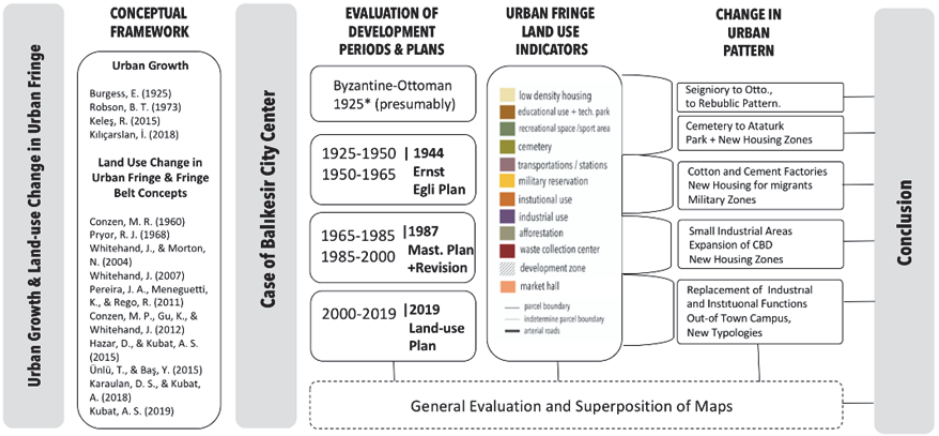

Figure 2: Methodology of the Research

Within the research scope, Karesi and Altıeylül districts, known as Balıkesir city center, were evaluated. The study aims to determine the effect of urban growth of Balıkesir on land uses in the city periphery and the transformation of these functions over time. Thus, the development in the historical process was made spatially legible through comparative map analysis, and the existence of peripheral activities in future urban studies was emphasized.

In research, the land-use changes in urban fringe were focused on with reference to the development periods (1923-1950, 1950-1965, 1965-1985, 1985-2000, 2000-2019) stated by the local government in the plan report (Balıkesir Metropolitan Municipality, 2016). Changes in peripheral land are determined through 1944 Ernst Egli plan and research report, 1972 Iller Bank development plan explanation report, 1987 Balıkesir master plan + revisions and land use map, 2016 Karesi-Altıeylül 1/5000 master revision plan notes, 2019 land use maps and satellite photos of 2005-2019. According to the data obtained, how the growth of the city affects land use in urban fringe was evaluated through perception of Conzen and Whitehand in British School. The airport, urban parks, cemeteries, institutional lands, industrial areas, market halls, military areas and rural settlements (according to Conzen's Alnwick study) located on the urban periphery were identified according to historical periods. In this context, the land-use changes through urban growth (cemetery to urban park transformation, the formation of migrant neighbourhoods, the evolving of agricultural land into residential areas,

the transfer of industrial uses out of the city, the dynamics of the city changing with the university, etc.) are analyzed, mapped and interpreted (Figure 2).

4. URBAN GROWTH OF BALIKESIR CITY CENTER THROUGH LAND-USE CHANGE IN URBAN FRINGE

4.1. Urbanization Process of Balıkesir City Center

The city has an important geopolitical position in the South Marmara Region, which has an active role in transportation according to highways related Istanbul, Izmir, Bursa and sea access in Bandırma and Körfez. The most intense period of urbanization was between 1950-1965. The population growth rate of the city is below the national average. However, although the rate of increase has changed, the urban population has increased over the years, and the city has continued to grow physically (Tunga, 1997, p. 59-60). Geographical factors such as Çamlık Hill, Cay and Kasaplar Stream Beds play a role in the formation of the urban macro form. So, these factors affected the boundaries of the settlement and the city expanded into the lowland for a long time while preserving its single-centred structure. After all, in order to understand the socio-economic development of the city, it is necessary to elaborate on the historical context.

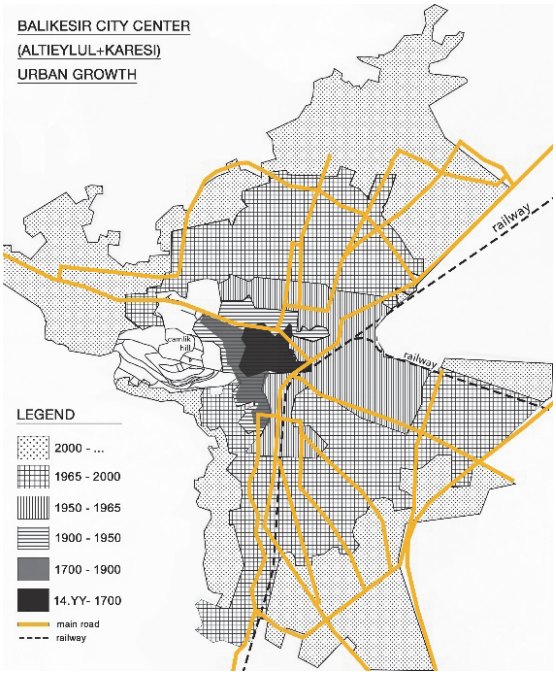

Figure 3: Urban Growth of Balıkesir City Center (Tunga, 1997; Balıkesir Metropolitan Municipality, 2016)

There are no traces of the ancient period in the city center, however, the existence of a small settlement surrounded by the Byzantine city walls is confirmed. The development of the town accelerated during the Seljuk period. Afterward, it was ruled by the Karesi Seignory and, later in the Ottoman Empire, was used as a princely sanjak. The first data about physical condition about town in written sources are found in the Ibn-Batuta travel book in 1333. In the book, it is mentioned about the settlements in the limited area and the existence of the big bazaar (Tunga, 1997; Güney, 2018). The buildings built by Zagnos Pasha in the 15th century (mosque, covered Turkish bazaar, hamam) shaped the functioning of the city. Although there was no significant change in the urban pattern in the 17th and 18th centuries, the military class began to lose its importance, and commercial activities increased (Tunga, 1997). In the 19th century, new dynamics emerged with the construction of the railroad (Güney, 2018). In the early 1900s, northward expansion was observed, and during the Republican period, settlements appeared in the north and southeast of the city. Immigrants arriving in the 1950s were placed in disconnected areas from the city center, and between 1950-80 the discrete areas and the gap between the main mass were largely filled (Tunga, 1997)(Figure 3).

The floors number of buildings was increased with the changes made in the 1987 plan. Some residential areas were replaced with commercial functions, and the sub-center deficiencies were mentioned in the plan report (Balıkesir Metropolitan Municipality, 2016). In the 2000s, the university was moved to out of town campus, the terminal located in the city center to the north of the city. The industrial areas around CBD were declared a renewal area and were repositioned away from the city center. As the city became a metropolitan municipality, the goal of 'branding' emerged in the city (Güney, 2018). In line with the vision plans, Camlık Hill, Cay Riverside Recreation Area, and various mass housing projects have been brought to the agenda.

4.2. Land-use Change in Urban Fringe Through City Plans

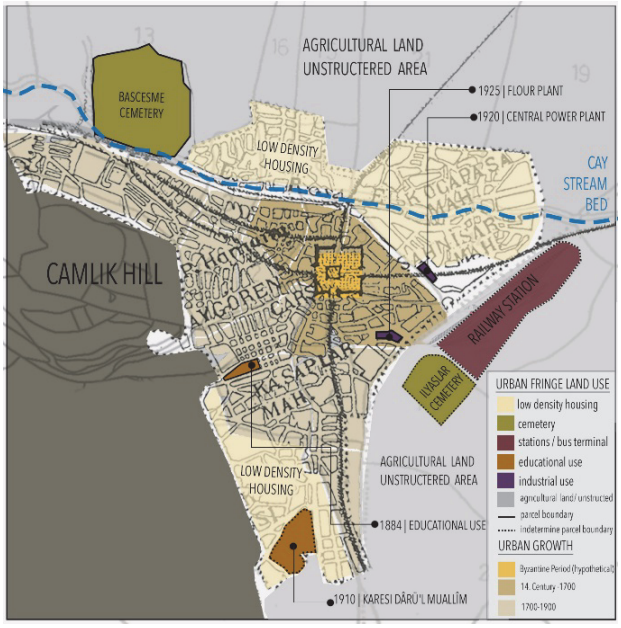

Figure 4: Byzantine- Ottoman Period to 1925 (It was produced by the author using maps taken from the archive within the scope of Tunga's thesis.)

Byzantine-Ottoman-1925 Periods

The first settlement of the city belonging to the Byzantine period is located within the borders of the Hisarici neighborhood, which is the city center today. In terms of building island in the square form in Hisarici is compared with Roman castrum in the plan report of Egli, and it has been suggested that this form is also connected to the Bergama-Edremit road axes (Tunga, 1997). In addition, there are a total of 27 archaeological sites, including 12 necropolis-ancient settlements, five castles, six tumuli, and three mounds in the suburbs of Altıeylül and Karesi (Balıkesir Metropolitan Municipality, 2016). The settlements, which were established in the 14th century during the period of Karesi Seigniory, were emerged on the hill slopes (200 mt), and the lowland was used for agricultural activities. Afterward, the area looks like a small town (15-20th century) with different neighborhood patterns (such as Hisarici, Yildirim, Karaoglan, Kaya Bey, Eski Kuyumcular, etc.) in the Ottoman period (EnsPD, 2016). The quality of being the only commercial center of Anafartalar Street decreased with the opening of the railway and train station in 1912. The main axis (Milli Kuvvetler Street) connecting the city to the train station was started to be used in 1916 (Balıkesir Metropolitan Municipality, 2016; Tunga, 1997). There was a shift towards the

train station in the city center. In this period, Karesi Darül Muallim Mektebi (1910), central electric unit (1920), and Muharrem Hasbi Flour Factory (1925) were built on the urban periphery (Figure 4).

1925-1950 Period

Republican policies have shaped today's urban space. The city's development plan was made by Ernst Egli in 1941-1944(approval) and remained in effect until 1955. According to Egli's plan, growth was aimed in the north and east directions; minimum intervention was made to CBD, new development areas were created outskirts (Balıkesir Metropolitan Municipality, 2016). The new government building (1947) and the Forestry Directorate are located near the station. The area between Çay stream bed and the central electric unit is reserved for small industrial and manufacturing workshops. The area used as the Ilyaslar Cemetery was converted into Atatürk Park between 1934 and 1942 (Yüksekli). In the period of 1940-1960, development movements in the city gained speed in line with the policies of the Republican era (Figure 5). Urban equipment such as Halkevi, Ali Hikmet Pasha Stadium, maternity center, art schools, cinemas were built in that time (Birol, 2004). Military clubs, which are designated as registered buildings, have been built, and the city has become a corps center (Güney et al. 2009; EnsPD, 2016). The areas to the south of the railway are considered as worker housing zone due to the low land costs. The development areas in the north and east stated in the plan are specified (Tunga, 1997). As a result of these, the city started to lose its rural character.

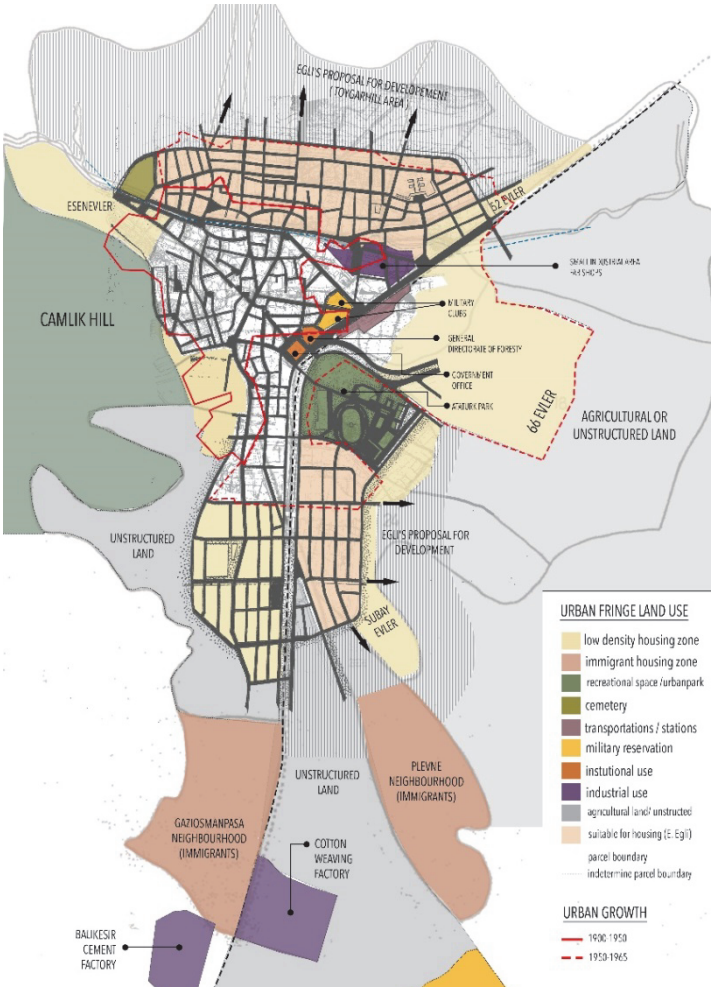

Figure 5: 1925- 1965 Urban Fringe Land-use (It was produced by authors through 1939 city map and the plan of 1944 Ernst Egli)

1950-1965 Period

Compatibly with the policies in the '50s, the industry was an essential factor in the development of the city, and the city has shown a single-centered development (Güney et al. 2009). However, immigrants who came to the city between 1955-59 were placed in Gaziosmanpaşa and Plevne neighborhoods away from the city center. This situation interrupted the integrity of the macro form within a certain period. As stated in the plans of Egli, construction permits have been given to the lands in north and south. Housing productions have been realized by building cooperatives (EnsPD, 2016). In 1950, the city had a great fire. After that, settlements with two-story garden housing typologies such as 52 evler, 66 evler,

Subayevler, Esenevler were formed (Birol, 2004). Today, almost all of these houses are apartmentized. In the continuation of the process, the city was developed in the east and southeast direction with the effect of the railway and highways. As the growth continued, the gaps in the fragmented urban fabric were filled (Balıkesir Metropolitan Municipality, 2016) (Figure 5). When the land uses in the urban fringe of the period are examined, the government office, Muharrem Hasbi Flour Factory, forestry headquarters, military clubs, which used to located in the urban periphery in the early period, are stuck in the city center of today.

1965-1985 Period

The master plan, which could not provide the requirements of the city, was revised in 1963, and the next development plan was prepared by Iller Bank and entered into force in 1972. This plan was also revised again in 1974, and the lands on Bursa road were functioned as a small industrial site. Commercial functions in the city after the 60s were mostly located on Anafartalar, Milli Kuvvetler Street, Gazi Boulevard, and Vasıf Cınar Avenue. At the end of the 60s, squatting was observed in Tepebaşı, Maltepe, Dinkçiler, Plevne, Gümüşçeşme, and Gündoğan neighborhoods (Tunga, 1997). Within the scope of the plan, it was decided to concentrate the CBD in the traditional pattern and it is revealed that the density should decrease as we go towards the urban periphery. This resulted in the transformation of residential areas in the city center to commercial activities and an increase in floors in buildings (EnsPD, 2016). However, this change was considerably restricted by the cooperative's housing production (Balıkesir Metropolitan Municipality, 2016). Exceptionally, the supply of low-priced lands to cooperatives in order to prevent slum formation contributed to the formation of the Adnan Menderes District (Güney, 2018). It has been decided that the institutional uses (DSI, KGM, etc.), which are located around to CBD, will continue to function and the small industrial area will be moved to the recommended organized industrial zones, so industrial activities are clustered in two different locations (Tunga, 1997).

1985-2000 Period

One of the essential activities regarding the period is the preparation of the city's development plan in 1987 (Balıkesir Metropolitan Municipality, 2016). Five revision zones have been defined in this plan, which is still effected urban space today. According to plan and reports; it is aimed to transform the residences into commercial use in Orucgazi, Cay, and Vicdaniye neighborhoods, the number of floors was increased to four throughout the Atatürk and Hasan Bahri Çantay neighborhood, it is aimed to rearrange the parcels in Gümüşçeşme, Gündoğan, and Atatürk neighborhoods by reducing them to the optimal size and Gazios-

manpaşa neighborhood, which was included in the plan as an industrial zone, was decided to be used as a residential area (Tunga, 1997).

Other issues dealing with the city in the 1987 plan are the lack of sub-centers and the industrial areas on Kepsut street. Although sub-center deficiency has been tried to be overcome with the focus of commercial institutions, success has not been achieved, and industrial areas were reconsidered within the scope of the strategic action plan in the 2000s. Apart from these, the central airport (1998), which was put into service in peripheral land, was closed to civil flights after three years of use and was transformed into a military airport.

When the land uses are analyzed in the 1987 Master Plan, the urban fringe is surrounded by military uses, industrial, institutional uses, and low-density residential fabric (including villages). The new development areas of the city are predominantly determined in the north, and military land and industrial areas constitute a barrier to the development of the city in the south (Figure 6).

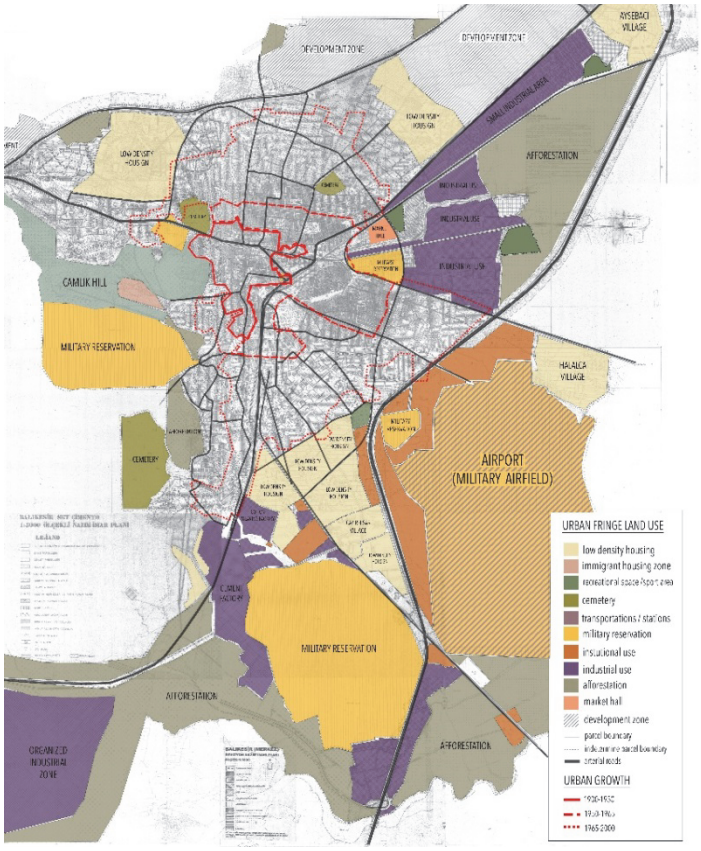

Figure 6: Balıkesir 1985-2000 Urban Fringe Land-use (It was produced by the authors through 1987 master plan taken from the municipal archive.)

2000-2019 Period

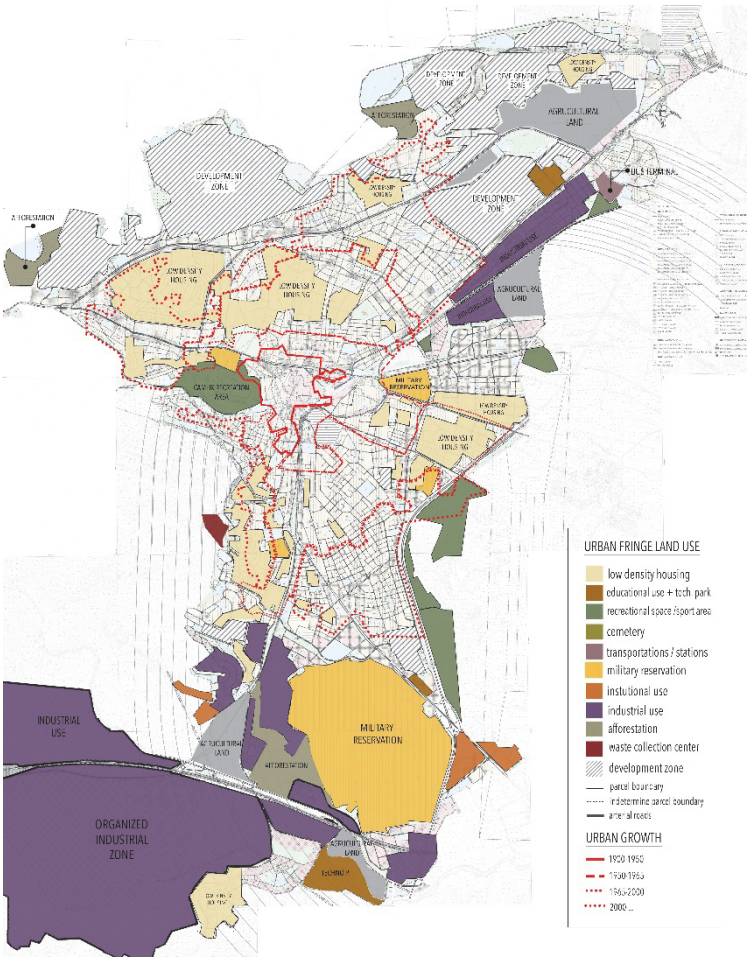

Figure 7: Balıkesir 2000-2019 Urban Fringe Land-use (It was produced by the authors through 2019 land-use map taken from the Balıkesir Municipality.)

There have been many internal and external factors that changed urban dynamics after 2000. Some of the events that cause changes in urban space use can be listed as follows.

In 2002, the university, which was scattered in the city center, moved to Çağış Campus. This situation led to an increase in the density of residential areas towards Çayırhisar in the south of the city. Accordingly, Bahçelievler neighborhood is one of the exemplary areas (EnsPD, 2016). With the transfer of the bus station in the city center to Ayşebacı Village in 2006, the city showed a tendency to develop in the north-northeast direction. With the shopping center opened in the direction

of Pasaalan, an increase in commercial functions in the north direction was observed, and the area started to be a potential sub-center (Güney, 2018).

Within the scope of the 2014-2023 South Marmara Development Plan, Balıkesir was decided as a sub-center planning region and many mega projects related to the city were proposed (Balıkesir Metropolitan Municipality, 2015). With the enactment of Law No. 6360, Balıkesir was chosen as one of the cities that were decided to establish a metropolitan municipality, which changed the way the city was governed. Projects such as Camlık Hill Recreation Area Project and Camlık Mosque, Cay Riverside Recreation Area Project and Balıkesir Fair Area were produced with the effort of creating a local center and 'brand city'. Although the relationship and necessity of these projects with the city can be questioned, it is seen that some projects are formed by the transformation of peripheral land uses. For example, while Çamlık Hill is a passive green area, it is aimed to be transformed into a recreational area, but instead, a complex building block with a library, science center, museum, religious, and social support units were built. Another example, Çay Deresi Recreation Area, was an industrial area with building materials industries in the surroundings. There was a wholesale market hall on the land, where the Avlu Balıkesir is located currently. Although small buildings in the area still working, for now, it is aimed to transform this entire region.

When the urban fringe land uses in the period 2000-2019 (Figure 7) are analyzed, essential similarities are seen with the period 1985-2000. This situation can be interpreted as an indication that the city has reached the construction limit in the south. On the other hand, around the city center, it is seen that the various land uses are changed and tried to be integrated into the city, although their contents can be discussed through the projects mentioned above.

4.3 Evaluations of Land-use Change in Urban Fringe

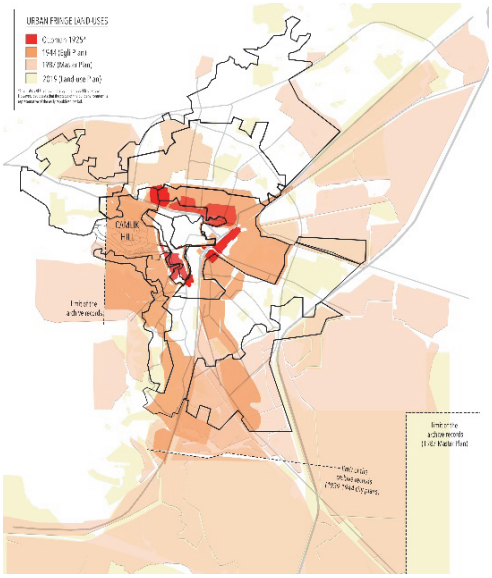

Figure 8: Superposition of Urban Fringe Land-use Through Periods

When urban fringe land-use of the city are examined, it is seen that the development of the urban periphery has progressed in parallel with the urban growth pattern (Figure 8). In this context, the main elements limiting the urban development in Balıkesir, besides geographical factors such as Çamlık Hill, extensive military lands, organized industrial zones, small industrial sites, and institutional uses.

When the created periodic maps are compared, the following can be said about the urban fringe. The areas that functioned as agricultural or unstructured in the early Republican and pre-era periods are used as the middle and high-density living areas of the current city and have lost their peripheral character. A similar situation exists for other development periods (1925-1950, 1950-65, 1965-1985, 1985-2000) of the city. In the 2000s, it is seen that some of the peripheral lands were moved or changed functions in order to reduce congestion in the city center and increase public use. (Transformation from the industrial area to the Çay Recreation Area, moving the Intercity Bus Terminal to Aysebacı, etc.).In the context of the urban landscape, it is crucial to reveal such areas because the continuation of urban growth without being aware of the urban fringe belts leads to the loss of the potential green areas and resulted uncontrolled and unqualified expansion. Therefore, increasing the awareness of land use of urban fringes and translation these into green areas by using these fringe belts will make the city's growth pattern healthier. In this regard, when the areas that

contain peripheral land-use in specific periods in Balıkesir and their current status are examined, the results are as follows (Table 1).

Table 1: Comparison of Urban Fringe Land-use in Development Periods and Current Status of The Lands

	Year of Built	Building/ Area	Land-use Character	Current Situation	Change in Building /Area	Explanation
Ottoman – Early Republican-1925 Urban Fringe Land-uses	1910	Karesi Darü'l Muallim	Educational Use	In urban center	Modification to Balıkesir Uni. Faculty of Education	Although the structure has been used by different educational institutions over the years, it has continued to educational function.
	1912	Railway + Station	Transportation (Railway)	In urban center	Continuation of the function	The station led the formation of the new center of the city.
	1920	Central Power Unit	Industrial Use	In urban center	Transformation to art center (FB alienation)	Today, the power plant is used as a culture and art center. (Salih Tozan Culture and Art Center)
	1925	Muharrem Hasbi Flour Factory	Industrial Use	In urban center	Abondoned Building	Although the factory structure is centrally located in the city, it has been dysfunctional for a long time.
	-	Ilyaslar Cemetery	Cemetery	In urban center	Translation to Ataturk Park (1937-1942) (FB character)	The cemetery, which was converted into a urban park between 1937-42, became an essential node for the city with the opening of the stadium in 1953.
1925-1965 Period Urban Fringe Land-uses	1937	Government Office	Institutional Use	In urban center	Continuation of the function	The government office triggered the shift of the city center from Anafartalar street to Milli Kuvvetler and accelerated the settlement in this part of the city.
	-	Military Clubs	Military Reservation	In urban center	Continuation of the function	The buildings located opposite the station structure damage public uses of the city center cause of the limited population is allowed to access it.

	1950-1965	52 Evler, Esenevler, 66 Evler, Subay Evler	Low Density Housing (Cooperativ.)	In housing zone	Modification to medium-high density residential area	These are examples of the development period of the urban built environment through cooperatives.
	1950-1960	Gazıosmanpasa-Plevne Neighb.	Low Density Housing - Immigrants	In housing zone	Continuation of the function	These are the residential areas built for migrants and separated from the city at the time they were built.
	1955	Cotton Weaving Factory	Industrial Use	In urban fringe	Abondoned Building	It is one of the factories built on the urban periphery in line with industrialization policies. It closes in 1986. It goes into reproduction (2001) and reproduction is stopped again (2003).
	1955	Cement Factory	Industrial Use	In urban fringe	Continuation of the function	It is one of the factories built on the urban periphery in line with industrialization policies. (12th cement factory in Turkey)
	-	Military Maint.. School	Military Reservation	In urban fringe	Continuation of the function	Area used as a military school.
	-	Akıncılar Small Industrıal Zone	Industrial Use	In urban center	Translation to Mechanic Services	The area used for industrial and manufacture has now turned into a collapsed space in the city center. Although speculative transformation projects have been introduced in the field but not implemented yet.
1985-2019 Period Urban Fringe Land-uses	-	Wholesale Markethall	Markethall	In urban center	Transformation to Commercial Zone (AVM) (FB alienation)	The market hall in the area has become a commercial function as stated in the strategic action plan. Although the first phase has been opened yet, there are discourses that other industrial structures in the vicinity will be moved.

	1998	Airport	Military Reservation	In urban fringe	Translation to military airport. (FB character)	The airport, which was closed for civilian use in 2001, was designated as a military area in the 1987 master plan.
	-	Plevne, BahçelievlerPaşaalanı, Kuvai Milliye etc.	Low Density Housing	In urban fringe	Modification to medium-high density residential zone	With the growth of the city, the density of housing areas increased.
	-	*Çayırhisar, Halalca, Ayşebacı Villages etc.	Low Density Housing	In urban fringe	Continuation of the function	*In accordance with Law no. 6360, the villages received the status of the neighborhood, but no changes were made to the current situation.

5. CONCLUSION

So ever the integration of fringe belt studies into planning has been discussed; its importance in implementation projects is not yet understood. However, in recent years, these areas have shown great interest in the field of urban morphology. It is clear that, although not immediately apparent on-site, when development processes are mapped and examined, land uses in urban fringe are an essential element in the internal structure of cities. These areas, which have a significant effect on shaping the macro form in the development processes of cities, were also examined by geographers (Whitehand, 2007).

Like all urban areas, fringe belts come with their identities as a result of many interactions and changes. These areas carry clues about urban growth, directing new development areas of the city because the areas undergo transformations integrated with the development stages of the city and have spatial magnitudes that will affect urban use. When the projects carried out in urban environments and the related literature is examined, it can be seen that fringe belt studies are developed by emphasizing small-scale cities or particular areas containing original regions or structures (Pereira, Meneguetti, & Rego, 2011) In this study, which was carried out in line with this understanding, the transformation of Balıkesir city center was investigated on land-use change in urban fringe through Conzen's perspective.

As can be seen in the comparisons made within the scope of the study, many of the areas that peripheral usages have turned into areas in the city center today (1925-50, 1960-85 periods). Over time, urban uses and density have increased, new residential areas have been built. This situation has caused congestion in the

city center and after 2000's the areas that lost their peripheral character onwards started to change function.

Although there are successful applications in the city, such as Atatürk park, which have turned into active green areas, these examples are very limited in number. However, many of the low-density residential areas are concentrated. Institutional uses with limited access in the city center continued to function. In this case, large lands (military clubs, lodgings, DSI, KGM, etc.) located in the city center have created restrictions on public use.

Land uses in urban fringe should be seen as threshold areas representing the growth of the city, planning policies should be established with the awareness of these fringe belts, and function change decisions in the city should be made through the understanding of quality urban space rather than economic concerns. The potentials of these areas surrounding the urban space are quite high. The use of these areas as an active/passive green area instead of being reconstructed or concentrated will add quality to the built environment by creating spatial welfare.

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SESSION 5B

Theme: Architectural/Urban Design, Art and Aesthetics

14 October 2020 Wednesday, 13.30 – 15.00

Chairperson: Prof. Dr. Savaş Zafer ŞAHİN

Yaren ŞEKERCİ, Hilal Tuğba ÖRMECİOĞLU
Abstract Space and Modern Architecture: Adana and Ankara Power Plants

Merve BULDAÇ, Sıla Ceren VARIŞ, Merve KARAOĞLU CAN
An Evaluation of the Symbolic Meaning of Tile Usage in the City of Kütahya

Saadet Mutlu KAYTAN, Can BİNAN
Re-functioning the Italian Embassy Building in Maçka

Şahika ÖZDEMİR, Serhat ANİKTAR, Ahmet KURNAZ
Interior Design of Mosques and Madrasas Belonging to Seljuk and Ottoman Civilizations in Konya

ABSTRACT SPACE AND MODERN ARCHITECTURE: ADANA AND ANKARA POWER PLANTS*

Yaren ŞEKERCİ**, Hilal Tuğba ÖRMECİOĞLU*

ABSTRACT

According to Lefebvre's statement that "Space is a social product", production relations have an important role in space production. The transition from one production method to another is highly significant; because, this is the effect on the social production relations that can be involved in the space. Since each production method has its own space, a new space is produced during this transition. Based on this, Lefebvre proposes an important periodization of space. This periodization was created by taking into consideration the general production methods and the history and institutions of the societies in which these production methods prevailed. In the periodization, six spaces, "absolute space", "consecrated space", "historical space", "abstract space", "contradictory space", and "differential space" are mentioned. Abstract space, which includes the electric power plants built in between 1910-1932 in Turkey and which covered by this study is defined as a modern space with straight lines and geometric perspective.

After the first power plant was established in Turkey in 1910, fifty-two more built in Turkey until 1932. When the architectural features of these factories are examined, the number of those built in the modern style of Lefebvre's abstract space concept is quite limited. It's seen that there is a search for style in the power plants that go between national style and modern architecture and this shows that the traces of the style search of the period are felt in the industrial buildings. However, especially in power plants established by foreign companies, there are those which were built in modern construction methods and materials and modern architecture. Among these, the power plants in Ankara and Adana established by German E.L.G company stand out. Both of them built in reinforced concrete beams, with modern construction methods and modern architectural style

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* This study is based on the Yaren Şekerci's master thesis titled "Electrification of Antalya and Antalya Old Powerplant".

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according to the conditions of the period. Ankara Power Plant has a square plan type in contrast to the common rectangular plan typology. The absence of a narrow edge of the structure has led to the need for a larger opening in the roof and therefore, the steel roof truss system of the structure stands out. The modern mass and facade of Adana Power Plant distinguish the structure from other power plants of the period.

In this study, it's aimed to highlight the importance of Adana and Ankara Power Plants, which were built in a modern style, in comparison with the other power plants in Turkey established in between 1910-1932 by investigating the architectural features over the abstract space defined by Lefebvre.

Key words: Abstract Space, Adana Power Plant, Ankara Power Plant, Modern Architecture

1. INTRODUCTION

According to Lefebvre's (2014) statement that "Space is a social product", production relations and manufacturer powers such as nature, work and organization of work, technique and information have important roles in space production. As he conveyed "Every society –and hence every mode of production with its sub variants create their own spaces" (Lefebvre 2014)". At this point, the transition from one production method to another which might also be called the change of technique has great theoretical significance; because, this is the effect on the social production relations that involves the space by making the space totally changed. Since each production method has its own space, a new space is produced during this transition.

Based on this, Lefebvre proposes an important periodization of space based on the general production methods and the history and institutions of the societies in which these production methods prevailed. However, it is supposed to be considered that in this periodization, when a new space is produced, the previous ones could be still valid and existing. Lefebvre (2014) mentions six types of spaces which are "absolute space", "consecrated space", "historical space", "abstract space", "contradictory space", and "differential space". Even though Lefebvre does not spesifically mention the production methods and time frames for these, Marxists collegues like Ronald Boer (2015) match the Marxist production methods with the Lefebvre's space periodization. As it is mentioned that Lefebvre doesn't give any time frame for the space types' birth, but there are some theological and political clues to understand the production method and the era.

In the production methods of the Marxist theory, absolute space is the space of the hunting and gathering production method. It is pure nature, the spaces that

nature offers us to shelter and live. With feudalism and the establishment of the first city-states, the consecrated space was born. Emergence of abstract space followed this by the rise of capitalism. With the late capitalism, contradictory space and by the communism differential space have been produced (Ghulyan 2017).

Other than the Marxist theory, this space periodization might also be fitted the theories of industralization process and periodization of the change of production techniques. Freyer (2018) defines "technique" as the ability of a person to do something in a good, safe, subtle, precise and special way. It is possible to see that the technique has been progressing throughout the history of humanity, that more and more useful tools have been made, the variation of materials has been increased, the manifacturing methods have been developed and new energy sources have been discovered. Until the age of industry, people first wanted something specific and then found a special tool and energy source to realize this thing. The energy used in this technique, which goes back to the 19th century, is organic energy of human or animal power and natural energy sources used to produce motion energy (Freyer 2018). In this time line, nature is the most important provider for humanity for both living in and manifacturing. Therefore, the absolute space is the space of this period.

According to Gimpel (1976), the Medieval Age was an era that brought machinery to Europe more than ever before. This will be one of the main factors in the dominance of the Western hemisphere over the rest of the world. In the Middle Ages, the mechanical use of wheels used since pre-Christ times became widespread and machines began to replace manpower. This means a change in production method and by this change, consecrated space was born.

Along with the Renaissance, there were important developments concerning the birth of modern science in the 16th and 17th centuries. Between the 15th and 17th centuries, when the foundations of the industrial revolution were laid, large-scale industrial structures were started to be established. However, a significant alteration in the manifacturing method cannot be mentioned in this period, so there is no new kind space produced.

With the steam engine and coal, which became the main symbol of the 19th century, the manifacturing technique had been changed and gained a whole new meaning in terms of function and quality (Freyer 2018). The first of the changes in the technique is the type of energy used. The use of primary (organic) energy sources in production is abandoned and the use of secondary (inorganic) energy sources begins. Secondary energy sources are not as limited as primary energy sources because they are not readily available in nature and can be

produced in the desired amount. When mechanical, thermal or electrical energy is being produced, it is possible to enlarge the energy production as much as desired and to increase the amount of produced energy by thousands of times (Freyer 2018). Here is when the new space which is the abstract space was produced.

Abstract space, which is covered by this study, functions objectively as a set of things-signs, with formal relationships such as glass, stone, concrete and steel, corners, slopes, hailstones and cavities. This formal and quantified space denies differences; it denies (historical) differences from nature and time, as well as those of body, age, gender and ethnic origin (Lefebvre 2014). The significance of such a cluster refers to a supersimilitude that escapes meaning: the functioning of capitalism, both conceived and hidden (Lefebvre 2014). It is reminded that abstract space has been explained with capitalism in the Marxist theory, too.

There is no simplicity in the abstraction of abstract space; it is not transparent, it cannot be reduced to logic or strategy. Abstract space works positively against its own implications such as techniques, applied sciences, power-dependent knowledge. Abstract space is not homogeneous; but the aim of it is homogeneity. It is multi-unit in itself. Geometric and visual complement each other and contrast (Lefebvre 2014). Haussmann was the pioneer of this space practice with an institutional basis like the absolute state. This order, supported by straight lines, alignment and geometric perspective, was supported by the supreme institution, the State. The continuation of this would be Bauhaus and Le Corbusier, who declared the "dictatorship of right angles" (Ghulyan 2017). Le Corbusier and the accompanying modern architects put sunlight, open space and greenery, which they define as the rhythms of nature and the conditions of nature, on the basis of their projects and carried out their projects on behalf of "freedom" (Lefebvre 2014).

The abstract space can be called as modern architecture when examined in the context of architectural style. Because of the emphasis on modernity, products, and changes in techniques; the power plants have been chosen for this paper to be examined since these buildings are the product of the modernism and space of producing electricity which is a very important step of industrialization and resource at the same time. Under these circumstances, in this study, it's aimed to highlight the importance of Adana and Ankara Power Plants, which were built in a modern style, in comparison with the other power plants in Turkey established in between 1910-1932 by investigating the architectural features over the abstract space defined by Lefebvre.

2. POWER PLANTS BUILT IN TURKEY BETWEEN 1910-1932

The space of production, which is an important part of the production of the space, differs due to the spatial and technical needs of the production of various

products. One of the spaces of production is power plant in which electricity is produced. In Turkey, the first power plant was established in 1910 (Arslan 2017) and fifty-three power plants had been built until 1932 in total. Fourteen of them were established by foreign companies[1] or local municipality & foreign company partnership[2]. According to this information, it is clear that only a minor amount of these plants were established by foreign companies and the rest of them were built by Turkish local governments or Turkish investors and entrepreneurs. When these power plants are examined due to the architectural and structural way, those which were founded by Turkish source were built by old structural system like masonry and the materials used in these factories were mostly local materials like stone (Figure 1-A). These power plants are smaller than the ones established by foreign companies by both in structural and power bases (Figure 1-B).

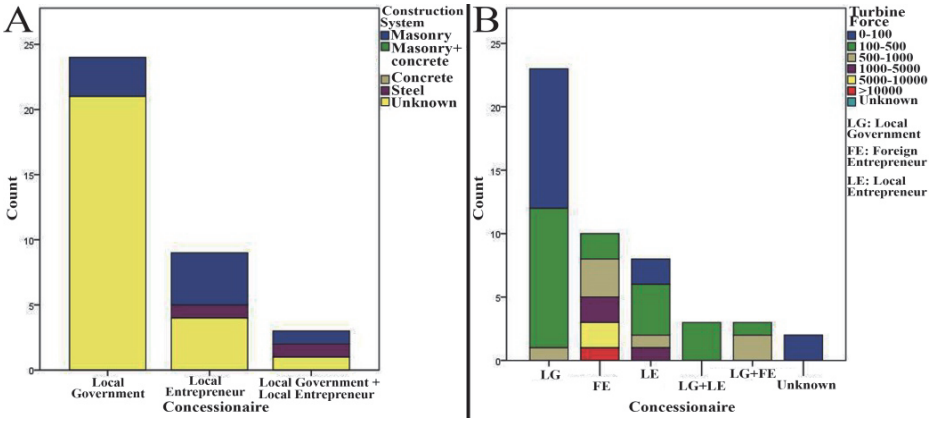

Figure 1: (A) Construction Systems of Turkish Investment Power Plants, (B) Turbine Force of the Power Plants examined by Concessionaire

Some of the power plants built by Turkish investment have national architectural style and Turkish decoration figures on them. Bandırma, Ödemiş and Aksaray Power Plants could be given as examples for it (Figure 2). The National Style is seen in some of the power plants established by foreign companies like Edirne, Balıkesir and Bursa Power Plants.

[1] Bursa (1926), Ankara (1928), Adana (1929), Balıkesir (1930), Edirne (1930), Tekirdağ (1930), Antep (1932), İstanbul (1914), İzmir (1928), Zonguldak (1924) and Malatya (1928) Power Plant (Işıkpınar 1932)

[2] Konya (1927), Eskişehir (1926), Kastamonu (1930) (Işıkpınar 1932)

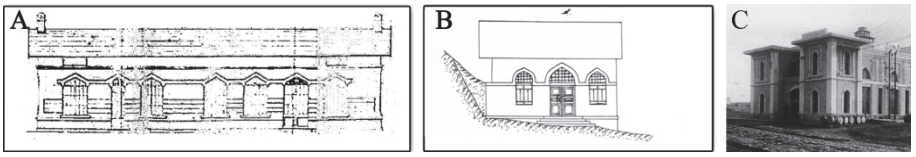

Figure 2: (A) Aksaray Power Plant, (B) Ödemiş Power Plant, (C) Bandırma Power Plant (BCA 230-0-0-0/33/41/4, BCA 230-0-0-0/118/10/1, Güney 2012)

Abstract space of Lefebvre as it is defined before has a modern/geometrical architectural style and it is as if it doesn't belong anywhere and at the same time it belongs to everywhere. Therefore, even though a power plant building type is both a tool and a product of modernism; if it is examined in economic terms, it is also a product of capitalism which is the era of abstract space. Hence, the power plants have national style cannot be fully considered as abstract space because of their local architectural style.

According to the architectural style, construction system and material, most of these fifty-three power plants are hardly defined as modern and abstract space of Lefebvre. Only a few power plants established in Turkey during this period distinguish themselves from others by architectural wise in terms of modernism and stand out. These power plants are Istanbul (Silahtarağa), İzmir, Zonguldak, Adana and Ankara Power Plants. All of them were established by foreign companies. These could be divided into two different categories by the construction systems. The first group which has steel carrier system includes Istanbul, İzmir and Zonguldak Power Plants and the second group which has reinforced concrete carrier system includes Adana and Ankara Power Plants.

Even though the first group of power plants has a modern construction system, they cannot be defined as abstract space fully because of the roof type (Figure 3), because all three of them have gable roofs. However, in modern architecture which is defined in this paper as abstract space has flat roof. Therefore, due to the roof type, they could be eliminated from being abstract spaces. Secondly, as a very powerful modern architectural statement of Sullivan, "form follows function", it is hardly possible to understand the function of the spaces from these buildings. For example, when Zonguldak Power Plant is examined from outside of the building, it cannot be understood which part of the building is the producing space and which part is the administration/other functions. Both volumes of the building and the window quantity are equal. Since the plan of the power plant cannot be found, there is no chance to understand if both of the volumes have the same function or not. Unfortunately, the architecture of the building does not help to understand, either. Last but not least in these structures, more than one roof had to be constructed in order not to pass wide

openness. The concern of passing long span started with the bridge constructions and was tried to make adjustments ever since then. Until the modern and new solutions were found, the buildings which had rectangular shaped plan and had a short length side were built. However, in modern time there are new constructional solutions for that and in modern architecture cube/square form in plan and similar side lengths of the buildings have been chosen.



Figure 3: (A) Zonguldak Power Plant, (B) Istanbul Silahtarağa Power Plant, (C) İzmir Power Plant (Kaya 2014, Yaren Şekerci's Archive 2018, Yaren Şekerci's Archive 2018).

Under these circumstances, these factories could be eliminated from being abstract spaces without denying that they are quite modern compared to their peers. On the other hand, the second group which includes Adana and Ankara Power Plants could be considered as abstract spaces due to the modern construction system, architectural style and materials.

3. ADANA AND ANKARA POWER PLANTS AS ABSTRACT SPACES

While Işıkpınar (1932, 1933) informed that the establishment date of Ankara Power Plant was between 1928 and 1930, Artel (1976) stated that it was established in 1924. The first attempt for the electrification of Ankara was realized by Ganz company in 1916, but this attempt was not successful (Karayaman 2014). The first electricity factory in Ankara was established in 1925 by the Municipality of Ankara with a direct current dynamo of Bentderesi, which was rotated with a 50 horse-power locomotive (Karayaman 2014). An attempt was made to establish a diesel power plant in Ankara in 1926 with the partnership of German MAN and AEG companies due to the lack of electricity needs. The concession right for this power plant was granted to Elektrizitäts Lieferungs-Gesellschaft (ELG), headquartered in Munich. The construction of the factory was completed on September 26, 1928. Since the diesel generator group bought for this factory started to serve in another structure between 1927 to the finish of the construction of the factory, Ankara got electricity one year before the construction of the power plant had been finished (Karayaman 2014). Ankara Power Plant (Figure 4), which was established as a diesel power plant, was transformed into a thermal power plant operating with Zonguldak coal since 1936 with a decision taken in 1933 (Saner and Severcan 2009).



Figure 4: Ankara Power Plant (Işıkpınar 1932)

Işıkpınar (1932, 1933) states the establishment date of Adana Power Plant as 1929-1930 and Artel (1976) as 1925. Adana's first electrical center is the power plant established in 1919 (Çanak 2013). The electricity produced in this power plant was used to illuminate the old municipality and the government mansion area. This situation continued in the same way in the first years of the Republic (Çanak 2013). The factories in Adana produced the necessary electricity by themselves. Osman Vehbi Bey, who realized the need for electric tram in Adana during the construction of the Istanbul-Baghdad railway, received the city's electrical concession in 1915 with the Public Works Minister of the time, Abbas Hilmi Pasha (Çanak 2013). Osman Vehbi Bey handed over the concession to the municipality in 1927. Municipality also handed over the concession of electricity production and distribution to ELG company (Çanak 2013). Adana Electricity Turkish Anonymous Company was established on May 15, 1929. The company, located next to Demirköprü, has two diesel engines of 1500 horsepower at its power plant (Figure 5). The company, which started its activities by undertaking the privilege of ELG Berlin, had all its facilities built by ELG Berlin. Due to the "Great Depression", the company consistently suffered between 1929 and 1929. Due to this situation, the partnership structure of the company has changed in a short time. The company was purchased by the government on 7 July 1939 and given to the management of the municipality (Çanak 2013).

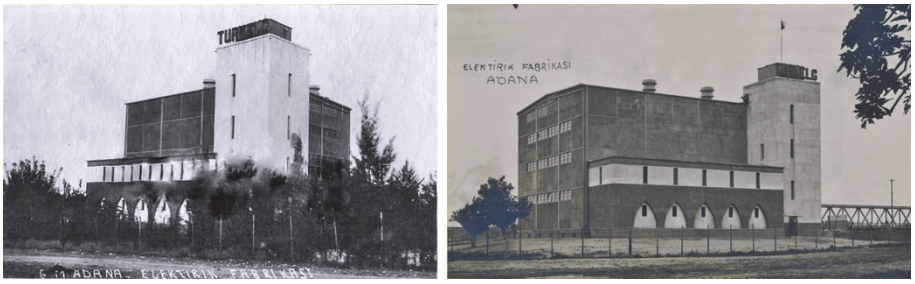

Figure 5: Adana Power Plant (URL 1)

Both of the power plants in the second group were established by E.L.G., were built in modern construction system, which is reinforced concrete and modern architectural style by evaluating them in the conditions of the period. Unlike the common rectangular plan typology, Ankara Power Plant (Figure 6) has a square plan scheme and this factory distinguishes itself from the power plants with steel construction by it, because the absence of the narrow edge of the structure has led to the need for a larger opening on the roof. Therefore, the steel roof truss system of the structure stands out. This modern way of construction and square geometry are one of the features of the modern architecture thus abstract space.

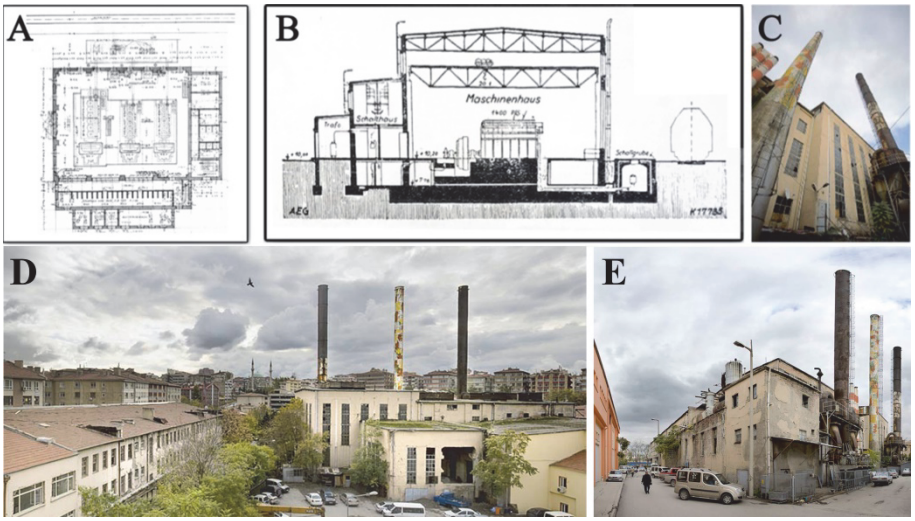

Figure 6: (A) Ankara Power Plant Plan, (B) Ankara Power Plant Steel Roof Truss System, (C), (D), (E) Ankara Power Plant (BCA 230-0-0-0/5/17/1, URL 2)

The modern mass and facade of Adana Power Plant distinguishes the building from other power plants of the period. The cubic volumes, which have different heights and different sizes combined in one building and this led to make a first impression to the people from the outside about the functions of the spaces. For example, the biggest volume of the building is the electricity production space and the other volumes are the service, administration, etc. (Figure 7). This power plant is also significant due to having a production technology ahead of time.

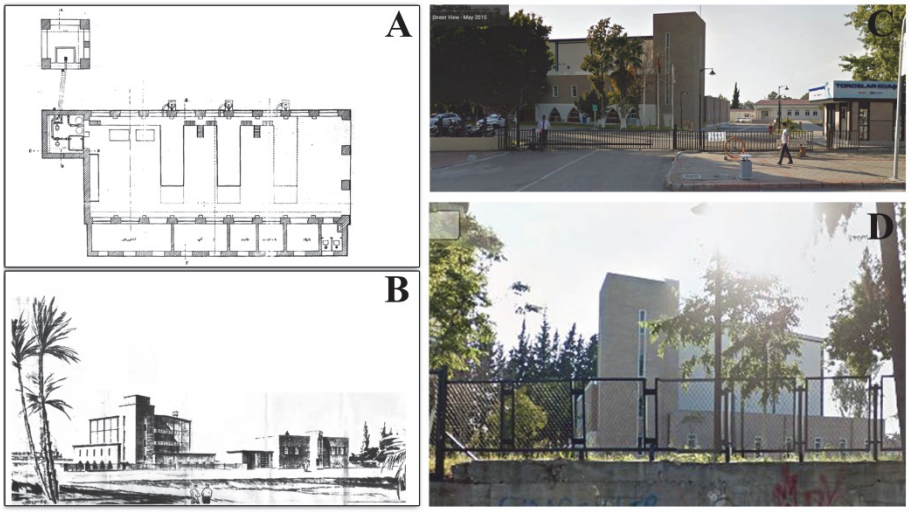

Figure 7: (A) Adana Power Plant Plan, (B) Adana Power Plant Perspective Drawing, (C), (D) Adana Power Plant's Current Condition and Function (Adana Toroslar EDAŞ General Directorate (BCA 230-0-0-0/3/8/1, URL 3)

While most of the power plants could produce electricity with 0-100 total power, in Adana Power Plant there were two turbines, which had 3150 total power. The generators of the power plant were AEG. In Ankara Power Plant, there were five turbines, which had 5500 total power, and the generators were AEG and Siemens Schuckert (Işıkpınar 1932). This makes Ankara Power Plant the third most powerful power plant in the period after Istanbul and Izmir Power Plants and makes Adana Power Plant the forth one.

While Ankara Power Plant was destroyed in 2017, Adana Power Plant is still being used as a space but in different function, which is still relevant to electricity. Adana Power Plant is currently Adana Toroslar EDAŞ General Directorate Office.

4. CONCLUSION

Based on Lefebvre's (2014) "Space is a social product" statement, in this context, the spaces of production in Turkey's industrialization and modernization period have been tried to be examined. Under this circumstances, the power plants produces electricity that is the most important resource for all type of factories and one of the steps of industrialization have been chosen. Since the electricity and the factory buildings are significant in modernization and industrialization, Lefebvre's abstract space is examined because of the similarities with modern architecture. Among the first established fifty-three power plants of Turkey, only Adana and Ankara Power Plants standed out as abstract space. Both of the power

plants have reinforced concrete carrier system, flat roof and high total power of producing electricity.

In time, while the new spaces have been produced due to the economic impacts, the abstract space left its space to the new spaces such as contradictory and differential spaces. In new world order and new spaces, unfortunately the old ones are being replaced or they are excluded. However, it should not be forgotten that these previous spaces thus buildings represent the era of they were established in an unwritten way. Therefore, even though the time is not for abstract space anymore, the buildings of that time have to be preserved as an evidence of that period. In the upcoming decades, there will be new production techniques, new economical conditions and new kind of thinking of humanbeing. Since the only thing that does not change is change, there will be new space types in the future. Our duty is to preserve our spaces that reflect previous periods and to transfer and adapt them to the future.

In this context, two very important factory of the modern era of Turkey have been examined and tried to been highlighted the importance of them. Unfortunately, only one of them is still in use but have a different and new function.

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AN EVALUATION OF THE SYMBOLIC MEANING OF TILE USAGE IN THE CITY OF KÜTAHYA

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ABSTRACT

Urban space is always in motion, where vital activities take place, and economic, cultural, and social organization locate. Apart from all these organizations, it becomes essential to approach the city through the concepts of 'urban image' and 'urban identity'. Both ideas consist of a set of norms covering natural-social life and all kind of cultural activities and products. In order to fulfill these activities, settlement components are in need for creation by local authorities that have the symbolic meaning related to the locality, compatible with the city. By meeting this need, cities become dynamic, attractive, livable for citizens and different compared to their counterparts.

Urban space is generally shaped around concrete or abstract values that create symbolic meaning for the city, inspired by urban memory, significant for the city and the citizens, and it forms the urban image. Urban space plays an important role not only for the usage of the people living in public spaces but also in terms of the identity they bring to the city. These urban components, which enable people for both individual use and interacting with each other in public spaces, might have both positive and negative impacts on the urban image and the identity of the city.

The research method of this study is determined as visual evaluations based on the data obtained through on-site observation of the selected case. A literature review is made using the scanning model. The observations were made by using photography as a method of recording data. Within the scope of this study, the city of Kütahya is discussed based on the usage of tiles that have been noted as the city's brand and become the focus of its urban identity. The main aim for this study is to draw a critical evaluation

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of the usage of tiles in terms of symbolic meaning through these settlement components in Kütahya.

Keywords: Urban image, Urban identity, Settlement components, Tile, Kütahya.

1. INTRODUCTION

The city is an organism. It has to keep a certain image and identity in order to get distinctive value. Multivariate components create the city. The city, as a complex mix, has both common areas as the rest, yet it is also unique. Each and every city has unique features at different scales and from multiple point of views. In the city, cultural, geographical, socio-economic characteristics and the locals build the urban identity and the image of the city. In order for cities to remain their respective identity, these features should not be overlooked and local institutions such as municipality and governorship should appreciate these features. Each city is the subject of economic development within its capacity not by overlooking the cultural heritage and the proper use of existing resources in terms of transferring the values and components it possesses to future generations. Each component is an indicator of socio-cultural life, level of development and visual harmony. Under normal circumstances, these components should be able to be observed by symbols in the city as parts and as a whole, nevertheless non-integrity is subject to be observed.

Culture is constituted by the sum of symbols. Each city sustains itself based on the existence of a number of symbols. These symbols exist through narratives. This enables the image and identity of the city to convey to the rest of the world. In the specific case of Kütahya, the well-known owned resource is tile. It has a historical significance and still has a productive value. Tile gives the city an undeniable meaning. In this research, observations about the city of Kütahya are made visually and analysis links the existing situation to the theory of urban image, identity and symbols in the urban space.

Main motivations of this research is to study the image and identity acquired by the city of Kütahya, and to determine the repeated use of tiles in the city. It is aimed to question the value of the use of tiles from the past to the present. Based on these theoretical knowledge, the selected boulevards and avenues of Kütahya is subject to this research with their facades, fountains and objects.

The structure of the research is as follows: theoretical sections where the urban image, the identity of the city and the settlement components are explained; the symbolic meaning of tiles that the relation that imposes on the city; data analysis and methodology; and finally findings and discussion.

2. THEORETICAL BACKGROUND

One of our major concerns is to define the concepts that have immense impact on urban life. These concepts are grouped as urban image, urban identity and urban space. Additionally, symbolic meanings in academic literature and features of tiles are very significant to examine. This part of the research provides the relationship between urban image, urban identity and urban space. Each concept is thoroughly explained in each subsection which leads to better understanding of the concepts. These three concepts are assumed to be in close relation within the scope of this research.

2.1. Urban Image

In order to understand the image of the city, it is necessary to understand what the facts of the city and the image mean. The city can be defined as "a form of settlement, a type of community, the product of recent times, and a certain stage in the development process of human societies". The image is defined as pictures, maps or impressions that occur in the minds of any object, event, situation, activity, individual, organization, city and country (Bakan 2008: 293). Within the framework of these two concepts, it is possible to say that the image of the city is formed in the human mind. Time spent in the city, experiences gained, the places they are located, information and news from the city's films, books or magazines / newspapers create an image that reveals the positive or negative aspects of the city. Therefore, it affects people's investment, shopping, working and traveling decisions. It can also be defined as the sum of the psychological characteristics formed on the target audience related to the city in the light of all mentioned (Gecikli 2012:5).

Kevin Lynch (1960: 47-48), author of the book: "The Image of The City", divides urban image into five groups;

- Paths: Ongoing channels that observers are accustomed to, sometimes or potentially used (Figure1).
- Edges: Linear elements that are not used as paths by the observer (Figure2).
- Districts: are characteristic areas with common characteristics (Figure3).
- Nodes: are junction points, stopping points in travel and intersection points of roads (Figure4).
- Landmarks: These external elements can be physically recognized and perceived throughout the urban area. These are simply identifiable physical objects, such as buildings, shops, towers, domes, trees or mountains (Figure5).



Figure 1. Paths[1]

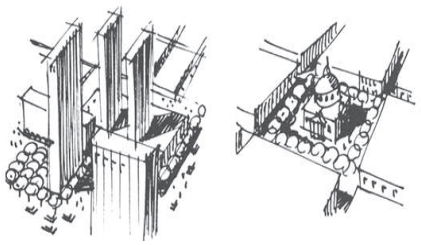

Figure 2. Edges

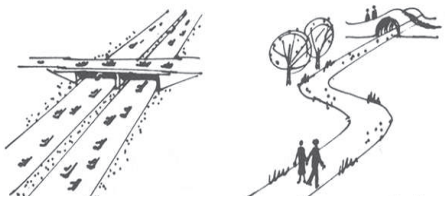

Figure 3. Districts

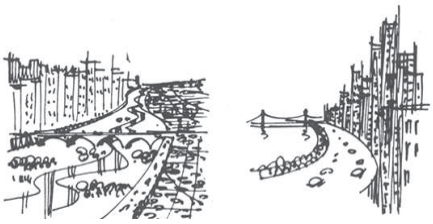

Figure 4. Nodes



Figure 5. Landmarks

Avraham (2004: 473) divides the urban image into two groups as open image and closed image. New features and qualities can be added to the image of the city for the open image, and the definition of closed image is difficult to change prejudices. As Avraham has mentioned, it can be said that especially in recent years, municipalities, urban planners and urban decision-makers have taken important initiatives to add new qualities to the existing image of the city. This causes competition among cities. This competition also adds the brand image to the image of the city. However, significant efforts are needed to make a city a brand (Demirel 2014: 232). Some cities have created production markets and created brand image by transforming the opportunities of nature such as climate, soil structure and developing technology and communication opportunities into

[1] Figure 1,2,3,4,5; Retrieved January 08, 2020, from https://kentstratejileri.com/tag/kent-imgesi/

opportunities due to their geographical location. This makes the city attractive to the people and makes the city more valuable and preferable in the eyes of the people living in that city and the people who cross the road with it (İri et al. 2011: 82). What is important here is to display a positive city and brand image. Within the scope of this study, the effects of symbolic meanings of tiles and ceramics that constitute the city and brand image in the city of Kütahya that constitute the sample area will be explained in detail and the positive and negative aspects they add to the city.

2.2. Urban Identity

The concepts of urban image and urban identity are often mixed up in the literature. While the urban image expresses a mental process obtained by observing the city; the urban identity refers to the social, cultural and spatial narratives of the city (Topçu 201: 1052). Identity is objective that indicates actual features of a place, whereas image comprises of mixture of these features with addition of perception about the place (Montgomery 1998: 100). Lynch (1981) defines urban identity as "the extent to which a person can recognize or recall a place as being distinct from other places". Similar to individuals, urban areas ought to have peculiarities, these consist of a number of characteristics, or establishable elements. It is important considering urban environment from historical perspective not only focusing on historically noteworthy structures but also perceiving the evolution of the local urban setting in terms of human factor, built environment, and nature. This urban setting is substantial to create "a sense of place", while paying attention to the urban identity as stated by many scholars (Oktay 2002). Local urban context varies according to many peculiarities from climate to culture. The quality of the urban public space that involves streets and squares contributes to the making of the urban identity (Oktay 2002). On the other hand, the urban identity has a transformative and a distinctive meaning. In theory, urban identity is attached to many channels of research. These different branches of research can be named as psychology, planning, architecture, and the like. From the psychological point of view, Prohansky et al. (1983: 59) states the importance of the relation between self and surroundings. They assert the importance of "an ecological approach in which the person is seen as involved in transactions with a changing world". This changing world addresses the urban environment the individual continues his/her life. The relations between identity and urban areas is used in a parallel way with the place identity and urban-related identity (Lalli 1992). This explanation takes us to the notion that identity of a physical setting, which is explained in the literature as several ways. One of them is in terms of environmental psychology area, named as "place identity".

Ujang (2012: 156) highlights the urban place identity and the possible contribution of indicators as attachment to place and attributes of place to the "future redevelopment of local urban places". The concept of place identity that most frequently underpins planning and design is the genius loci view of place (Norberg-Schulz 1980 as cited in Hague 2004). "Genius loci", in the etymological sense, means a peculiar soul of the place (Hague 2004: 5). These type of spaces transform into "the place". The urban identity shows the peculiarities for a place that created not in isolation but with the help of interpreting, communicating and acting within a context (Groth 2002: 17 as cited in Hague 2004). Urban environments consist of both natural and artificial urban elements, and social and cultural features in parallel to the definition of urban identity (Ilgın 1997 as cited in Saban Ökesli and Gürçınar 2012). In conclusion, "the urban identity is a great process that affects the image of the city, which has its own characteristics with different scales and interpretations in each city, shaped by physical, cultural, socio-economic, historical and formal factors, which creates the concept of a constantly developing and sustainable city formed by the citizens and their lifestyles, extending from the past to the future" (Lynch 1960; Tekeli 1990; Çöl 1998 as cited in Topçu 2011).

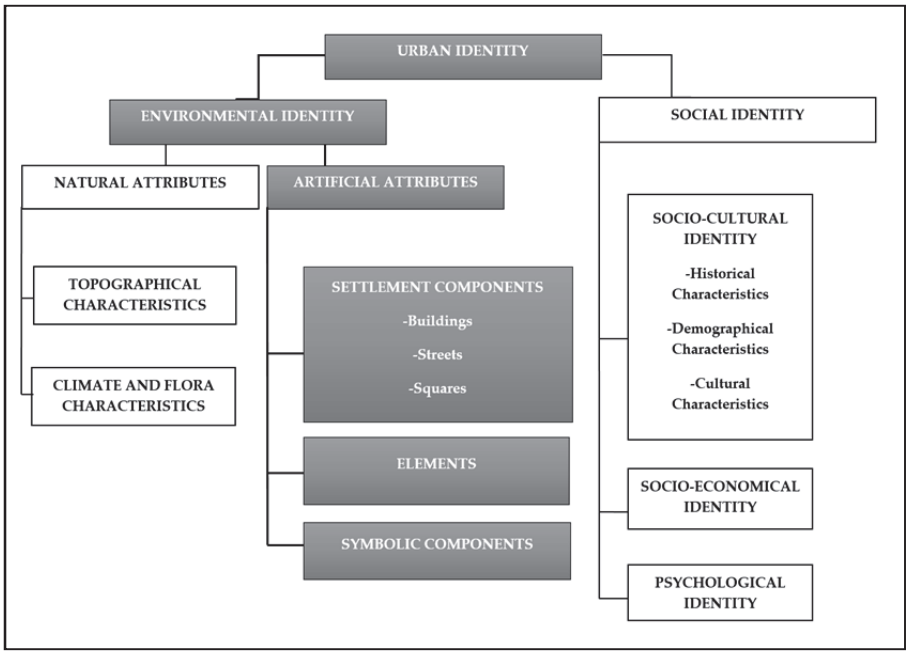

Figure 6. Urban identity components.[2]

[2] This figure was reproduced exactly by the authors of the research from Örer, 1993.

Figure 6 shows the conceptualization of the components of urban identity in a master's thesis Örer 1993 as cited in Saban Ökesli and Gürçınar 2012. The "artificial attributes" grouped as settlement components, elements and symbolic components are important to notice in terms of our research. We focus on the Settlement Components as building facades, fountains and monuments, and Symbolic Components such as tiles for Kütahya case. The level of research is comprised of artificial attributes in parallel to the work of Örer (1993 as cited in Saban Ökesli and Gürçınar 2012). Without digressing from the topic, let us move on to the third component within this research. In her highly cited work, Jacobs (1961: 29) puts emphasis on the streets and sidewalks as in an urban setting functioning as "most vital organs". According to her, when thinking of a city, the streets ought to be the first to come to mind (Jacobs 1961: 29). That is why, now we are moving to the streets of the city which is highly in relation to the settlement components on the streets and their meanings.

2.3. Settlement Components

The natural and built environment elements that reveal the identity of the city are in interaction with individual differences, cultural values, social life, past experiences, emotional associations or knowledge that underlie the user's environmental evaluations. Çoban (2014: 129) mentions that the meanings attributed to the character of the city through these features have become a social symbol and can be defined by a purely symbolic content rather than a physical structure of that environment. Because the social identity developed by the city composes from a common language created by environmental and symbolic values. The main recommendation of Rapoport (2004: 12) on this context is the necessity to consideration of the 'things' that the community of the region emphasizes as a cultural element. At this point, the 'things' which create the city and ensure the existence with all its eigen value, more descriptively for this research as a 'components', can be sorted, classified and examined according to different qualification or pecularities. The settlement components which are classified as buildings, streets and squares with a holistic approach, as it mentioned in the section 2.2., are represented with three most important elements that can be searched within the focus of this research; building facades, fountains and monuments.

The first component of the representation is the building facades, which provide support in establishing the boundaries of the city and concretize the identity marks by framing. These buildings offer to its audience diversfied experiences according to their location and other effective factors of the environment. Two different forms of configuration described by Moughtin (2003: 63-65), can be

cited as an exemplary for these experiences: *Buildings in landscapes*, that need space around them so that they can be appeciated as unique compositions. On the other hand, *buildings having geometric volumes*, when placed together, can present a unified composition provided that certain conditions are met, so that the ever-changing composition is seen from many viewpoints (Figure7).



Figure 7. Settlement components from different viewpoints.[3]

The second component is the fountains, which present the essential water element to the inhabitants of the city in different forms and structures. The necessity of shaping the regions where the cities will be established according to the water factor and providing access to it at the highest level, necessitates the consideration of functional and aesthetic requirements in the city planning. As long as these requirements can be met, fountains can become the focal points of the city with its visual attraction and activity, gathering and socialization that location offers. The third component is monuments, which have similar functions as fountains within social norms, but may differ in their daily life activities and symbolic meanings. The centralization and character put forward by these two components can be explained with the *'imageability'* that Lynch (1960: 9)

[3] London, England © April, 2018. Courtesy of Merve Karaoğlu Can.

describes as "quality in a physical object which gives it a high probability of evoking a strong image in any given observer" in his study called The Image of the City.

In addition to being capable of supporting the urban identity, each component that can be used in the city also contains semantic and visual elements that may lead to perceptual confusion. Although the ornament and decoration of the settlement components with different functions represent their area of action, the consistency and unity of language in design will enhance the holistic and symbolic meaning of a city. Therefore, the locations of these components, in order to increase their visibility, may be arranged in the arterial roads, mainly on or near to busy streets. Thus, the context, meaning and the dramatic effect of buildings, streets and squares, namely settlement components, can be improved and changed within the process.

2.4 Symbolic Meaning of Tile Usage and Urban Relation

Etymologically, a 'symbol' means a sign or object that is used to represent something (tangible), whereas 'symbolic' means representing something (intangible) according to the Cambridge dictionary. Symbolic meaning unfolds the theory on institutions, design, urbanism and such. Symbolism deals with the "attachment of meaning, an emblem, a non-explicit connection of ideas" (Tennekes 1982; Firth 1973 as cited in Nas 1992: 177). Generally, symbols can relate to societal levels for example the international level, national, regional, city level, village level, local institutional level (Nas 1992: 178). Reminiscence, meaning and connotations are represented by places for people, groups and citizens in the city. Space is the fundamental source of the meaning that besides being conveyed from specific buildings, landmarks or statues (Montgomery 1998: 101).

Dembski and Salet (2009) conducted a research that attempts to focus the use of symbols and transformative potential of institutions by using them. The coherence and identity of the city is an ongoing process along with the transformations of urban spaces (Dembski and Salet 2009: 611). Diversified symbolic expressions emphasize the urban transition processes via highly visible landmarks, design objects, using metaphors, expressing cultural markers, highlighting new public spaces, grand urban manifestations and events, and the like (Dembski and Salet 2009).

A symbol has a wider connotation which cannot be observed in the symbol fortright (Nas et al. 2006 as cited in Dembski and Salet 2009: 619). Symbols have both formal and informal attachments, which make them often ambiguous, even fuzzy, and some cases various different meanings are linked to a particular symbol by different groups (Nas 1992: 179). Cultural symbols have the possibility to be

detached from institutionalised practices. Therefore, these are open to weaken the impact on urban space (Dembski and Salet 2009: 621). This shows the importance of setting the institutional and theoretical grounds for symbolic meaning of tiles in the city. As in the context of our case study, tile is a symbol both for production and culture. It is a cultural symbol that refers to "a certain way of life" (Dembski and Salet 2009: 611).

All kinds of objects, motifs and symbols that create symbolic value have shown their effects in the field of culture and art in every period. The use of tiles examined in the scope of the study has become a product in which many artists create various forms of living, thought and needs of both himself and the society. The Turkish Language Association[4] defines tile as "oven-cooked terracotta, slime slabs, tiles, one side glazed and often decorated with flower paintings, used to cover and decorate tile walls". The true meaning of the word is derived from the Chinese name with reference to the Chinese who introduced Ottoman porcelain art to the world. As a result of "colored and glazed firing of various forms of plates, the protective transparent layer formed by the melted glaze on the slab made of tile paste became the basis of tile art and provided a color that does not fade to the architectural ornament in which it is used"[5]. Tile art, which is used as a cultural heritage in many places from small to large scale, is known to have a centuries-old history in Kütahya and İznik lands[6]. This ceramic product, which is generally used according to the interior / exterior spaces in which they are used, has been produced in different ways to serve various purposes in human life from the past to the present, and has survived both in functional and visual richness (Pamuk and Oyman 2016: 2).



Figure 8. Tile art samples.[7]

[4] Retrieved January 08, 2020, from https://sozluk.gov.tr

[5] Retrieved January 08, 2020, from https://islamansiklopedisi.org.tr/cini

[6] Retrieved January 08, 2020, from https://www.armadacini.com/cini-hakkinda/turk-cini-sanatinin-tarihcesi

[7] Retrieved January 08, 2020, from https://islamiturksanatlari.wordpress.com/cini-sanati

As a result of archaeological excavations and researches in the city of Kütahya, also known as KOTIAEION in ancient times, it has been determined that ceramic production has been made since ancient times. Tile and tile making, which became a symbol for the city of Kütahya and became known outside the borders of the province and the country, is also an important livelihood of the people[8]. Tile centers were established in Kütahya especially when it came to the Ottoman principality[9]. Thanks to their productions, these centers provided significant support to both the economic and socio-cultural structure of the city.



Figure 9. Tile plates and vase motifs unique to Kütahya.[10]

All these developments 2.1. Urban Image and 2.2. As described under the headings of Urban Identity, it is seen that tiles contribute significantly to the image and identity of the city by the segments producing, marketing, using and promoting it and accepting many visitors. The meaning of such an important symbolic value for such a city, its repetition in the city (in different structures, surface and urban objects) and the value it carries, the positive or negative effects of the past and today in Kütahya, and the image and identity it adds to the city will be discussed.

3. DATA ANALYSIS AND METHODOLOGY

Based on the chapters used in the city of Kütahya, which constitutes the sample area, starting from the sections where the urban image, identity and the symbolic meaning of the city are explained. The main aims are;

- To study the image and identity acquired by the city of Kütahya,

[8] Retrieved January 08, 2020, from https://kutahya.ktb.gov.tr/TR-69390/geleneksel-sanatlar---zanaatlar.html

[9] Retrieved January 08, 2020, from https://islamiturksanatlari.wordpress.com/cini-sanati/

[10] Retrieved January 08, 2020, from https://kutahya.ktb.gov.tr/TR-69390/geleneksel-sanatlar---zanaatlar.html

- To determine the repeated use of tiles in the city,
- To question the value of the use of tiles from the past to the present.

For these three aims, cross-sectional method was used over the current due diligence screening model. Our sample is the mostly used main arteries of Kütahya such as Cumhuriyet Street (Sevgi Road), Abdurrahman Karaa Boulevard, City square, Adnan Menderes Boulevard. Other reason for this sampling is the occurrence of settlement components.

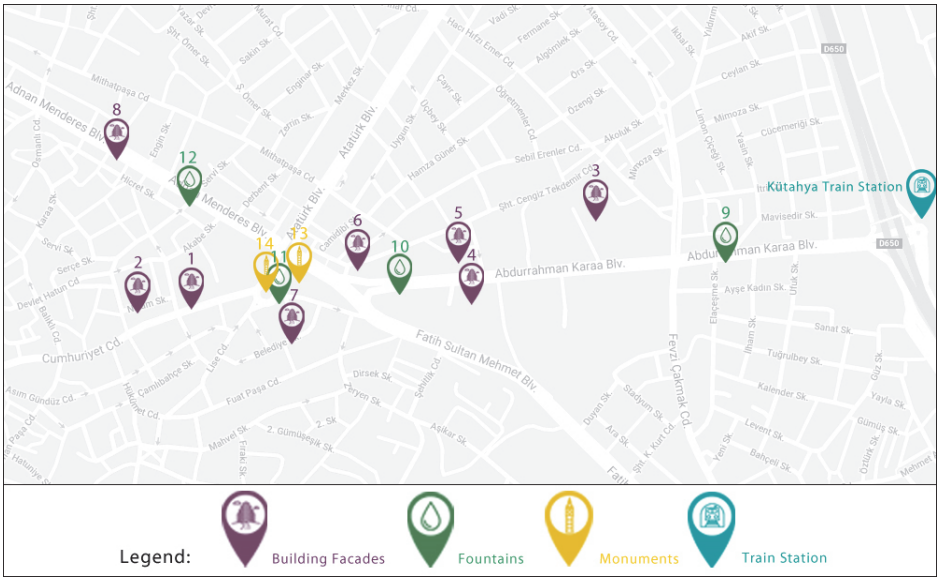

Figure 10. Location of the samples.[11]

The streets selected as the study area intersect in a square that functions as the node of Kütahya city. In these regions, it is thought that the prevalence of urban elements such as banks, fountains, counters, stations that can reflect the identity of the city will be higher than other regions, and more importantly, their qualitative values will help to obtain more data than the elements that can be seen in other regions. Based on this, the observed points are mapped, as can be seen in Figure 10, for better perception of the location information. Each settlement component named as numbered in Table 1 is defined with a different color, and the equivalents of these colors are presented in legend.

[11] This map, which is an off scaled sketch, was produced by the authors of the research through Google Map.

Table 1. Building facades, fountains, monuments samples.[12]

Group 1 Building Facade			
1: Cumhuriyet Street (Sevgi Road)	**2**: Cumhuriyet Street (Sevgi Road)	**3:** Abdurrahman Karaa Boulevard	**4:** Abdurrahman Karaa Boulevard
			
5: Abdurrahman Karaa Boulevard	**6:** City Square	**7:** City Square	**8:** Adnan Menderes Boulevard
			
Group 2 Fountains			
9: Abdurrahman Karaa Boulevard	**10:** Abdurrahman Karaa Boulevard	**11:** City Square	**12:** Adnan Menderes Boulevard
			

[12] This table was produced by the authors of the research.

Group 3 Monuments	
13: City Square	**14:** City Square
	

As shown in Table 1, the study was divided into three groups as “building facades”, “fountains” and “monuments”. The photographs taken on the streets and boulevards designated as sampling area were placed on the table in the groups they belong to according to their usage. The information of each image and the usage of tiles in the city will be explained in more detail in the findings section.

4. FINDINGS AND DISCUSSION

In order to conclude this research, we aim to focus on more detailed analysis of the observations we have made in the city of Kütahya. We grouped three main settlement components in accordance to their frequencies that have seen in the city.

Building facades, within the focus of this research, come to the foreground due to their lively and dull nature. By lively and dull classifications, we are corresponding to the urban image and identity notions in the theory part. Lively is parallel to the ‘genius loci’ of the urban space. Appropriate usage supports the identity of this specific urbanity. Dull usages of tiles are a weak representation of local narratives that opposes the actual urban identity of the city. On the one hand, lively usage of tiles melting into the building facades which enriches the urban identity that comes both from the city's past and recent social, cultural and especially spatial narratives. On the other hand, dull usage of tiles emerges as unnecessary repetitive applications that transforms the city into an ‘unauthentic’ form. First group of analysis focuses on the usage of tiles on the building facades in selected arteries of the city.

First example shows the cabinets for street vendors located in Cumhuriyet Street also known as Sevgi Road. Cumhuriyet Street is used to be one of the streets that

connects the new city square and the old town. It is pedestrianized in 2007 by local government body. It is highly subject to arguments since then due to the transportation planning relation. This controversial issue has been a topic between local government and citizens. It has been recently discussed the re-opening of the Cumhuriyet Street for car usage. Nevertheless, as it has seen on the photos, the pedestrianized road consists of street vendor cabinets. There are roughly 8-10 cabinets located along the 1 km-long street. Each one of these cabinets have tile prints on the sides of them. These prints characterize the combination of traditional patterns of tiles and their translation into the newer forms which also named as 'Yeni (new) Kütahya'.

Second example is the facade from a traditional coffee house where the tiles cover the whole surface located in the same street as the former one. It does not have a continuation when looking at the adjacent surfaces. It creates a contradiction yet does not necessarily give an identity to the place. The tables and men sitting just in front of the coffee house are spread along the walkway not only in front of the designated tile facade but also in front of the undesignated facade. This usage can be categorized as dull because it creates a 'kitsch' in the space and the design that people pass by and do not appreciate as part of urbanity.

Third example is a building facade which belongs to a public technical high school that is located in Abdurrahman Karaa Boulevard. This boulevard connects the train station to the new city square. Along the boulevard there are a number of public buildings varying from schools to public institutions. The entrance facade is covered with tiles. As we see the general design of the building, there are no signs of any other tile usage but the entrance. This way of dull usage creates a transverse add on. There is no obvious relation when the building is described singularly. Nevertheless, based on our visual analysis, along the Abdurrahman Karaa Boulevard there is a tendency to add tiles to some parts of the all 'public buildings'. It does not still correspond to the urban identity problem.

Fourth example is a municipal cultural center building that is located in the same boulevard as the former one. Both facades of this building is vertically and partially covered with tiles. This one might be counted as a lively application of the tiles due to the fact that the application goes hand in hand with the general design of the building. This building is used by the citizens and this place has a potential to create collective memory. This potential is in parallel to the appearance of the building.

Fifth example is building facade which belongs to a public technical high school also located in the same boulevard. As in the other public buildings, one part of

the whole facade is covered with tiles. This case is the same in the third example, the entrance is the part. In addition to the former example, there is a small effort to use the tiles in parallel to the design of the building, especially around the window and lengthwise of the entrance door. However, there is still not enough connection and reasoning to the urban identity of the city.

The sixth example constitutes a residential facade. In Kütahya province, it is possible to see the use of tiles on the facades of many public and private buildings, as well as the use of tiles on apartment facades. On the facade of this old apartment example in the city center, it is estimated that the windows facing the street belong to the hall and tile flooring is used in the hall windows of each floor. The facade has become more attractive since no tiles are used on the facades of the other apartments on the right and left sides of this apartment. The tiles used and preserved on the old buildings play an important role in the image and identity of the city. This old residence also preserves the old Kütahya in terms of protecting the tiles on its facade in terms of history and can be shown as an example that creates awareness in terms of urban image and urban identity.

The use of tiles in public institutions such as hospitals, schools, courthouses and municipal buildings in the city of Kütahya is especially preferred for reflecting the image of the city through public institutions. The "Çinigaz Natural Gas" building in the seventh example and located on the Municipality street in the city center is one of the mentioned public institutions. As can be seen in Table 1, image seven in the data analysis and method section, the tiles used on all three surfaces in the entrance part of the building made the entrance of the building more defined.

The apartment in example eight is located on Adnan Menderes Boulevard. It is seen that tiles are used on the entrance surfaces of the apartment. It was not used on the facade like the housing example in Example six, but only defined the entrance. The fact that the building is not historically old and that it is used only on the surfaces at the entrance does not contribute to the image and identity of the city and does not cover a surface to be noticed by the users of the boulevard.

It is possible to encounter a fountain at every corner of the streets of Kütahya. Since the city has a thermal sources and rich forests, the surface waters are abundant. The tile decorations seen from the Seljuk period in Kütahya architecture are also found in fountains. The fountain in example nine is located on Abdurrahman Karaa Boulevard. The tile decorations on the fountain are among the important values in terms of reflecting the image of the city and the identity of the city to the public and visitors.

The fountain in example ten is located on the same line as the fountain example in example nine on Abdurrahman Karaa Boulevard in the garden of the cultural

palace. It is among the most important examples of fountains in terms of its historical texture for the city of Kütahya. Each surface / facade of this fountain with square plan and four facades are decorated with tiles. It is among the important values in terms of reflecting the image of the city and the identity of the city to the public and visitors.

The eleventh example is a fountain in the square of the city center. This fountain, which has been designed with tiles on all its facades, is a fountain that can be easily noticed by the inhabitants due to the stops of the special transportation vehicles located around it. The design elements and tile use of this fountain, which is expected to have a very important value within the scope of the the value it can add to urban identity and the location, are almost the same as the fountains seen in the examples ten and twelve. In other words, it cannot exhibit a unique behavior and its tiles remain as some decorative ordinary elements that can be used anywhere else.

The Menderes fountain in twelfth example, located in the center of one of the busiest streets of Kütahya and positioned as the surface element of a residential building, does not appear as an autonomous element as in other examples. Although it is acceptable for facades to offer a variety of experiences, city components, such as fountains which are themselves an element of culture and identity, must be designed in a plain shape-ground relationship. Otherwise, the volumetric and the geometric properties of the fountain will not provide a strong enough effect as it expected. Therefore, as in this example, the attempts to create and reinforce identity of tile use will be interrupted.

Clock towers are an urban element which is located at the perceptible points of the city and sometimes has a completely decorative and/or functional feature that tends to leave a strong image on inhabitants. The decorative elements on them that reflect the identity of the city will provide a rich visual experience. The thirteenth figure is an example that is freely defined in the city square and isolated from any element that can steal a role from it, but seems to dominate everything by its location. It is noteworthy that the tiles on it have the features of referring to each other and defining layers. Thus, it can be said that in this example the tile, used on all kinds of element surfaces in order to contribute to urban identity, provides an elemental quality giving to it symbolic meaning.

As a public space, squares are one of the most important elements in urban planning. It can contain all the symbolic meanings of a city and can easily evolve to the place of meeting, gathering and socialization of the people with its visual appeal. With these features, each monument designed in a square in the center of the city can become the focal point depending on its the dramatic effect. In

the fourteenth example, the tiled vase had probably great importance for lang synes but nowadays it seems to have lost its ability to respond to aesthetic and symbolic values. It can be said that it does not meet the expectations especially in terms of the scale and the visual effect of the tiles it carries, by lagging behind the changing and developing environmental conditions.

In each settlement component analyzed above (building facade, fountain, monument), the use of the tile, which has become the symbol of Kütahya, is included. As a result of the observations, it was found that tile can be used on every surface. While making these observations, positive or negative contributions of tile to Kütahya city, the necessity of repeating itself by using this element all over the city, the value or worthlessness of tile gained from past to present is reviewed and its impact on urban image and identity is evaluated.

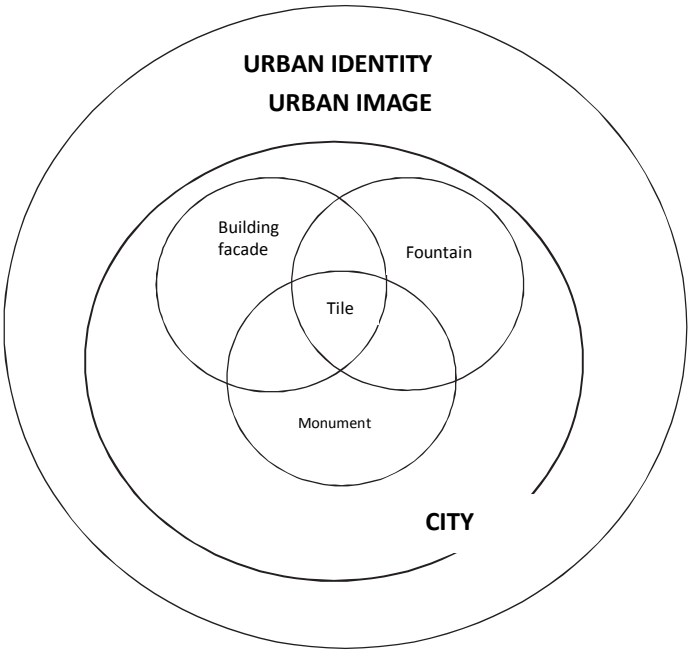

Figure 11. Settlement components of the city of Kütahya in the context of artificial attributes as shown in Figure 6.[13]

It is understood from the Figure 11 created above; each circle has formed intersections within itself. Facade, fountain and monuments, which are defined as settlement components, are the common points where tiles intersect. These artificial attributes that are subject to this study fall under the city of Kütahya

[13] This figure was produced by the authors of the research.

category. These components in Figure 11 belong to some bigger and higher category as shown in Figure 6 in Urban Identity section. It can be concluded that all these phenomena come together to form the image of the city and the identity of the city.

Future studies can be concentrate on the effect of the study areas selected as the main artery on the user. Within this context, it is possible to investigate to what extend the first-degree viewers of the city wishes to experience these tile designs by questionnaire. Thus, decisions can be made in the matter of reducing, maybe increasing or adding these designs to identity of the city by following a completely different method more easily and in an effective way. It will provide substantial improvement not only physically but also socio-culturally. In conclusion, this research provides a new perspective of the sample city.

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RE-FUNCTIONING THE ITALIAN EMBASSY BUILDING IN MACKA

Saadet MUTLU KAYTAN*, Can BİNAN*

ABSTRACT

Giving the use of various state institutions under the new needs of old buildings is a common approach to present-day Turkey from the Ottoman Empire. Allocations are generally made across the country in line with the need for building and use.

Istanbul is a place where allocations are more common, probably due to building stock and usage density. Particularly most of the large programmed buildings have been allocated and re-functionalized.

The Italian Embassy is one of these buildings. The building was designed as the Italian embassy, but construction was not completed and could not be used for this function. The purpose of this paper is to examine the allocation process of the structure, to determine the applications and the authenticity of the structure. For this purpose, researches have been carried out with the permission of the Ministry of Culture and Tourism in the archives of Regional Council for the Conservation of Cultural Property Istanbul II. In addition, document research was carried out at the T.C. Presidential Republic Archive.

In 1938, as stated in the article 2/9363 of the T.C. Directorate of Judicial Decisions, while the building was under construction the Republic of Turkey was agreed with the Italian Government and 150.000 TL was purchased in two installments and the building was transferred to the Real Estate Agency. President Kemal Atatürk's signature is in the official letter (30-18-1-2 / 84-71-2, The Presidency State Archives of the Republic of Turkey).
In a document in 1942, it was reported that the building was sold to Milli Reasurans by the Cumhuriyet Halk Partisi Head of Istanbul Provincial Administration Committee (490-1-0-0 / 1721-995-2, The Presidency State Archives of the Republic of Turkey). In this process, the announcement of the sale of the structure appeared in the newspapers with the title "Land for Sale in Macka" (Tasviri Efkar Newspaper, September 22, 1942).

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During this process, on September 25, 1942, Istanbul Governor and Mayor Dr. Lütfü Kırdar asked the Ministry of Finance to transfer the building to a conservatory or a city club (30-10-00-00 / 81-535-8, The Presidency State Archives of the Republic of Turkey).

After all the allocation processes, today, the structure is re-functioned for educational usage as Macka Vocational and Technical Anatolian High School.

Within the scope of this research, it is aimed to determine the allocation phases of the building, the transformations of it after the re-functionalization processes and to evaluate these determinations in terms of conservation theories.

Key words: Conservation, Educational Buildings, Allocation, 19th Century Buildings, Italian Embassy Office.

1. INTRODUCTION

A process of modernization and renewal was initiated with the establishment of the Republic in 1923. The newly established state began to form a new organization and administrative operation. These modernization movements have also been seen in the architectural and cultural environment. One of the consequences of this change is the need for a series of large-scale structures in the urban area within the framework of new needs.

In cases where the state's new building program was limited by budgetary constraints and new buildings could not be built, the reuse of the buildings that were built in the previous periods came into question. The refunctionalization of these buildings, which were not seen as architectural heritage in the early years of the Republic, at that time was carried out in order to prevent the construction of new buildings and to meet the needs beyond the purpose of preserving the old ones.

Maçka Technical and Industrial Vocational High School, which was originally planned as the Italian Embassy in Vişnezade neighborhood of Beşiktaş district of İstanbul, is one of these structures that has been reused with the new function. The building is located on block number 703 and plot number 4. The building has been officially registered with the decision of the Board dated 16.04.1997 and numbered 8587, and it is within the urban protected area with the decision dated 23.01.2009 and numbered 2338 (The decision of the İstanbul Cultural and Natural Assets Conservation Regional Board No. II of Ministry of Culture and Tourism of Republic of Turkey dated 13.02.2009 and numbered 2397).

The construction of the building planned as the Italian Embassy in order to replace the Venetian Palace, which came under the sovereignty of the Austro-Hungarian Empire, was not completed due to the fact that the empire was

destroyed during World War I and the reign of the Venetian Palace was recaptured by the Italians. At the end of the 1940s, the structure was used as a tobacco warehouse under the General Directorate of Monopolies (Tekel Genel Müdürlüğü). The interior of the building was built in the early 1950s with the function of conservatoire. As a result of the implementations made in 1970, two [sc1]were added to [sc2] of the building (The document of the İstanbul Cultural and Natural Assets Conservation Regional Board No. II of Ministry of Culture and Tourism of Republic of Turkey numbered 489, BoyutPedia, Boyut Publishing Group).

In 2019, the building's surveying, restitution and restoration projects were prepared.[1] Implementation studies have not started yet.

2. METHODOLOGY

Italian Embassy (Figure 1): Although it seems to be a historical building that has preserved its originality and oldness value considering the facade characteristics, its interior features create contrasts with these qualities. A systematic study on why and how this contradictory situation arises was aimed to be conducted, structure was examined, photographed and sketched at the site by obtaining permissions from İstanbul Provincial Directorate of National Education, İstanbul Governor's Office and the Ministry of Culture and Tourism of Republic of Turkey; research has been carried out at the İstanbul Cultural and Natural Assets Conservation Regional Board No. II. As a result of these researches, the ground floor plan, 1st floor plan, 1 section and the western facade sketch of the structure was prepared as the present state and restitution state.[2]

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[1] The archives of the İstanbul Cultural and Natural Assets Conservation Regional Board No. II of Ministry of Culture and Tourism of Republic of Turkey, Period Analysis of Maçka Akif Tuncel Technical and Industrial Vocational High School's Survey, Restitution, Restoration, Civil Engineering, Mechanical Engineering, Electrical Engineering, Landscape Projects Preparation, Project Owner Anfora Architecture Restoration Design Consultancy and Construction LC.

[2] While the survey and restitution sketches are being prepared, the studies carried out in the building in 2017 and the archives of the İstanbul Cultural and Natural Assets Conservation Regional Board No. II of Ministry of Culture and Tourism of Republic of Turkey, Period Analysis of Maçka Akif Tuncel Technical and Industrial Vocational High School's Survey, Restitution, Restoration, Civil Engineering, Mechanical Engineering, Electrical Engineering, Landscape Projects Preparation, Project Owner Anfora Architecture Restoration Design Consultancy and Construction LC's Projects and restitution decisions were taken into consideration.



Figure 1: Western Facade, Photograph by author, September 2017.

3. ARCHITECTURAL FEATURES

The architect of the building is Guilio Mongeri and the construction technique is masonry. The 6-storey building is accessed from Maçka Street. The entrance area of the structure, which has a prismatic mass structure, is in the west direction. The entrance is connected to the corridor with stairs in the east-west direction. These stairs lead to the basement and upper floors. Although the plan scheme in the basement is largely coherent with the ground floor, the corridor scheme extending in the east-west direction turns into rooms on this floor.

The stairs at the western end of the other larger corridor extending parallel to this corridor provide access to the upper floors. The offices are mainly located in the spaces located on the ground floor. The mezzanine is reached through a spiral staircase that is hidden in the space, which is located in the north-west direction (Sketch 1).

The first floor plan scheme shows different features from the ground floor. The wide corridor on the ground floor extending east-west and the corridor connected to the entrance to the south of it turned into rooms on this floor (Figure 2). The space located in the projection of the entrance space and the adjacent spaces constitute the classes. The mezzanine on the 1st floor is not original. This floor has rooms and classrooms. The 2nd floor plan scheme is largely original. Large spaces were divided to create classrooms (Sketch 2).

In the 3rd floor plan scheme, there are spaces where partition walls had been removed in order to obtain large spaces.

The 4th floor plan scheme, in its original form, consisted of two spaces at the east and west ends and the corridor, which connected these spaces. Today, the roof system between these two spaces had been removed and spaces had been added to this space and the corridor (Sketch 3). Although the addition of mezzanines and attic floor to the structure and some areas due to the change of function caused differentiation in section and facade characteristics, the preservation of the general features caused this variation to remain low. The implementations of the load-bearing system of the later period added to the construction was reflected in the section of the structure.

The facades were completed during the construction of the building and the interior was built in later periods. For this reason, the facade features are original except for the spaces added to the attic.

During the completion of the unfinished construction in the 1950s, reinforced concrete construction was added to the structure, which has originally masonry construction system. The stairs were constructed of reinforced concrete and it is possible to see the floorings made of reinforced concrete.

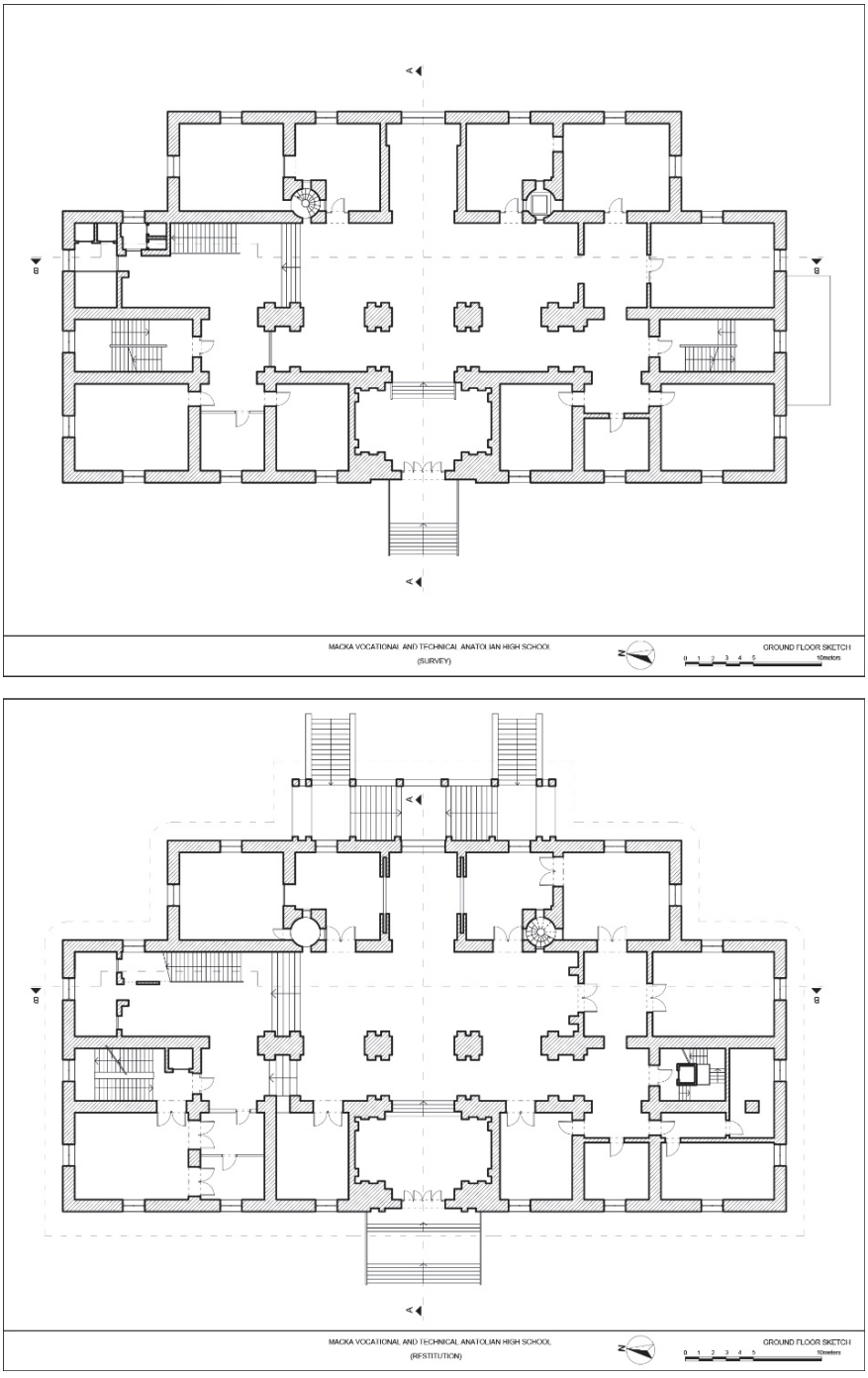
Cut stone material was used on the facades (Figure 3). The façade, which was planned symmetrically with respect to the entrance axle, was designed to be more spectacular than the other facades (Sketch 4).



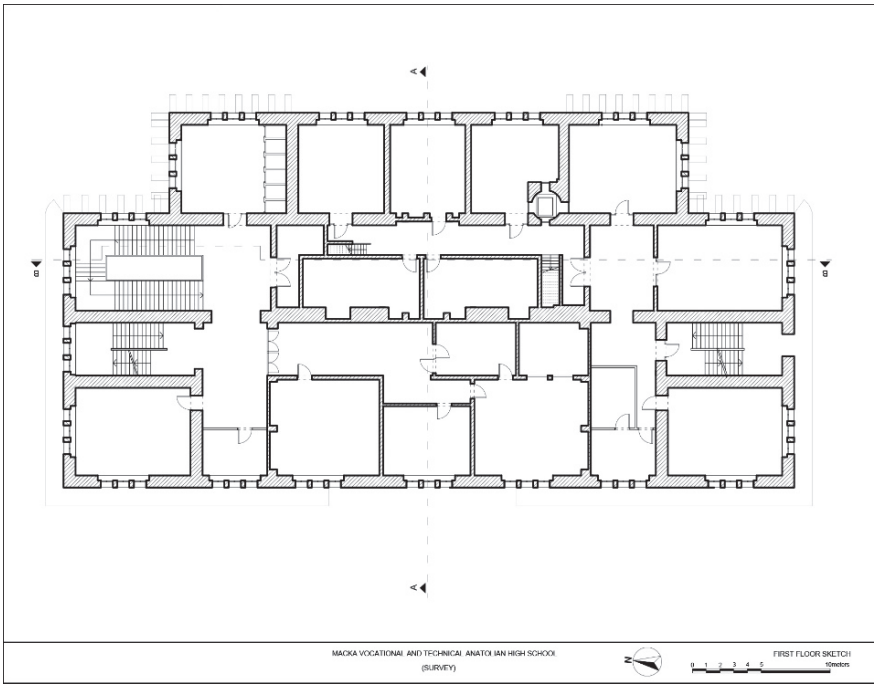
Figure 2: Interior-Ground Floor, Photograph by author, September 2017.



Figure 3: Eastern Façade, Photograph by author, September 2017.



Sketch 1: Ground floor sketch; survey-restitution.

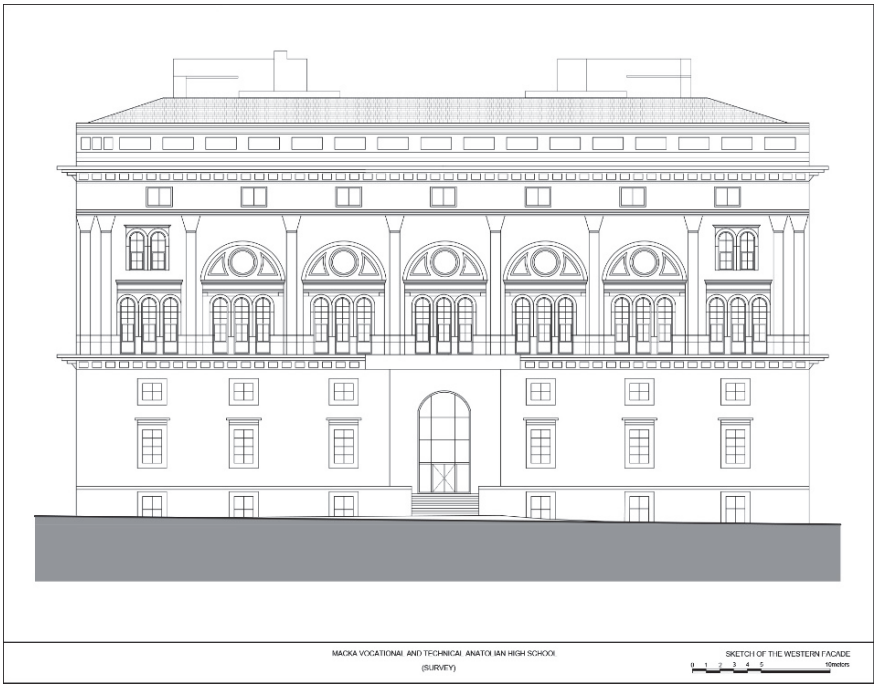


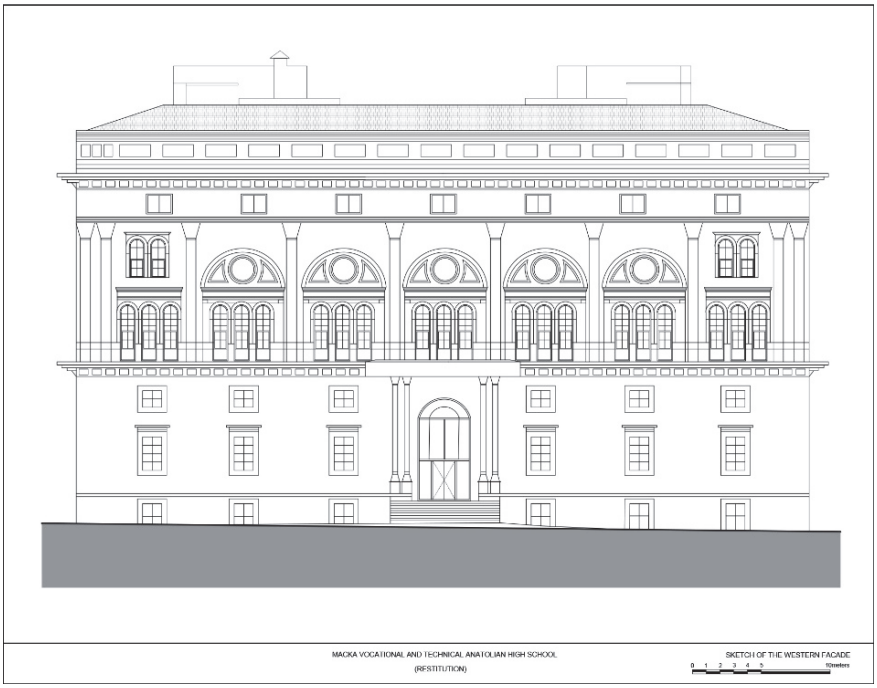
Sketch 2: First floor sketch; survey-restitution.





Sketch 3: A-A section sketch; survey-restitution.





Sketch 4: Sketch of the western facade; survey-restitution.

4. PROCESS OF ALLOCATION AND REFUNCTIONING OF THE BUILDING

The period between the beginning of the construction of the building as an Italian Embassy and its use as Maçka Technical and Industrial Vocational High School covers a wide range of time period.

Allocation process associated with the structure began with plot allocated in 1929 on the ground that there was no way to transport the materials needed to sustain the construction that was left unfinished during the World War I (30-18-1-2 / 5-46-9, The Presidency State Archives of the Republic of Turkey).

The structure, which started to be constructed in 1900s and remained incomplete until 1950s, was refunctionalized in line with the needs of different institutions.

On 27 February 1947, the draft law titled "The draft law on the sale of the Treasury building on the Tramvay street in Maçka neighborhood of İstanbul and the reports from committees on Internal Affairs, Finance and Budget" was submitted to the Grand National Assembly together with the justifications. In the justification, it was stated *"…While the real estate was about to be sold by the Bank, it was allocated to the said Ministry to be used in the exhibitions of the fine arts and receptions that will be hold by domestic and guest corporations and to be widely benefited by the İstanbul Conservatory upon the proposal of the Ministry of National Education.*

Subsequently, it was reported from the said Ministry that it is necessary to make an expense of 1.5 million liras to make the building suitable for use in these matters and that it is not possible to spend this money regarding the emergency situation, and it is stated that the transfer of the building to the Municipality would be favorable, in order to allow the İstanbul Conservatory to benefit from it… Considering that the said building will respond to a need of the İstanbul Municipality, to be a benefit to the said municipality, it was decided that the building will be sold at a price much lower than its current value for 300 thousand liras". The bill was accepted on April 28, 1947 and its transfer to İstanbul Municipality for 300 thousand liras was approved (Türkiye Büyük Millet Meclisi, Tutanaklar, 10.01.2020).

In this context, the former Italian Embassy building in Maçka, intended to be used as a conservatory building by the İstanbul Municipality, was transferred to the Turkish Monopoly Administration (Tekel İdaresi) in 1948 and intended to be used as a tobacco warehouse. In the newspaper report on this subject, it was stated that the building had not been completed since 1910 and that the Italians brought craftsmen and workers from Italy for the construction of the building. In this 1948 report, it was mentioned that the Italian Government acquired an embassy building in Ankara since the capital was Ankara and handed over the unfinished embassy structure in Maçka to the Ministry of Finance. It was

indicated that the building was allocated to the Ministry of National Education to be converted into a conservatory. It was also stated that the structure was used as a tobacco store at that time (Figure 4, "1948 yılında İtalyan sefareti binası tütün deposu olacak!", emlakkulisi).



Konsvatuvar yerine tütün deposu oluyor!

Tekel idaresi Maçka'daki italyan sefareti binasını temizletmeğe başladı!

Maçkadaki İtalyan sefaret binası

Maçkada İtalyan sefareti binası, 1910 senesinden beri tamamlanmamış bir halde bulunuyor. Meşrutiyetin ilânından bir müddet sonra İtalya hükûmeti İstanbulda yeni bir sefaret binası inşasına teşebbüs etmiş ve o zaman Hariciye Nezaretinin muvafakati ile Maçkada büyük bir arsa satın almarak İtalyadan getirtilen usta ve işçilerle binanın inşasına başlanmıştı. Bina tamamlanacağı bir sırada Trablus harbi başladığından inşaat noksan kalmıştı. Az bir müddet sonra Balkan harbi ve birinci umumi harb birbirini takip ettiğinden sefaret binası tamamlanamamıştı.

Bilâhare devlet merkezi Ankaraya naklettiğinden — diğer sefaret binaları sırasında — İtalya hükûmeti de Ankarada yeni bir bina edinmişti.

Maçkadaki binanın metrûk bir vaziyette kalması üzerine sefaret binayı Maliye Bakanlığına devretmiştir.

Birkaç sene evvel İstanbul Belediyesi tarafından yapılan bir teşebbüs üzerine Milli Eğitim Bakanlığı binanın Konservatuara tahsisine muvafakat etmiştir. Yalnız bu hususiaki formalite ikmal edilmediğinden binanın devri henüz tamamlanmamıştır. Çırağan sarayının, otel ittihaz edilmek üzere, belediyeye devri hakkında bir kanun çıktığı gibi seafret binasının da belediyeye verilmesi için böyle bir kanun çıkarılmasına ihtiyaç görülmektedir.

Binanın belediyeye verilmesi hakkındaki muamele bu merkezde iken son zamanlarda Maliye Bakanlığı, tütün deposu ittihaz edilmek üzere, binayı Tekel İdaresine devretmiştir. Bu devirde «muvakkat kaydı» olmakla beraber Umum Müdürlük binaya el koymuş ve birkaç günden beri temizlemeğe başlamıştır.

Şehir içinde tütün deposu ittihaz edilecek binalar için belediye zabıtası talimatnamesine göre belediyeden müsaade almak icap etmektedir. Tekel İdaresi, henüz belediyeye böyle bir müracaatta bulunmamıştır. Belediyenin böyle bir müracaatı nasıl kabul edeceği henüz belli değildir. Ancak, şunu kaydetmek isteriz ki Maçka ve havalisi, kabul edilen imar planı mucibince bir kültür mıntakası olarak tesbit edilmiştir. Nitekim imar planındaki bu kayda göre sefaret binasının Konservatuar ittihazına hükûmetçe muvafakat edilmiştir. Şimdi verilmiş böyle bir karar cihetle mevcut iken bu binanın tütün deposu ittihazı birçok mahzurlara meydan verecektir.

Eski sefaret binası henüz tamamlanmıştır. Depo haline getirilmesi için bir hayli masraf edileceği anlaşılıyor. Muvakkat bir iş için bu masraf yanık değil midir? Diğer taraftan belediyenin ve diğer resmi makamların binanın bütün deposu olarak ittihazına muvafakat etmiyecekleri tahmin ediliyor.

Figure 4: Newspaper Article, "1948 yılında İtalyan sefareti binası tütün deposu olacak!", emlakkulisi.

Lütfi Kırdar, who served as the Governor and Mayor of İstanbul, started to implement the master plan prepared by Henri Prost between 1936-1937. Within the scope of these studies, the building was given to İstanbul Municipality by the Turkish Grand National Assembly free of charge for the construction of the Municipal Conservatory. After this free purchase, 300 thousand liras, allocated by the municipality from the budget for the purchase, was used to complete the unfinished construction of the structure (Selcuk, Ugur., E. 2009, p.157).

Following the allocation of the building to the İstanbul Municipality, the incomplete construction of the building was completed by the architect Mahmut Bilen in the early 1950s (Can, 1994, p. 301).

Repair was completed in 1958-1959 and Maçka Industrial Vocational High School was moved to this building (file no 41, issue 3463, Letter from the Regional Directorate No. I of the General Directorate of Construction Affairs of the Ministry of Public Works and Settlement, titled as İstanbul Maçka Industrial Vocational High School from the archives of the İstanbul Cultural and Natural Assets Conservation Regional Board No. II of Ministry of Culture and Tourism of Republic of Turkey).

In an article dated 13.01.1981 written by the Department of Laws and Decisions of the Prime Ministry to the National Security Council, the establishment of Industrial Technical Education Institutions that are needed to ensure the social, cultural and economic development of our country and increasing the capacities of those that are active were emphasized. In this context, it was stated that 855 students could not register to Maçka Industrial Vocational High School due to the lack of capacity in the same year. In this context, it was emphasized that additional workshops should be built and the current usage area should be expanded. However, since the ownership of the building belongs to the İstanbul Municipality, it was not possible to do so and the transfer of the structure to the Treasury was requested (The Correspondence of the Department of Laws and Decisions of the Prime Ministry numbered 101-266/08002 from the archives of the İstanbul Cultural and Natural Assets Conservation Regional Board No. II of Ministry of Culture and Tourism of Republic of Turkey). According to the Ministry of Treasury article dated 27.08.1981 following this article, the structure was allocated to the Ministry of National Education in accordance with Article 23 of Law no. 1050 (The Letter of Ministry of Treasury numbered 4/1 Branch Directorate 3100-613-8281 from the archives of the İstanbul Cultural and Natural Assets Conservation Regional Board No. II of Ministry of Culture and Tourism of Republic of Turkey).

5. CONCLUSION

Allocations to the Ministry of National Education are frequently seen in the period starting with the establishment of the Republic in 1923 and until the 1980s. It is seen that the existing building stock had been evaluated in order to fulfill the large buildings needs for meeting functions such as education, museum and health structure.

The building, which was planned as an Italian Embassy, remained unused and empty from the early 1900s to the 1950s except for its use as a tobacco warehouse. The construction of the interiors had not been completed after refunctionalization for educational purposes. As a result of the implementations within the scope of refunctionalization, the interior of the structure, whose facades were conserved, were planned and built according to the educational function.

Plan schemes were designed to create spaces such as classrooms, workshops, and reinforced concrete stairs, floorings and columns that were not found in the original construction technique of the building were constructed. Mezzanines were added within the scope of the new function.

The interior features of the building contain modern approaches of the period while the exterior architecture of the building has 19th century features.

The implementations made within the scope of refunctionalization were not about the conservation of the originality of the structure but about ensuring its use. It is understood that the new cultural and architectural identity attributed to the structure and the stylistic features are important period attachments that must be conserved and have the protection value. For this reason, it is thought that this structure is a cultural asset that must be protected with all its attachments. It is thought that the professional people who converted this structure from the unfinished Embassy to the educational structure approached the building in line with the architectural approaches of the period.

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INTERIOR DESIGN OF MOSQUES AND MADRASAS BELONGING TO SELJUK AND OTTOMAN CIVILIZATIONS IN KONYA

Sahika ÖZDEMİR*, Serhat ANIKTAR**, Ahmet KURNAZ*

ABSTRACT

The city of Konya, with its geographical location, its historical and cultural wealth, has always maintained its status as an important settlement. Also, Konya was the capital of the Seljuks, and important architectural works were created during this period. Konya became a magnificent city in terms of scientific, cultural, artistic and administrative aspects during the Seljuk period, and the settlement texture and silhouette of the city was shaped during this period. The problem of conservation arises in historical buildings that are trying to adapt to contemporary life depending on the needs of today. In particular, it is observed that the historical buildings that appear to be protected within the scope of the facade have lost valuable interior features due to the applications that lead to the loss of value in the context of the interior space. The aim of the study is to emphasize the importance of preserving and using the interior space as a result of the analyses carried out in the selected mosques and madrasas. In this study, interior analyses of mosques and madrasas belonging to the Seljuk and Ottoman civilizations identified in Konya were documented with drawings and photographs. The door and window features, wall, ceiling and floor finish materials, adornment and ornaments used in the interior, stair type, mihrab and pulpit elements of the mosques and madrasas selected in the context of interior design were examined.

Keywords: Konya, Interior Design, Seljuks, Mosques, Madrasas

1. INTRODUCTION

Konya, the capital of the Anatolian Seljuk State, is one of the most important trade centers of the period in terms of being a junction point where the trade routes extending from east to west and from north to south intersect. Before

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Seljuks, Assyrians, Hittites, Persians, along with many other civilizations, the Romans 'King's Way (Via Sebaste), the Christians' Pilgrimage Road, Byzantine military and trade routes, such as the Silk Road extending from Central Asia passes through Konya. These roads, which have been continuously evolving in the historical process, have enabled the pilgrims, messengers, passengers and armies to reach the ranges they want to arrive, as well as the caravanserais in the deserted places where there are no settlements [1].

When the works of the Seljuks existed, the domestic and foreign sources of the period as well as the researchers of today confirm that it reached its peak in every field of art. This civilization has trained many distinguished masters. The religious and civil works of the Seljuks are masterpieces with their architectural style, their purpose of use and their aesthetic appearance. Surprisingly, the works left by the Seljuks proves to us that the Seljuk artists lived in encouragement, prosperity and happiness from novice to master [2].

Most of the Seljuk architectural works are Arab, Iranian; Syria, Armenian forms; columns and headings are seen, which were later mixed with Seljuk art and found their own way. The Seljuk architecture that emerged after the formation of Anatolia also developed different characteristics. The most important of these is undoubtedly stalactite. Stalactite is an architectural element developed from trumpet especially to fill the upper cavities of doors and mihrabs [2].

Mosques and masjids, with the excitement of creating a new way of life for the Turkish tribes who accepted Islam in Asia, come up with surprising features during and after the X. Century. However, they were an important factor in determining the physical structure of the Seljuk Anatolian cities. The establishment and development of cities, the formation of neighborhoods, mosque / masjid relationship has always been the result. The first mosques built in Anatolia were built inside the city walls and even in the inner castle as in Konya Alaeddin Mosque. The first mosques were built together with the palace as a continuation of the old traditions. Thus, the combination of the two factors affecting the city in terms of administration and religion ensured the construction of the city. In the Seljuk city, the mosque formed the core of the desired city or neighborhood. Some of the first mosques were built on the ruins of the old church or building, and some mosques were the center of the city constructions. It is known that mosques and masjids, which were built later, were generally established in new areas [2].

Within the scope of the study, as a result of the analyzes carried out in selected mosques and madrasas in Konya, the importance of using the interior space is also emphasized. In this study, interior analysis of mosques and madrasas

belonging to Seljuk and Ottoman civilizations identified in Konya are documented with drawings and photographs. The door and window characteristics of the mosques and madrasas selected in the context of interior design, wall, ceiling and floor finishing materials, interior decoration and ornaments, stair type, mihrab and pulpit elements were examined.

2. BACKGROUND OF CONTEXTUAL FRAMEWORK

Studies on protecting historic buildings in Turkey continue to benefit although the problems. As one of these problems; applications that cause loss of value can be realized in the interior spaces of historical buildings that seem to be protected within the scope of the facade. As a result, historical buildings that try to adapt to contemporary life may lose some or all of the interior features that make them valuable.

Protection is a holistic phenomenon. Historical buildings should be preserved with all their values. The perception of the interior adds significant value to a historical building. Therefore, in the protection applications, interventions to the interior should be meticulously approached. Otherwise, the interiors of historical buildings may lose their physical (structure, material, etc.), cultural (historical, memorial, etc.) and economic value [3].

The desire to make changes in the use of historical buildings is often focused on interiors. Therefore, the risk of loss of value in the interior increases compared to the façade. After all; while many historical building facades bear witness to the past, the interiors remain as a reflection of today. The most prominent example of this is the applications in the historical buildings where the façades are suspended and the interiors completely destroyed and rebuilt [3].

In historic buildings, interiors may lose value under the influence of the user and the user. In addition to the definition of function, use can also be considered as the use action itself. The continuity of the act of use poses a threat to protection due to the aging it will create in the interior and its elements. This raises the need for continuous maintenance. It is inevitable that historical buildings should keep up with the new and contemporary life for the continuity of their use with original or new functions. Therefore, new arrangements are needed in historical buildings. Here the designer's contribution to the interior is great. The interior design of historical buildings should be carried out by architects or interior architects specializing in their fields. In this field, the profession of interior architecture should play an important role in both education and professional life. However, this issue seems to be enough of interior design education in Turkey [4].

It is a positive approach in terms of preserving the use of historical buildings with their original functions as much as possible. Inns, residences, mosques, masjids and baths are among the types of buildings where the original function can be maintained. According to the re-functionalized structures, it can be said that the interior spaces are less damaged in the buildings where the original function continues, but it cannot be said that they have not been damaged at all.

3. METHODOLOGY

Within the scope of the study, the interiors of the mosques in the outer walls of Konya were analyzed. The interior elements that retain their originality, the elements that have not survived to the present day and the current status of the mosques are emphasized. The door and window characteristics of the mosques and madrasas selected in the context of interior design, wall, ceiling and floor finishing materials, interior decoration and ornaments, stair type, mihrab and pulpit elements were examined.

The aim of this study is to reveal the elements that cause loss of value in the interior spaces during the use of historical buildings and to emphasize the importance of using historical buildings while preserving the interior. In this context, the selected examples are intended to determine the extent to which the structures that appear to be protected from the outside have changed in their interior.

The interior space analyzed are listed below alphabetically:

- Abdulmumin Masjid
- Alaeddin Mosque
- Aziziye Mosque
- Beyhekim Masjid
- Bulgur Tekke Masjid
- Hagia Hasan Masjid
- Iplikci Mosque
- Kadi Izzettin Masjid
- Kapu Mosque
- Piri Mehmet Pasha Mosque
- Sahip Ata Mosque
- Sekerfurus Masjid

- Tahir and Zuhre Masjid
- Tercuman Masjid

4. FINDINGS OF THE STUDY

Aziziye Mosque is a mosque built with a mixture of classical Ottoman architecture and Baroque architectural style. Aziziye Mosque XIX. century is a style that dominates the Turkish architecture. However, it cannot be included in a certain style within the Ottoman architecture and it is a structure in which different innovations are tried. The place of worship is illuminated by large arched windows on each side. The mihrab and pulpit are made of bluish marble, called "Göktaşı", in the Konya region. Especially on the mihrab gates, there are inscriptions which were produced by a good calligrapher (Figures 1 and 2).

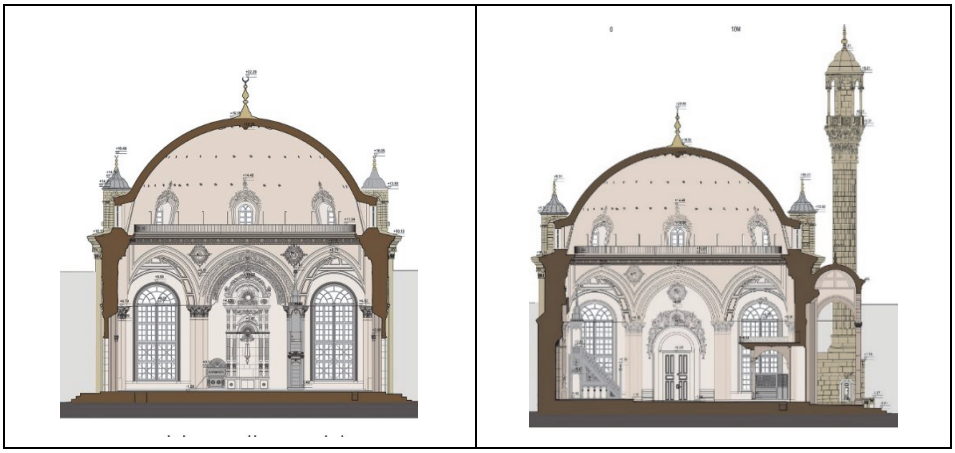


Figure 1. Aziziye Mosque interior sections

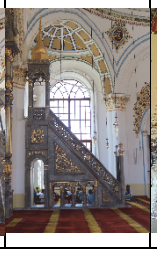
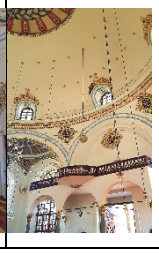
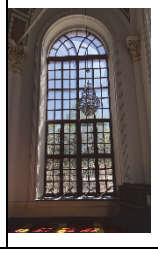
MIHRAB	PULPİT	CEILING- UPPER COVER	WALL DECORATION-WINDOW	WALL DECORATION-DOOR	DECORATIONS
					

Figure 2. Aziziye Mosque

The Sahip Ata Mosque has the first double mineral crown gate of Anatolia with stone, brick and tile ornaments, and it also attracts attention with its mosaic tile mihrab from the old mosque. The mihrab is also stalactite. In the niche of the mihrab, motifs pass through the intersection of polygons (Figures 3 and 4).

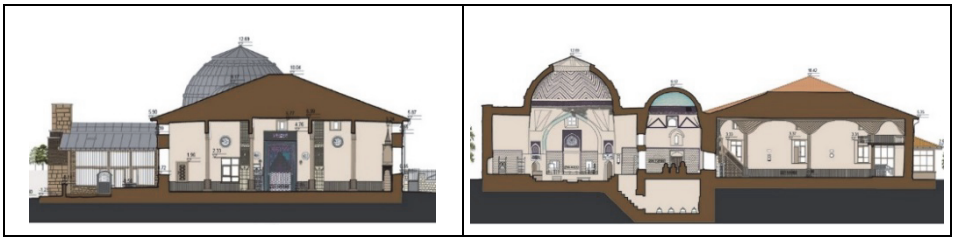


Figure 3. Sahip Ata Mosque interior sections

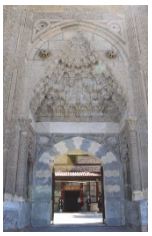
MIHRAB	CEILING- UPPER COVER	WALL DECORATION-WINDOW	WALL DECORATION-DOOR	DECORATIONS
				

Figure 4. Sahip Ata Mosque

Iplikci Mosque could not survive to its original shape and was repaired at different times. The walls of the mosque are built of cut stones and bricks. The windows are opened in regular rows on the walls and the interior is well lit. The lateral spaces after the entrance were covered with cross vaults and a nave cradle vault adjacent to the mihrab wall. On the axis connecting the entrance and the altar, three domes along the three halls give an interesting view to the plan of the mosque. Today, the interior is covered with plaster XIX. There is an original mihrab beneath the 18th century baroque style mihrab. The original mihrab is one of the oldest examples of Anatolian Seljuk art (Figures 5 and 6).



Figure 5. Iplikci Mosque interior section

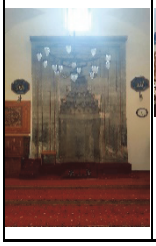
MIHRAB	PULPİT	CEILING- UPPER COVER	WALL DECORATION-WINDOW	WALL DECORATION-DOOR	DECORATIONS
					

Figure 6. Iplikci Mosque

Kapu Mosque was built of cut stones on a square plan and covered with eight domes of various diameters. In the east, west and north directions, there are second floor halls and entrance gates. There are ten marble columns to the north, the last congregation place and west to the fountain. The lower part of the minaret is stone and the upper part is brick. Kapu mosque is the largest mosque built in Konya during the Ottoman Period. Built of cut stones, the mosque has the characteristics of classical Ottoman mosque architecture. The mihrab is made of stone, the pulpit is made of wood and plain (Figures 7 and 8).



Figure 7. Kapu Mosque interior sections

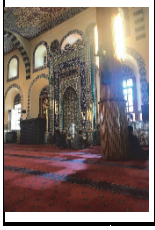
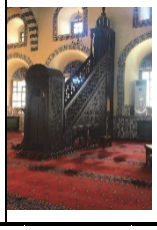
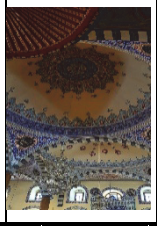
MIHRAB	PULPİT	CEILING-UPPER COVER	WALL DECORATION-WINDOW	WALL DECORATION-DOOR	DECORATIONS
					

Figure 8. Kapu Mosque

Stone and brick were used as the material of Sekerfurus Masjid. The facade is half stone and half brick material. The building does not include geometric and floral ornaments. There is no tactile. The entrance door is covered with tiles and mosaic. While the mihrab was previously covered with tile mosaic, there is currently no trace. There are trumps that provide access to the dome (Figures 9 and 10).

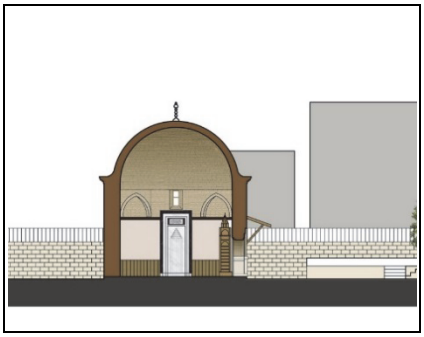


Figure 9. Sekerfurus Masjid interior sevtion

MIHRAB	CEILING- UPPER COVER	WALL DECORATION-WINDOW	WALL DECORATION-DOOR	DECORATIONS
				

Figure 10. Sekerfurus Masjid

Beyhekim Masjid consists of a domed place of worship and three sections adjacent to it. The entrance door of the masjid is opened between two windows of different size. Although the eastern facade of the masjid has a very careful cut stone workmanship, it is quite plain. The most important center of the masjid is the tiled mihrab. It is framed by a stalactite niche mihrab with two columnar columns on the sides. Mosaic tiles are covered with plates made in technique XIX. It was abducted to the Berlin Museum in the late 19th century (Figures 11 and 12).



Figure 11. Beyhekim Masjid interior sections

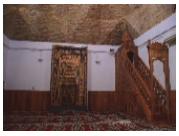
MIHRAB	CEILING- UPPER COVER	WALL DECORATION-DOOR
		

Figure 12. Beyhekim Masjid

Hagia Hasan Masjid sits on a high floor with a rectangular stone and rubble fill. It is built with a flat roof. The mihrab is marble and the pulpit is wooden. The windows are finished with a pointed arch. On the ceiling, motifs are made with wooden inserts (Figures 13 and 14).

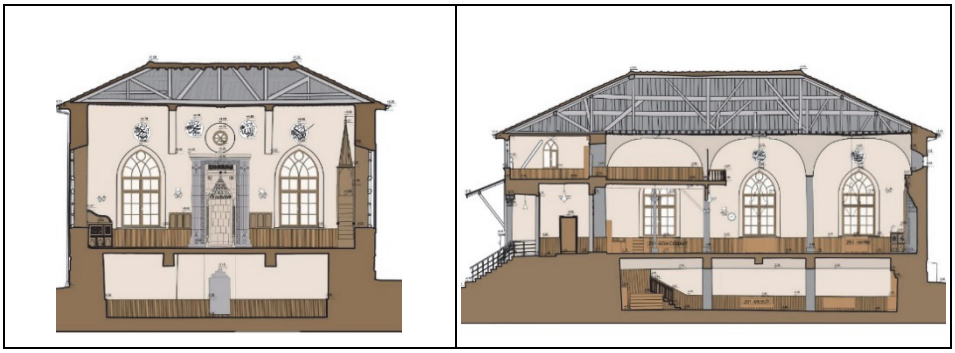


Figure 13. Hagia Hasan Masjid interior sections

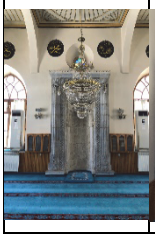
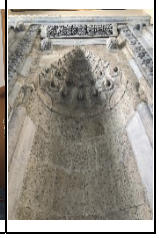
MIHRAB	PULPİT	CEILING-UPPER COVER	WALL DECORATION-WINDOW	WALL DECORATION-DOOR	DECORATIONS
					

Figure 14. Hagia Hasan Masjid

The pulpit of the Kadi İzzettin Masjid is decorated with marble tiles and its mihrab has a wooden motif. The ceiling is covered with wood and rests on pillars. The window openings are rectangular. The walls are painted in plain white (Figures 15 and 16).

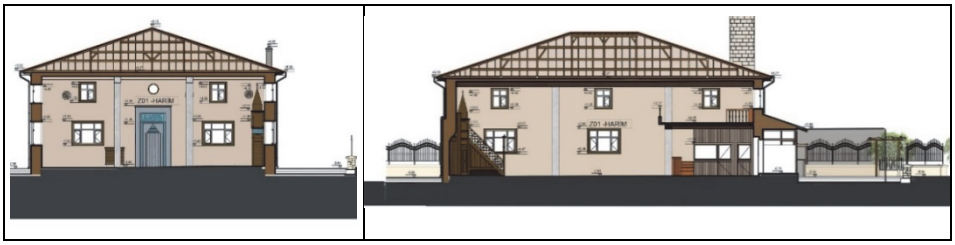


Figure 15. Kadi Izzettin Masjid interior sections

MIHRAB	PULPİT	CEILING- UPPER COVER	WALL DECORATION-WINDOW
			

Figure 16. Kadi Izzettin Masjid

In Bulgur Tekke Masjid cut stone is used in the lower part and brick is used in the upper part. The temple is high. Under the right side, there is a shop and under the Qibla side, there is a fountain and a water partition. The front of the mihrab was raised by filling 70 cm. On the right and left of the mihrab, there are two doors with regular stone jambs 2 m high from the old floor (Figures 17 and 18).

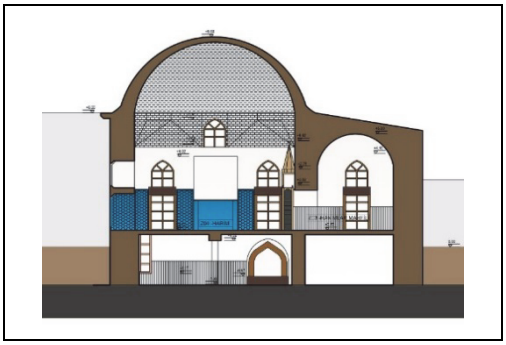


Figure 17. Bulgur Tekke Masjid interior section

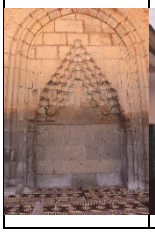
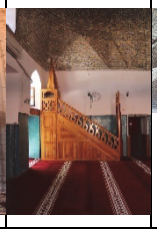
MIHRAB	PULPİT	CEILING-UPPER COVER	WALL DECORATION-WINDOW	WALL DECORATION-DOOR	DECORATIONS
					

Figure 18. Bulgur Tekke Masjid

Alaeddin Mosque was built in the style of Islamic architecture and covered with trees and soil. The interior resembles the forest of columns. It consists of 41 stone marble columns belonging to Byzantine and classical periods. One of the most interesting parts of the mosque is the pulpit. The pulpit is intertwined with ebony wood and is one of the best examples of Anatolian Seljuk woodworking. In front of the mihrab decorated with tiles, there is a field covered with tile decorated dome. The tiles of the mihrab and domes are partially cast (Figures 19 and 20).

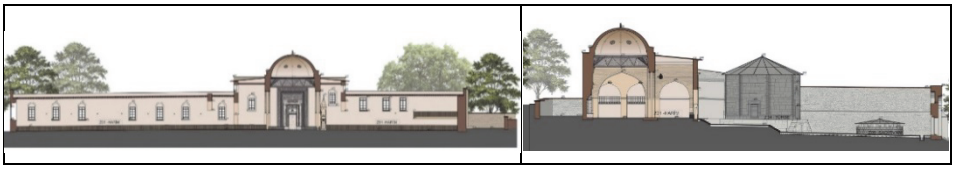


Figure 19. Alaeddin Mosque interior sections

MIHRAB	PULPİT	CEILING- UPPER COVER	WALL DECORATION-WINDOW	WALL DECORATION-DOOR	DECORATIONS
					

Figure 20. Alaeddin Mosque

Tahir and Zuhre Masjid were built as a brick covered dome. To the east of the masjid, there is a small portal with brick mosaics; the tomb has a mihrab decorated with gypsum reliefs (Figures 21 and 22).

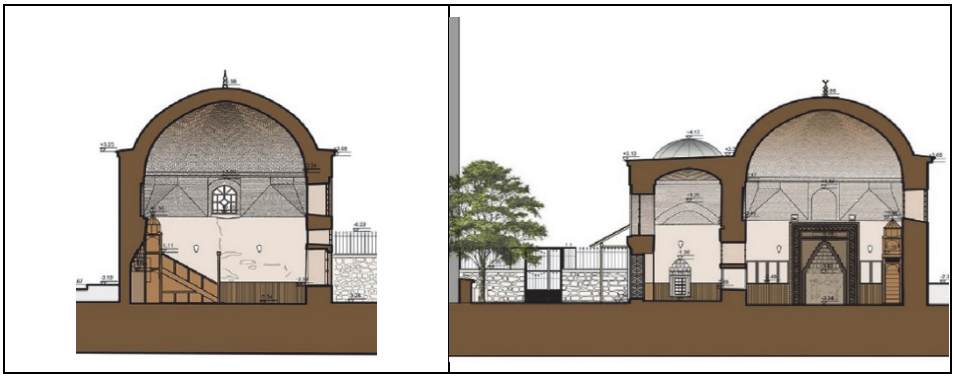


Figure 21. Tahir and Zuhre Masjid interior sections

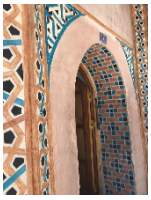
MIHRAB	CEILING- UPPER COVER	WALL DECORATION-WINDOW	WALL DECORATION-DOOR	DECORATIONS
				

Figure 22. Tahir and Zuhre Masjid

In the construction of Piri Mehmet Pasha Mosque, cut stone and rubble were used. Facade corners of the mosque, minaret base, window jambs, arches forming the last congregation, cut stone was preferred. The columns connecting the arches at the last congregation were made of marble material and the sentence door providing passage to the harim was made with marble cladding. Assemblies, pulpit and lectern are made of wood. The lower windows and the upper window covers of the northern façade were also made of wood. The mihrab is made of plaster. On the outer facade, the upper window frames and the pointed arches of the lower windows, as well as the body of the minaret, are made of bricks. The tile material was used in the minaret. The last congregation place and domes covering the harim and the cone part of the minaret are lead plated (Figure 23).

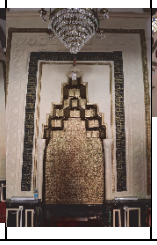
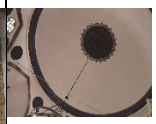
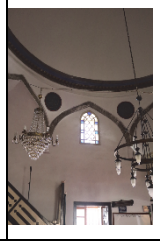
MIHRAB	PULPİT	CEILING- UPPER COVER	WALL DECORATION-WINDOW	WALL DECORATION-DOOR	DECORATIONS
					

Figure 23. Piri Mehmet Pasha Mosque

Tercuman Masjid's mihrab and pulpit are wood but are not original. Features wooden door details and pointed arched windows (Figures 24 and 25).

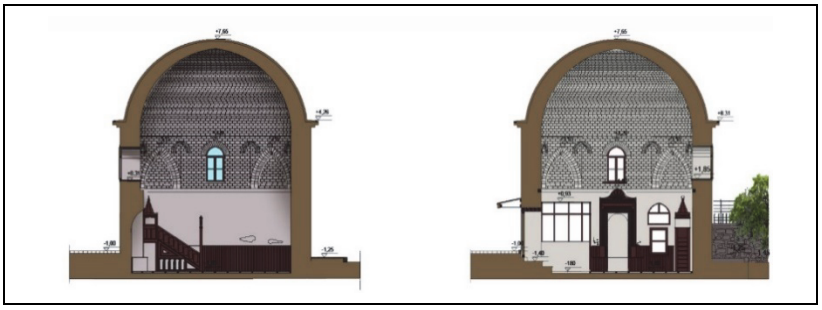


Figure 24. Tercuman Masjid interior sections

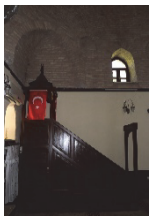
MIHRAB	PULPİT	WALL DECORATION-WINDOW	WALL DECORATION-DOOR
			

Figure 25. Tercuman Masjid

Abdulmumin Masjid is seen on the brick material facade. The mihrab and pulpit lost their originality and were rebuilt from wood (Figure 26).

MIHRAB	PULPİT	WALL DECORATION-WINDOW	WALL DECORATION-DOOR
			

Figure 26. Abdulmumin Masjid

5. CONCLUSION

Even though historical buildings continue to be used with their original functions, today's understanding of life, changing comfort conditions necessitate some changes in the interior. It is impossible to give many historical buildings a contemporary understanding of life without the necessary changes. Changes or additions; there must be legal practices that include accurate design understanding that can be distinguished and removable without destroying the value of the structure in a way that does not cover the original space. Thus, the continuity of life in the structure will be provided and the protection principle will be fulfilled by using.

In Seljuk Mosques in Konya, ornamental decoration is seen in the last congregation place and the top cover elements of the harim. In the harim, the dome, dome skirt, transition elements, arches, window and door edges, preaching rostrum, assemblies and mihrab are encountered. The decorations were applied on plaster, wood and stone.

Seljuk mosques in Konya, wooden ornament is seen on the mihrab, pulpit, assemblies, lectern, top cover and door and window wings. Fastening, carving and perforation techniques were applied. In general, geometric and floral motifs are seen. There are gypsum ornaments, mihrabs, top covering elements and windows that have little usage in Seljuk mosques in Konya.

It was observed that the mosques examined in Konya did not lose their function and that the interior elements were tried to be preserved. Despite this, most pulpits and mihrabs were not able to maintain their originality. It was observed that paint was applied to the historical texture on the walls. Windows and doors are generally preserved. Tile decorations have been destroyed in time.

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[3] Gonul, B. (2010). *Using Historical Buildings "Protecting Interior"*. Young Perspectives in Design Symposium, Istanbul Commerce University Engineering and Environmental Design Department, s. 33-44, 26-28 October 2010, Istanbul.

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SESSION 6A

Theme: Social Structure and Politics

14 October 2020 Wednesday, 15.15 – 16.45

Chairperson: Prof. Dr. Hamed KAMELNIA

Invited Speaker: Hamed KAMELNIA

Architects in the Age of Pandemic and Power

Hiba MACHFEJ, Turgay Kerem KORAMAZ

Gender Equality and Post Crisis Transformation: Case of Damascus City

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ARCHITECTS IN THE AGE OF PANDEMIC AND POWER

Hamed KAMELNIA*

The world we live in is in a very complicated situation these days. It has various and exclusive crises in front of it.

In a very short time we all had to change our lifestyle. Our architectural and urban spaces were amazed at how we deal with this new lifestyle?

Architecture and urban design, which was one of the main goals to enhance social interactions, was forced to make social distance. On the other hand, political crises are increasing day by day in different parts of the world Influenced by some governments that just seeking for the power.

In the edge of these turbulent days of despair, architects strive to provide solutions for a better world. It is important not only because of the profession, but also for the will in the societies.

Architects have learned to look for better solutions and look to the future in any situation.

They have left different reflections of the minimum opportunities and maximum limitations with their creative power and thought as the grate poet *Rumi* in *Masnavi* said:

Know that the form of the walls and roof of every dwelling-place is a shadow of the thought of the architect,

Even though in the seat of his thought there is no visible (material) stone and wood and brick

The International Congress of Architecture and Urban Planning, organized by my esteemed colleagues at the University of Konya, in these special circumstances, trying to bring together the ideas of architects and urban designers to find solutions to various problems in the fields of sustainability, technology, New theories etc and Specially take a look at the concept of space and redefine it in the current situation.

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Concept of space in architecture and urbanism is related to some subjects such as privacy, personal space, territory but nowadays faced by a new concept: social distance, so needs to be redefined and redeveloped.

Certainty Today, architects and urban planners will look at the space differently due to lifestyle changes and The development of knowledge in the fields of health and the environment and physical space should be given more attention by designers. Some topics such as therapy design, building biology need to be more developed and considered. We will also discover a more human future in our profession.

The important message of this event is the development of creative and progressive thinking, Efforts to enhance the quality of built environment surroundingus for people with different culture, religious, believes and lifestyles In the shadow of equality and peace and tranquility

Far from the political challenge that has brought nothing but destruction to the world and the loss of the quality of life of nations.

It is my honor to participate in the congress among the friends all over the world and hope so with your efforts poetics of space be more and more heartwarming for the life.

GENDER EQUALITY AND POST CRISIS TRANSFORMATION: CASE OF DAMASCUS CITY

Hiba MACHFEJ*, Turgay Kerem KORAMAZ*

ABSTRACT

Urbanization spurs several social issues like inequalities, exclusion, and segregation. Tacked with a humanitarian crisis, societies face even more problems. Additionally, discriminatory laws and social norms have led women to suffer disproportionately in cities. As the Syrian crisis enters its tenth year, the aftermath is worse for women, girls, and millions of people inside the country and refugees around the world. Hence, this research was made to understand the current urban challenges facing the social conditions of Syrian women living in Damascus, and develop a set of guidelines to foster the integration of women's needs and challenges in future urban policies.

The study was initialized with the interpretation of the social sustainability concept. A framework was created and later used in the analysis of the qualitative data. Furthermore, the interviews were made to identify urban issues and their effect on women. Followed by a survey, to have a better comprehension of how the interview results can reflect on a bigger population. Moreover, all the data was examined under a gender lens to highlight the existing disadvantages of women and provide a better gender-sensitive result. According to the finding of the study, enhancing the outskirt is essential as women living in the outskirts endure more in terms of transportation, services, and quality of the urban settings. Also, the quality of schools and the availability of day-cares should be enhanced as they hinder married women from accessing job opportunities. Lastly, it is important to adopt new strategies to reinforce the sense of belonging of younger women; which tend to suffer from a lack of attachment to their living places. The result outlines a guide to socially sustainable urban policies and post-crisis transformation that advocates gender equality in the context of Damascus city.

Keywords: Gender Equality, Post Crisis transformation, Social sustainability, Sustainability.

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1. INTRODUCTION

Women and men experience and perceive cities in different ways so addressing cities as gender-neutral results in creating urban settings that do not deliver women's needs. Thus, sustainable development encourages taking into consideration women and men equally and ensures the full involvement of women in decision-making. Women's knowledge and collective action are central to finding, demonstrating, and building more economically, socially and environmentally sustainable pathways (UN Women, 2014, p:13). In conflicts such as the case of Syria, gender inequalities are dependent. Especially that "In times of war, gender equality is often perceived as being a second-order priority. Human rights violations are not seen as integral concerns and are pushed back by decision-makers" (Latif, 2016, p.3). Therefore, designing gender-responsive urban policies that take into consideration social sustainability in one hand and women's needs in the other; will not only pave the way toward building-up a coherent and harmonious society but will also ensure the well-being of the future generation. From this context, this research aims to set up a guideline that links sustainable development with gender equality in the context of urban policies and the post-crisis transformation process of Syrian cities, by focusing on the case of Damascus.

2. BACKGROUND OF CONTEXTUAL FRAMEWORK

2.1. Sustainable Development

Sustainable development aims to deliver the needs of today without compromising the needs of the future. Environmental, economic, and social aspects form the three main pillars of sustainable development (Dempsey et al., 2009). However, the social aspect is the least researched and it did not get enough attention until the beginning of this millennium (Ghahramanpouri et al., 2013). Furthermore, according to Guy and Marvin (1999) to develop the research and practice of urban sustainability understanding the social dimension is a key element. Social sustainability is directly related to how the community affects its inhabitants in terms of well-being and overall quality of life now and in the future (Dixon and Woodcraft, 2013). Even though social sustainability is related to social factors (participation and services), physical factors (e.g. access to transportation) can impact the quality of life in cities. Even though social sustainability approaches may be different according to the place and time. However, the broad guidelines of social sustainability disciplines are common among most approaches.

Scholars have mentioned the factors in Figure 1 as the main factors that affect social sustainable urban settings discussed by theorists. The figure illustrates the wide breadth of related concepts and is suggestive of the close conceptual proximity between factors (Dempsey et al., 2009). These factors fall under two

main concepts that define urban social sustainability which are social equity and sustainability of the community (Dempsey et al., 2009).

2.1.1 Social equity

Social equity is linked with "social and environmental exclusion" and "equality of condition" (Dempsey et al., 2009). Equality of conditions focuses on the rights of people in everyday life like education, infrastructure, decent housing, and public spaces... etc.

While social exclusion includes racism and sexism in the local scale, or areas of deficiency with poor living conditions.

2.1.2 Sustainability of community

Sustainability of community is known as the "collective aspects of social life" and it is highly associated with the physical elements of the urban environment (Dempsey et al., 2009). The margin of the definition of sustainability of the community is wide. Social cohesion, social capital, social network, and sense of community and others (see Figure 1) are all interpretations of the concept. In short, sustainability of the community is related to how the society functions locally as one community and its ability to develop and flourish. According to Dempsey et al. (2009), sustainability of community can be classified under five main dimensions, which are associated with the urban design scale:

1- Social interaction/social networks:

Both concepts are primary factors to social sustainability, they reinforce the social relationships among community individuals. Even though the two concepts are interlinked. However, they can be distinguished separately. Social interaction is related to the basic process in the formation of both human nature and the social order as described by Wirth (1964). While, the social network is connected to the "social support systems" showing that the people we know and feel we can rely on can impact other sides of life, like feelings of safety and a sense of well-being (Dempsey et al., 2009, p.7). The physical factors of the city can deeply affect social networks and interactions among community residents.

2- Participation in collective groups: a positive, effective participatory dialogue is the foundation of any community. The urban environment and accessibility to facilities can shape the participatory behavior of individuals.

3- Community stability: a society that accommodates residents for the long-term is defined as a stable community.

4- Sense of place: The quality of the urban setting affects people's enjoyment of the neighborhood in which they live, which reflects the sense of belonging.

5- Safety and security: Maslow's "hierarchy of needs" describes safety as a basic human need. It is also an essential factor in social sustainability and is directly linked to urban settings.

Figure 1. Factors of social sustainability (Dempsey et al. 2009).

Non-physical factors	Predominantly physical factors
• Education and training • Social justice: inter- and intra-generational • Participation and local democracy • Health, quality of life and well-being • Social inclusion (and eradication of social exclusion) • Social capital • Community • Safety • Mixed tenure • Fair distribution of income • Social order • Social cohesion • Community cohesion (i.e. cohesion between and among different groups) • Social networks • Social interaction • Sense of community and belonging • Employment • Residential stability (vs turnover) • Active community organizations • Cultural traditions	• Urbanity • Attractive public realm • Decent housing • Local environmental quality and amenity • Accessibility (e.g. to local services and facilities/employment/ green space) • Sustainable urban design • Neighbourhood • Walkable neighbourhood: pedestrian friendly

To analyze the interview results, a framework was prepared to highlight and simplify the main concepts of social sustainability. The physical and non-physical factors mentioned in figure 1 were illustrated in figure 2 as a first of creating the integrated framework.

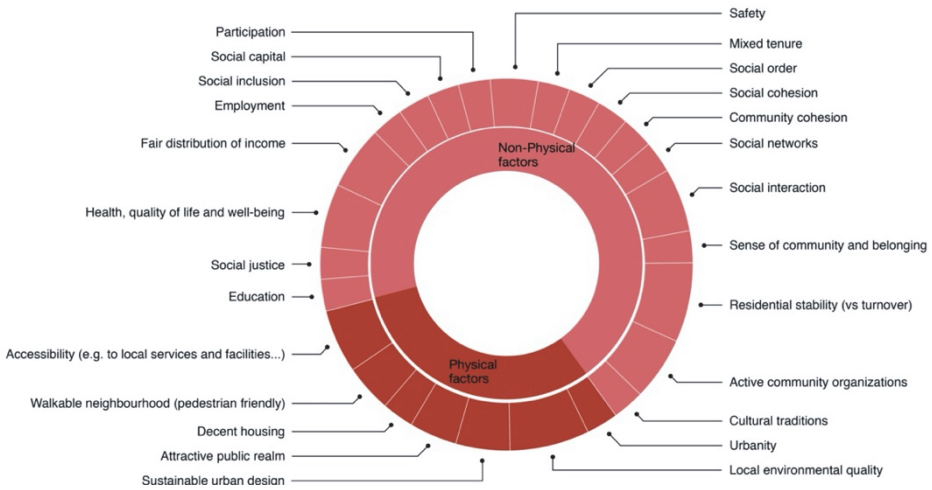

Figure 2. The physical and non-physical factors of social sustainability illustrated in a sunburst chart (the author).

Figure 3 reflects figure 1, the same factors of social sustainability were classified under the sustainability of the community, and social equity. This categorization is essential to grasp and simplify the wide range of social sustainability concept.

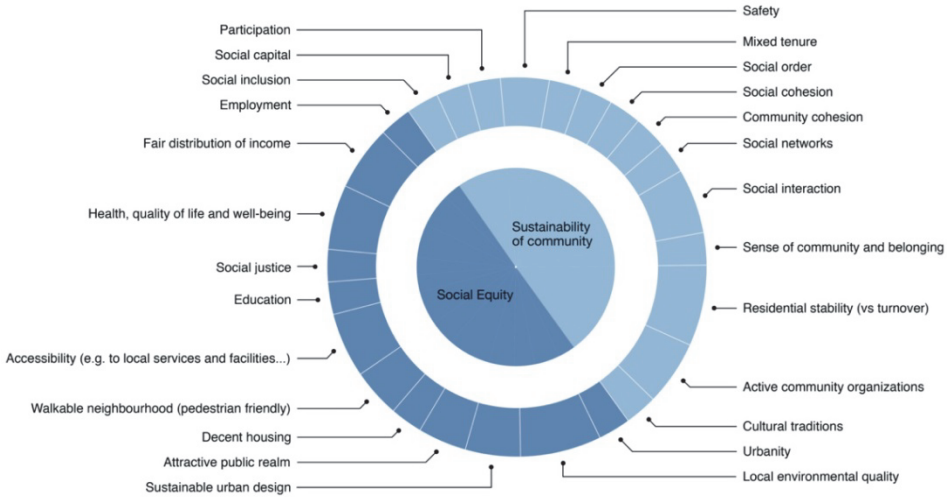

Figure 3. The social sustainability factors categorized under the two main domains of social sustainability (the author).

The two charts (figure 2 and 3) shows the categorization of social sustainability into two different ways, and according to the intersection of two charts, the final categorized factors are affecting the community in three main aspects. First, the built environment which represents the physical factors under the social equity domain. Second, the accessibility to services under the social equity domain whether the factors were physical or non-physical. Finally, the rest of the non-physical factors are under the sustainability of the community aspect, which can be considered as the third main aspect. Classifying the factors according to the mentioned three main aspects is an important step to facilitate coding the qualitative data and designing the quantitative survey. Also, it helps in identifying the overlapped factors. As a result, the framework in Figure 4, shows the integrated social sustainability factors that form a set of main aspects that enhances the quality of life if they were addressed in the right way.

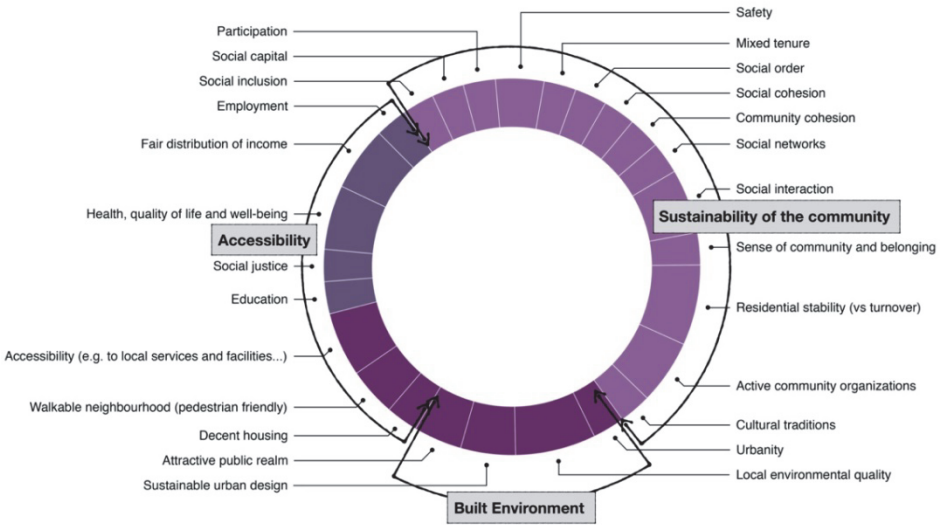

Figure 4. The proposed social sustainability framework.

2.2. Gender Equality

There are many attempts to implement social sustainability with urban policies in the last decades. And even though urban planning and design are usually considered gender-neutral, not designed for a specific sex, however, what gender-neutral usually prioritize is men's needs over women's (UN-Habitat, 2012). Gender is considered as a social identity which is not related to women only. Rather, it is concerned with the relationship between women and men and draws attention to the distribution of power and equality associated with gender identity (UN-Habitat, 2018). As long as the urban policy development strategies do not adopt gender equality as a key concept, the inclusiveness of cities will keep disadvantaging women, and limiting them from full participation in the different settings of cities. (UN-Habitat, 2018). Gender equality is the 5th goal of the UN sustainable development goals, and it is an essential pillar to building a sustainable, thriving, and just community.

The UN-Habitat has discussed some of the challenges that are hindering the implementation of gender equality in cities. Women are not only exposed to these challenges; however, they are still subjected to gender-based discrimination in their daily life. These challenges include lack of political voice, limited access to land and, housing which makes women more vulnerable in cases of domestic violence. Also, limited access to infrastructure and services as women have a hard time accessing safe and affordable transportation, and because of the bad livelihood as women are suffering from limited employment opportunities accompanied by low incomes, poor health, and school services.

In brief, if gender equality is not taking into consideration in the early recovery stage of damaged cities, the negative consequences will affect the whole community. By incorporating women's views and needs into the transformation policies of the design of cities, a just, balanced, and cohesive society can be achieved.

2.3. The Gender Profile of Syria

According to the UNHCR (2019), there are around 5.6 million refugees documented in neighboring countries and the number is expected to be higher because of undocumented refugees (Figure 5).

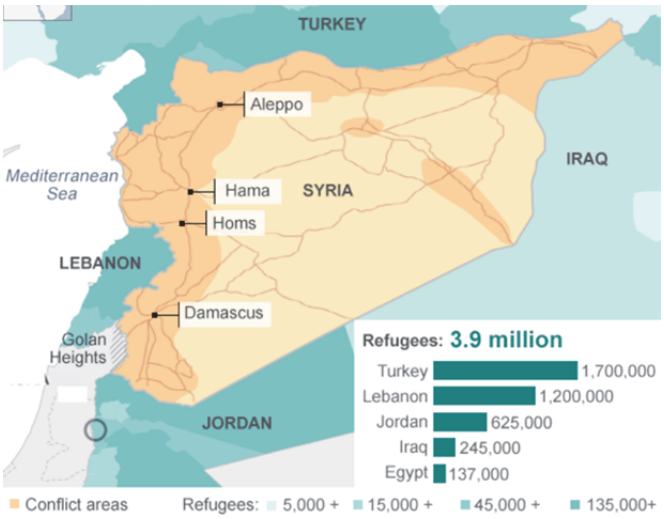

Figure 5. The refugee crisis in Syria (UNHCR, 2015).

Also, there is around 6.6 million who immigrated internally which means around 40% of the population in total were forced to leave their home. Moreover, around 70% of Syria's current population needs humanitarian assistance according to the UN. The percentage of people living under extreme poverty (less than US$1.90 per day) went from 34% before the crisis to around 69% in 2017. And with no clear political solutions until today, Syrians continue to suffer and get displaced making Syria "the world's largest displacement crisis" in the century (Humanitarian Needs Overview, 2017). The women of Syria are in the middle of the conflict bearing the worst consequences from the decline of health services, violence, limited opportunities to education and many others. The negative standards of the society towards women also contributed to the exclusion of women in the social, economic, and political life of Syria (Challenges to Gender Equality in Syria, 2018).

The war impact even follows women refugees, resulting in many women suffering from the lack of adequate shelters among many other serious issues. During war times, human rights violations mostly are not perceived as primary concerns by decision-makers and gender equality becomes a second priority (Latif, 2016). It is hard to grasp precise data about gender-based violence since women tend to keep quiet about these incidents to escape society shaming. Yet, many organizations, such as Women Under Siege, have managed to document many cases (BTI, 2018). In some cases, even women refugees, who became without a guardian or financial support, were forced to have sex in exchange for receiving aid (IPPF, 2015). In general, women and children are the most vulnerable groups in war conditions. Since the beginning of the conflict, thousands of Syrian women have been either killed, raped, arrested, tortured, taken hostages, or even used as a human shield. That is why future studies need to take in consideration views of women at every stage of the recovery phase.

3. METHODOLOGY

The study used qualitative, quantitative and the integration of both approaches in order to take advantage of both techniques. "Adopting both methodologies qualitative and quantitative can give a more powerful voice to women's experiences" (Hodgkin, 2008). This research started with in-depth interviews with 6 Syrian women to identify and understand their problems, and the framework was derived from the analysis of the interview data. Followed by a survey based on the framework to see how the qualitative results can be generalized over a broad-scale. This approach of starting with qualitative followed by quantitative is known as an exploratory sequential approach: qual→QUAN (Creswell, John W., 2014). Moreover, a gender lens was adopted (which is known as a transformative method) to interpret that data, as it can help women's voices be heard. According to Creswell (2014, p.38) "Transformative research provides a voice for these participants, raising their consciousness or advancing an agenda for change to improve their lives. It becomes a united voice for reform and change".

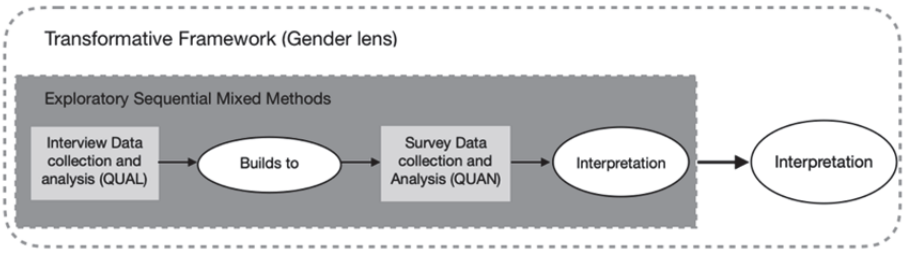

Figure 6. The adopted mixed method

3.1. Phase One: Qualitative Analysis of Interview Data

The interviews were with 6 women from different backgrounds, all the data was then classified and categorized while taking into consideration the framework related to social sustainability. The interview questions were asked were general questions, so interviewees can freely answer the questions without any guides. The first question was to explain the main challenges the interviewees face in their daily life in the city. The second question focused on women's expectations and hopes from future recovery policies that can enhance their living experience in the city. The participants took part individually over the telephone since they are all resident in Damascus or its countryside except for one person who was interviewed personally. Interviewees were informed that the purpose of the research was to explore how the city affects women in general. All interviews were recorded, and the interviews ranged in length from 10 to 25 minutes. Each one was later transcribed and used in the analysis of participants' responses.

4.1.3 Data analysis

The analysis for phase one served to establish a good grasp over the critical challenges that face women in their daily activities regarding the urban settings. The next step was using Strauss and Corbin's (1998) approach of constant comparisons between the data to formulate a theoretical framework. All the data was then classified and categorized while taking into consideration the literature review related to social sustainability.

First, the transcription text (database) was read to have overall information about the responses. Then, in each paragraph similar words and phrases were highlighted, and labels were generated. The result was divided into negative and positive according to the interviewee's experience. Phrases like: I feel there are many strangers(n4), Transportation is really bad(n1) or I can't sit alone in parks without a male with me, I don't feel safe(n5). were labeled negative. Phrases like: I don't see a problem in job opportunities(n4), I don't see any discrimination in work(n5), Services in the city center are good(n6) were labeled positive. The number (n) represents the number of the interviewee.

The second step was classifying negative and positive phrases under sub-categories according to their theme. These sub-categories were then classified under the categories derived from the social sustainability framework in figure 4. Therefore, figure 7 was created to illustrate the process which includes the sub-categories themes mentioned from the interviews under the main categories mentioned in social sustainability.

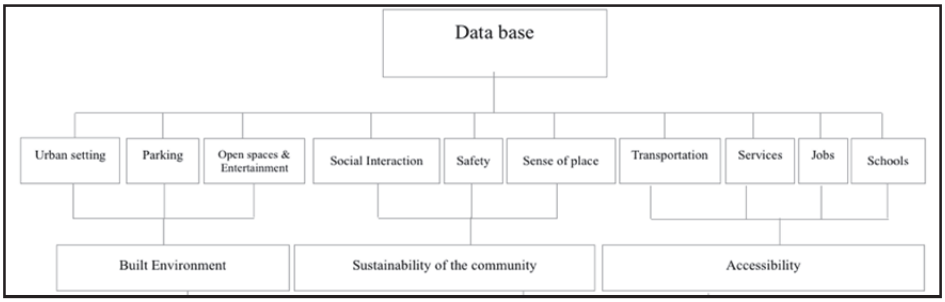

Figure 7. The proposed social sustainability framework.

Also, Table 1 was created according to the responses of the interviewees and was categorized into the main dimensions. Table 1 represents the decoded interview results as follows:

Table 1. The results of interviews.

	Sub-Categories	First-interviewee	Second-interviewee	Third-interviewee	Fourth-interviewee	Fifth-interviewee	Sixth-interviewee
General Information	Age	44	39	26	27	26	56
	Education	HS	BA	BA	BA	BA	PHD
	Work	Not working	Working	Working	Working	Working	Working
	Marital Status	Married	Married	not-Married	not-Married	not-Married	Married
	Children	3 children	3 children	_	_	_	4 children
	Living place	Rural Area	Rural Area	Rural Area	Rural Area	City Centre	City Centre
	Main themes						
Accessibility	Schools	(-) Negative	(-) Negative	(-) Negative		(-) Negative	
	Jobs	(-) Negative	(-) Negative	(-) Negative	(+) Positive	(+) Positive	
	Services	(-) Negative		(-) Negative			(+) Positive
	Transportation	(-) Negative	(-) Negative	(-) Negative	(-) Negative	(-) Negative	(-) Negative
Sustainability of community	Sense of Place	(-) Negative		(-) Negative	(-) Negative	(-) Negative	
	Safety	(-) Negative		(-) Negative		(-) Negative	(-) Negative
	Social Interactions	(-) Negative			(-) Negative	(-) Negative	
Built environment	Open Spaces & Entertainment			(-) Negative	(-) Negative	(-) Negative	
	Parking				(-) Negative	(-) Negative	(-) Negative
	Urban Settings			(-) Negative	(-) Negative		(-) Negative

- Accessibility: The interviewed women expressed their difficulties in accessing different services in the city. A major challenge to the daily life of women was the transportation services, as women of the interview stated they struggle daily from limited transportation and the bad quality of the transportation means. Even though the accessibility to transportation is presenting more challenges to job opportunities, yet still the young females are having more advantages in finding jobs, because of the current unstable situation of men. On the other hand, accessing leadership jobs for women or opening a private business is defiantly challenging. Also, it is not as easy for married women with children to find jobs due to the responsibility of the house and children. The lack of day-cares and good schools is also considered a limitation to finding jobs for women

- Sustainability of the community: The sense of belonging was negative for both young women in general and women who immigrated internally. The feeling of safety was also a key issue that was mentioned. Women reported that they feel unsafe while using public transportation or while they are driving their cars at certain times especially in roads connecting between the city center and the outskirts. The feeling of unsafe is also affecting the women's usage of open space and some narrow streets. Another problem that was brought up by the interviewees is the lack of social interaction with their neighbors.

- Built environment: Many problems were mentioned about the built environment. Starting with streets, the lighting was mentioned negatively, and the infrastructure and the sidewalks were also reported in bad conditions. Some areas were described not clean and there were not enough trash cans. Also, the buildings are too close to each other in some areas which created a lack of privacy. The lack of limited green areas was also a big issue.

3.2 Phase Two: Quantitative Analysis of the Survey Data

The survey was based on the framework that was derived from the interviews. The respondents were asked about the issues they are facing in their daily life in the city, which measures the subjective appraisal for the city. Furthermore, the questionnaire was conducted in the Arabic language and was made using Google surveys and was distributed online through social media platforms. A brief explanation was written before the questions, and it started with a general information section that was added to understand the population background. Table 2 represents the information of the survey sampling.

It included 34 questions in total and there were three main dimensions other than the general information section. Accessibility, the sustainability of the community and the built environment were all topics derived from the interview

results. The questionnaire addressed a wide range of issues but the analyzed results will focus on the gender-sensitive differences which are derived from the answers of both females and males and demographic differences. Respondents were asked to scale different factors related to their experience in the city. The data were subjected to the independent-samples T-test to compare the mean values between females and males and the questions included closed-ended questions, multiple choices, Likert-type scales, and one open-ended question.

Table 2. The survey respondents.

Total Responses		358		
Gender		**Women**		**Men**
		271		87
Marital Status		**Married**		**Not-Married**
		185		173
Age groups	**15-18**	**18-30**	**30-50**	**50>**
	18	186	121	32
Children		**Yes**		**No**
		161		197
Number of children	**1**	**2**	**3**	**4>**
	29	54	34	45
Working		**Yes**		**No**
		199		159
Educational Level	**Elementary school**	**Highschool degree**	**Undergraduate degree**	**Graduate Degree**
	0	76	214	68
Living Place		**Damascus City enter**		**Damascus countryside**
		257		101
Still living in Syria		**Yes**		**No**
		262		96

Examining the results of the survey shows that there are not many differences between men and women and the urban environment is threatening the quality of life for both women and men as the survey results show. However, women are struggling more. The limitation of job opportunities and the transportation issue is affecting the ability of women to participate in the workforce, and the responsibilities of the house and children are presenting married mothers with a lot more difficulties in the job sector, from finding the right job to starting a private business. Yet, women still have a more positive view towards the accessibility to services and quality of schools as the T-sample results (Table 3).

Also, women are feeling insecure in public spaces and transportation, thus the urban settings are isolating women and weakening their interaction with the networks. This problem might be aggravated as many women stated they feel there are many new strangers in their familiar urban cities (Figure 8).

Table 3. T test results comparison between females and males.

	Variables	Female N: 271		Male N: 87		F	t	Sig.
		Mean	S. D	Mean	S.D			
1	Accessibility to transportation	2.24	0.923	2.22	0.92	0.019	0.221	0.825
2	Availability of basic services	**3.03**	1.012	2.63	1.013	0.825	3.214	0.001
3	Finding a suitable job	2.18	1.054	2.21	1.132	0.275	-0.197	0.844
4	Leadership job for women	2.26	1.095	2.45	1.065	0.193	-1.417	0.157
5	Accessibility to schools/day care	3.48	1.081	3.41	1.095	0.001	0.521	0.603
6	The quality of the schools or day care	**2.83**	1.089	2.52	0.975	0.307	2.391	0.017
7	Sense of belonging	3.35	1.36	3.33	1.37	0.051	0.103	0.918
8	Interaction with neighbours	2.9	1.342	3.13	1.246	1.877	-1.39	0.165
9	Participation in community	1.65	0.926	1.79	0.904	0.116	-1.266	0.206
10	Safety	2.85	1.04	2.78	1.146	2.762	0.539	0.59
11	The quality of open spaces or parks	2.09	1.029	2.08	0.985	0.681	0.089	0.929
12	The quality urban settings	2.3	0.994	2.18	0.983	1.213	0.941	0.347

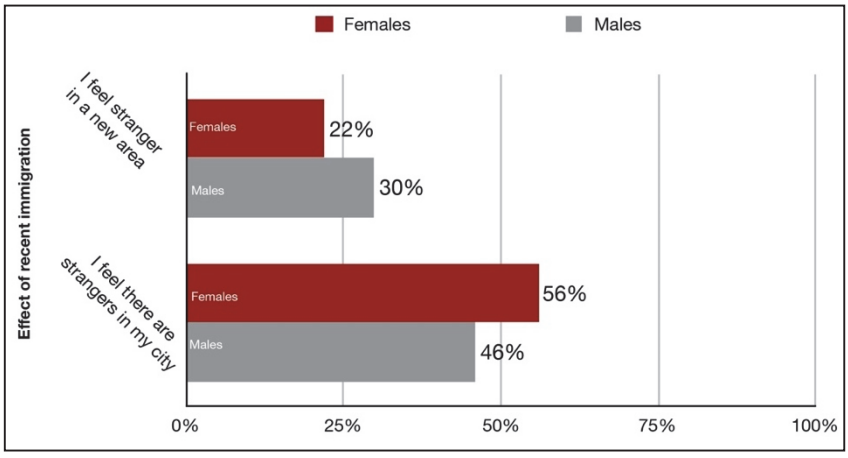

Figure 8. Frequency analysis comparison between females and males in terms of social sustainability.

Moreover, women with children consider it harder to find a job or have a leadership job for females and there is a significant difference compared to women without children (Table 4). On the other hand, the results reflect that women with children have more sense of belonging and participation with neighbors.

Table 4. T test results comparison between married and single women.

	Variables	Married N: 143		Not-Married N: 128		F	t	Sig.
		Mean	S.D	Mean	S.D			
1	Accessibility to transportation	2.30	0.979	2.18	0.855	4.078	1.078	0.282
2	Availability of basic services	3.04	1.027	3.02	1.000	0.006	0.150	0.881
3	Finding a suitable job	2.00	1.035	**2.38**	1.043	0.765	-3.029	0.003
4	Leadership job for women	2.08	1.049	**2.46**	1.115	1.656	-2.921	0.004
5	Accessibility to schools/day care	3.37	1.143	**3.61**	0.998	2.108	-1.822	0.070
6	The quality of the schools or day care	2.86	1.136	2.80	1.038	0.888	0.477	0.634
7	Sense of belonging	**3.57**	1.340	3.11	1.347	0.072	2.796	0.006
8	Interaction with neighbours	3.00	1.332	2.79	1.350	1.082	1.293	0.197
9	Participation in community	1.61	0.920	1.70	0.935	0.099	-0.771	0.442
10	Safety	2.80	1.065	2.91	1.012	1.063	-0.923	0.357
11	The quality of open spaces or parks	2.15	1.050	2.02	1.004	2.080	1.038	0.300
12	The quality urban settings	2.31	0.959	2.29	1.036	1.237	0.154	0.878

The limited leisure activities from outdoor activities to entertainment presented a requirement for the young generation. Participation in the community also was one of the major issues for women in the survey results. When women do not participate enough in society, their voices will not be heard and their needs will not be addressed, which leads to more exclusion of women. Moreover, it is also noticeable that memory towards the city had a strong impact on the people who left the country, as they did have a positive view of social interaction. However, their view regarding the current quality of life and the current situation was more negative than the people who are still in the city (Figure 9).

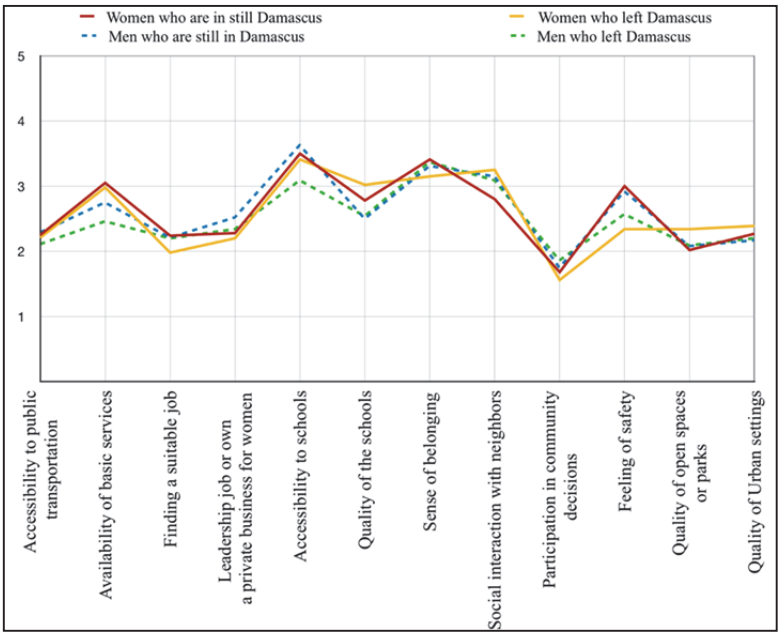

Figure 9. Mean values comparison according living inside or outside the country.

4. FINDINGS OF THE STUDY

In brief, even though the discussed issue affects the whole population, women are more vulnerable in the current situation in Syria. The issue stated by the interviewed women defiantly apply to the larger survey population, and the results of this survey help to provide a simple guide to help raise the voices of these women, especially since there are very limited clear policy-making tools which are related directly to the problems of the Syrian women. Therefore, urban planners and designers can use this guideline to get a better look at the struggles of the women and help them propose more insightful solutions to fulfill the needs and expectations of Syrian women. In the context of this study, for the future post-crisis policies to adopt a sustainable development framework that promotes gender equality, the following points should be highly considered:

1- Raising the awareness of gender equality in the context of sustainable development is crucial. Also, programs and workshops at the local and national scale that educate and gather data about the gender-sensitive must be done.

2- Providing better access to job opportunities by increasing the number and the quality of schools, and enhancing the transportation network to make the mobility of women more efficient. Applying a mixed-use design to the urban environment can be considered a solution since it can offer jobs close to the

residency of women. Thus, providing more day-cares and schools to support married women in finding suitable jobs is essential.

3- Paying more attention to the outskirts of the city, especially in terms of transportation means and the availability of services and quality of the urban settings.

4- Strengthening the sense of belonging for women by integrating more green spaces in the city and providing more open door and entertainment activities to enhance the feeling of attachment for young women, and taking better care of street lights to give a safer night-experience.

5- Upgrading open public spaces to be more welcoming and inclusive, so they can embrace women more safely, and enhance their access to the public spaces.

6- Updating the transportation networks and the means to offer more efficient accessible, affordable and safe public transportation.

7- Providing the opportunity for women to be a key player in the design and planning processes of the city will help to ensure designing cities that embrace gender perspective and promote equality. Also, raising the voice of women in local societies and involving them more in the action-making to increase their participation in the city.

8- To help the reattachment of Syrian people who left their country, it is important to strengthen their connection with the city. This can be done by enriching the identity of Damascus city itself for example. Renovating and enhancing famous landmarks and open spaces especially the ones with old cultural heritage through good social urban regeneration is probably going to save the Syrian identity. Also, involving Syrian people including the displaced and immigrated ones with the regeneration process can deeply help with their reattachment to their cities and their country.

5. CONCLUSION

Women have been dealing with inequality issues within the urban cities for many years even in our modern days. With all the negative impacts of urbanization, they are the most affected and the most vulnerable ones. Yet, in the case of a 10-years Syrian humanitarian crisis, women were left even more vulnerable and struggling furthermore in the urban environments to fulfill their daily needs. Thus, the recovery policies must take into consideration the needs of women to achieve a secure, equitable and welcoming community. A well-designed socially sustainable policies will not only enhance the quality of life for its residents, but it will also deepen gender equality and will empower women. Hence, gathering the efforts of policy-makers, urban planners and designers to adopt plans and programs

that prioritize the women's needs, can provide answers to the main issues and help implement social sustainability.

It is also important to mention the limitation of this study which may turn into opportunities for future research. The size of the sampling in qualitative and quantitative parts might not be enough to reflect the whole population. The different sample size between female and male in the quantitative stage is also considered a limitation. Most importantly, the study did not shed the light directly on the voices of women who are living in the most vulnerable areas of Damascus and its countryside because of the difficulty of reach in the current conflict. Future studies can overcome these challenges by including larger samples which explore how the urban patterns and housing are affecting women. In conclusion, this framework of post-crisis urban regeneration policies may open the door to redesigning new equitable urban schemes that welcome women, and offer new solutions to their challenges in the strive of a city, which advocates gender equality and sustainable development.

ACKNOWLEDGEMENTS

Many thanks to Assoc. Prof. Dr. T. Kerem Koramaz for his continuous guidance.

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"INHERITED GENTRIFICATION": CHANGING PROFILES OF GENTRIFIERS VIA INHERITANCE, THE CASE OF BOZCAADA, TURKEY

Duygu OKUMUŞ*

ABSTRACT

The gentrification phenomenon has been largely debated in Anglo-Saxon urban studies and inherently taken as an urban concept. However, this complex urban phenomenon emerges in the countryside with similar principal indicators: a change in the socio-economic composition of its citizens; an emphasis on cultural or national heritage and aesthetics; the emergence of new institutions leading to the closure of older ones; diversification of products and services; changes in properties' value.

This paper presents a qualitative case study examining the changes on the socio-spatial structure of a small Turkish island, Bozcaada, through these principal indicators of gentrification in the countryside. During the last two decades, Bozcaada has been displaying both the core elements and indicators of gentrification through the process of rural social change and structural local economic changes. In the early phase of Bozcaada's gentrification, the newcomers were mainly middle-aged and middle-class urbanites who moved to the island with rural idyll motivations. However, in the current phase, the characteristics of the newcomers have become diversified in terms of both motivations and socio-economic class.

The most significant finding of this paper is the identification of the second-generation gentrifiers of Bozcaada who are the direct descendants of the first gentrifiers. This particular section of current newcomers on Bozcaada is not as wealthy as the other newcomers or their parents. In fact, they may not be able to move into the local community if they have not inherited their parents'/grandparents' properties due to a highly inflated housing market. Although they do not hold any economic capital, they are still part of the gentrifying population of Bozcaada due to their cultural capital, which differentiates them from the other sections of the local community.

This paper argues that the second-generation newcomers naturally took part in the process of gentrification when they inherited their properties,

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since they play an important role in the significant socio-economic and cultural changes that are still taking place on the island. However, they created a different kind of gentrification from their parents, which is passed on to the next generation via the ownership of assets. This paper calls this new concept "inherited gentrification".

Keywords: gentrification, tourism development, rural transformation, counterurbanisation, gentrifiers

The full version of this paper is selected to be published in the special issue of International Journal of Architecture and Planning (ICONARP) after the peer review process.

SPATIAL DISTRIBUTION AND PROFILE ANALYSIS OF THE SYRIAN IMMIGRANT POPULATION PROBLEM IN FATIH DISTRICT OF İSTANBUL

Ömer BİLEN*, Mehmet GÜR**, Ersan KOÇ, Ebru KAMACI KARAHAN****

ABSTRACT

The paper reflects on some the effects of the "Arab Spring" that started in Tunisia and in Syria has resulted in the death of approximately 300,000 people. A wave of immigration began in 2011 mainly from Syria to the neighbouring countries such as Turkey and Lebanon. The Syrian migrant movement has caused social, economic and environmental problems in host countries. Turkey is the country most affected by the wave of immigration from Syria. Syrian refugees were unevenly been dispersed and/or distributed to major and border cities in Turkey. The distribution of cities in Syrian refugees in Turkey showed significant spatial heterogenities and differences. Although the ratio of population migrants to Istanbul total population is not very high, it has been the city with the highest migration in numerical terms.

Fatih district in Istanbul is one of the districts with the highest number of Syrian immigrants. Within the scope of social risk mapping research for Fatih district, immigrants - especially Syrian immigrants - have been declared as the main problem by residents, who experience higher dismissal in terms of economic opportunities. In our analysis, it has been determined that the main reason behind the Syrian immigrants being mentioned as problems is “economic reasons”. The rate of declaring Syrians as a problem in the districts of Fatih district is directly proportional to the distribution of the Syrian immigrant population.Turkey has been relatively late in assisting the social and economic integration of Syrian immigrants. This should be urgently provided. In order to end forced immigration, necessary steps should be taken to ensure peace environment in Syria.

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Keywords: Forced Migration, Syria, Refugees, Urban Security, İstanbul, Social Integration

The full version of this paper is selected to be published in the special issue of International Journal of Architecture and Planning (ICONARP) after the peer review process.

CHALLENGES TO URBAN HOUSING POLICIES IMPLEMENTATION EFFORTS: THE CASE OF NAIROBI, KENYA

Collins OUMA AGAYI*, Özer KARAKAYACI*

ABSTRACT

Nairobi, the capital city of Kenya has experienced rapid population growth since the arrival of Kenya-Uganda Railway in 1899. The central location of Nairobi on the railway route between Uganda and Malindi and its subsequent naming as the capital of Kenya in 1907, led to the settlement of the British and the Indian railway construction workers around Nairobi. The arrival of Africans from rural parts of Kenya to Nairobi looking for opportunities further led to population growth in Nairobi. Nairobi city, therefore, has rapidly urbanized with its boundary expanding from 18 km2 to 25 km2 and 688 km2 in 1900, 1920 and 1963 respectively. Population growth has caused the demand for housing to surpass the supply thus causing a housing crisis in the city. The housing demand is particularly a problem for the middle and low-income groups who have a 95% housing deficit. The high-income group, on the other hand, has a surplus of 60%. The housing crisis in Nairobi, therefore, manifests itself in the form of many slums and informal settlements emerging in and around the city. For instance, Kibera in Nairobi is Africa's biggest slum and one of the world's biggest. At least 60% of Nairobi residents live in the slum and informal settlements which make up only 5% of the total residential land of Nairobi. This paper examines the formation process of informal settlements in Nairobi before and after independence. This research also seeks to determine the policy and legal efforts put forward to address the housing problem in Nairobi before and after independence. Finally, the research seeks to establish the social, economic and spatial impacts of the intervention measurers applied to address the housing crisis in Nairobi. To understand the historical context of the informal settlements and slums formation in Nairobi, the research relies on secondary materials and historical data like academic journals, post-graduate theses, conference papers, government, and institutional research reports. The research then examines the policy and legal documents containing interventions by the government to

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address the housing crisis. The research establishes that despite efforts by the government to address the housing problem, housing problems persist with many more slums forming. This is attributed to high-interest rates, lack of citizen participation, the duplicity of policies, lack of land-tenure security among other reasons.

Keywords: Citizens participation, Demand, Housing, Interest rates, Informal settlements

The full version of this paper is selected to be published in the special issue of International Journal of Architecture and Planning (ICONARP) after the peer review process.

SESSION 6B

Theme: Architectural/Urban Design, Art and Aesthetics

14 October 2020 Wednesday, 15.15 – 17.00

Chairperson: Prof. Dr. Burak ASILİSKENDER

Nebahat Özge ESENER, Nilay COŞGUN

Overview of Sustainable Design Criteria in High-Rise Building Façade Design

Ayşıl COŞKUNER, Agah TAŞTEMİR, Ümit ARPACIOĞLU

A Comperative study on Daylight Evaluation in Konya Anatolian Seljuk and Ottoman Period

Elif VURUCULAR KESİMCİ

Bursa Khans Region as Urban Monument Artifacts

Tuğçe ELVER BOZ, Halime DEMİRKAN

Spaciousness and Emotional Responses to Curved Space Boundaries

OVERVIEW OF SUSTAINABLE DESIGN CRITERIA IN HIGH-RISE BUILDING FACADE DESIGN

Nebahat Özge ESENER*, Nilay COŞGUN*

ABSTRACT

Buildings are responsible for the high amount of global carbon emissions, structural wastes and energy consumption. The majority of buildings in Turkey are residential buildings and these residential buildings are responsible for the consumption of nearly half of the energy used by buildings as well as high amount of carbon emissions and structural wastes. Building facades are important elements of the buildings for sustainability since they are the elements that provide the distinction between the internal and external environment. It is known that a well-designed sustainable facade can lower the building's negative impacts to environment significantly. Considering the construction of high-rise residential buildings have increased in the last decade in Turkey, the study focuses on sustainable high-rise residential building facade design. The purpose of the study is, systematically evaluating the facades of high-rise residential buildings built in Turkey in the last decade in terms of sustainability criteria and to raise awareness for designers. In order to evaluate in a systematic way, in the first step, high-rise building facade systems were classified and sustainable design criteria for these facades were identified such as; energy saving, providing natural ventilation, efficient use of water, preventing direct or indirect glare, providing alternatives for color, texture and finish details, being lightweight, easy to install, maintain and clean. In the second step, according to the classifications and sustainability criteria determined, 5 high-rise residential building facades built in the last decade in Istanbul, which have the same certificate (Gold) in the LEED assessment system were evaluated. In conclusion, it is considered that a new certification system that examines the building in parts and treats the facade as opaque and transparent surfaces may be useful in sustainable high-rise residential building facade design. In further studies, it is planned to work on a new sustainable building design evaluation system design that might contribute to prevent environmental pollution.

Keywords: Sustainable Design, Building Facade, High-Rise Building.

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1. INTRODUCTION

Approximately 30% of global carbon emissions, 40% of energy consumption and 31% of wastes originate from construction activities (Moussavi, 2017). Dwellings constitute a large part of all buildings. Construction permits in Turkey from 1954 to 2015 show that 85% of the buildings built between those years are residential buildings. In addition, researches show that nearly half of the energy is being consumed by residential buildings (Karahan, 2017).

In addition to consuming energy resources, buildings have many negative environmental impacts such as; water consumption, raw material consumption, waste generation (air, water, and soil pollution), degradation of the ecosystem (decrease of biological diversity), and degradation of human health.

Building facades can significantly affect the performance of the building as they are the elements that distinguish between indoor and outdoor environments (Moussavi, 2017). A building facade can be designed with; the addition of equipment that will allow rainwater to be collected (like rainwater harvesting panels or claddings), the selection of materials that will reduce waste generation (provide reuse or recycle), and design strategies (passive and active design strategies) that will minimize the damage to the ecosystem. In this case, it can be said that the measures to be taken on the building facade design can significantly reduce the negative environmental effects of the buildings.

The building facade can be shaped according to the functions of the building. The facade of an educational structure can be designed to receive a good amount of light to create a good reading-learning space. The facade of a residential building can be designed to; provide light for the kitchen, landscape for the living room, privacy and comfort for the bedroom. In the past, it can be seen that the facades reflect the functions of the buildings. They give more or less insight into the actions that take place inside, and it is possible to easily separate education, health and office buildings from the residences; however, when we look at today's architecture, it is difficult to distinguish visually between an education building, health building, office building or residential building. This may be due to the similarity of these buildings with the introduction of similar facade systems.

It was observed that these similarities increased as the height of the buildings increased. While low-rise houses can be separated from office buildings, similar facade systems are used in order to provide high performance in high-rise buildings. In addition to this problem, considering the surplus of housing production in Turkey, the study has focused on high-rise housing facades. It is aimed at the study to create awareness about sustainable high-rise building

facade design strategy practices in Turkey during the last decade. In this way, it is thought that the environmental impacts of the buildings can be reduced by the strategies to be applied in the design of the building facades.

In the study, a literature review was realized and classification related to building facades were made. Sustainable facade design criteria were determined as; energy-saving, provide natural ventilation, efficient use of water, avoid direct or indirect glare and glare, provide alternatives for color, texture and finish details, should be light, should be easy to install, maintain, clean, it should have a visual impact (such as prestige, night view). Then, the facade of 5 high-rise residential buildings constructed in Istanbul in the last decade was examined on the basis of sustainable design criteria.

2. BUILDING FACADE AND SUSTAINABLE DESIGN CRITERIA

The word "facade" has been translated into English from the Latin word "facia" meaning "face" (https://www.merriam-webster.com). Today, the French version of the word "façade" is also being commonly used. Facade, firstly refers to the frontal surface of a building where includes the entrance door then it refers to the other exterior surfaces of the building.

In order to make a systematic examination, the function and elements of the building facade were first determined. Then, sustainable design criteria were determined and high-rise facade systems were classified.

2.1. Functions and Elements of Building Facades

The main functions, of the facade, are carrying the loads, protecting, distributing and finishing (Deniz, 2017).

- The building facade must be able to carry its own load and in some cases the load of the building in addition to its own load.
- The building facade should be able to protect the building against external impacts.
- It should provide indoor comfort for users.
- The building facade must have finishing surfaces that meet the aesthetic functions and provide comfortable and safe surfaces for the users.
- Service systems can be solved inside the building facade.

When the facade is divided into opaque and transparent surfaces; the exterior wall forms an opaque surface, while the exterior doors and windows form transparent surfaces (Figure 1)(Esener, 2018). In some cases, the doors may also be opaque.

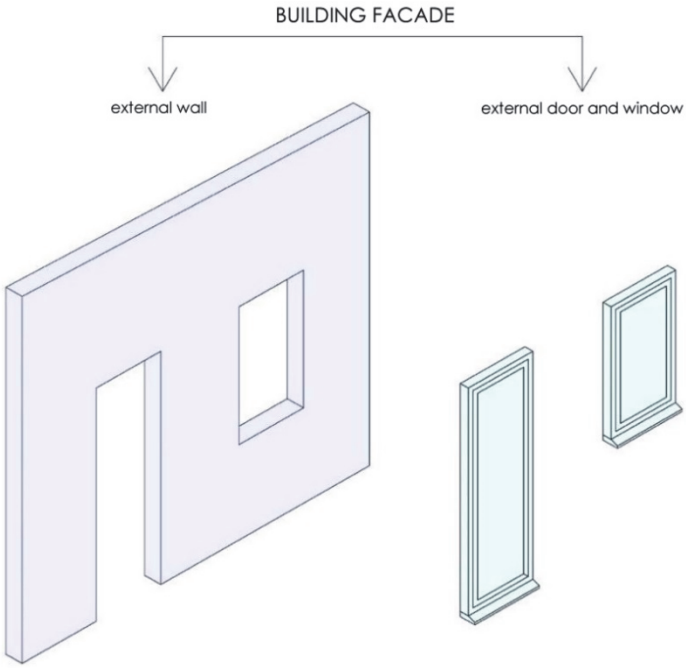

Figure 1 Building facade system (Esener, 2018).

The exterior wall is a planar structural element that divides the external environment and the internal environment in the vertical direction. Its functions are; carrying the loads, separation, isolation and protection. The window and the exterior door are the elements placed in the wall cavities in order to solve the problems of the transition between the indoor and outdoor environment and protection problems together. Their tasks are to provide transition, protection, and isolation.

2.2. High-Rise Building Facades

With the development of technology after the Industrial Revolution, the increasing need for housing in a narrow space has led to the popularization of high-rise buildings. Due to the increasing population and traffic problems and intensive work pace, the need for making good use of the time has led to the combination of multiple functions to produce multifunctional high-rise buildings.

Construction of high-rise buildings in Turkey began in the 1960s. The buildings, which were built until the 2000s, were generally designed for functions such as office buildings and offices. The housing function was then activated. In big cities, high-rise buildings have increased with factors such as; the need for

accommodation, landscape and urban transformation needed for the increasing population.

The designers who tried to cope with the construction difficulties faced with the concern of meeting the new needs of the users (prestige, pretension, etc.) started to design structures with different functions with similar visuals. Rooms with different needs (privacy, daylight, ventilation, etc.) have similar facades. This has directly affected the design of residential facades.

High-rise buildings led designers to innovative solutions due to various construction challenges. Wind, rainfall, natural disasters, static problems caused by form are among these difficulties. With the preference of advanced glass, material, service and structure system technologies, visual changes have started in the buildings. The development of elevators, ventilation systems, the use of high-strength materials has allowed the buildings to get taller. With the development of curtain wall systems and the development of glass technologies, the facades began to be designed more freely than the building structure system.

In order to better understand the high-rise facade structure systems, the building facade structure system classification should be made in order to better analyze the samples to be examined. In high-rise buildings, facade systems can be examined in three different ways depending on the relation of the facade with the building system of the building (Figure 2) (Fernandez, 2004).

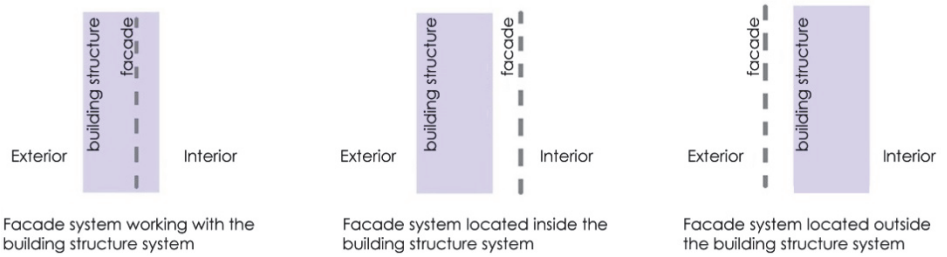

Figure 2 Structural Facade on the left, Exoskeleton in the middle, Skin Facade on the right (Fernandez, 2004).

2.2.1. Facade System Working with the Building Structure System (Structural Facade)

It is formed by filling the gaps between the structural elements. The structure can in some cases be protected against external influences. If it is made of materials like concrete, stone, it is heavier than other systems; pneumatic may be lighter. The movements of the structure may cause deformation on the facade and structural physics problems may arise in the joint details (Fernandez, 2004).

2.2.2. Facade System Located Inside The Building Structure System (Exoskeleton)

It is a facade system located behind the structure. The structural system was removed from the interior. The problem of solving the relationship of service systems with structural elements is eliminated. It is safe in terms of fire. The structure is not protected by the facade against environmental influences. The structure may prevent the facade from receiving daylight (Fernandez, 2004).

2.2.3. Facade System Located Outside The Building Structure System (Skin Facade)

It is a system located outside the structure. It is known as the curtain wall. It protects the structure from external influences and is usually light. Separation from structure provides flexibility in design. It is easy to design roof, facade and structure relations (Fernandez, 2004). Constructing it is easy and is often used in high-rise buildings in Turkey. Therefore, the curtain wall is discussed in more detail in this study.

Curtain wall systems can be designed with one or more layers (double-skin facades, triple skin facades, etc). With spaces between layers, natural ventilation and protection against harmful sun rays can be ensured in high buildings. Multilayer glass coatings filled with argon gas can increase the U-value (Pank et al., 2002). Cladding facades are divided into heavy cladding facades and light cladding facades (Sev, 2009) (Figure 3).

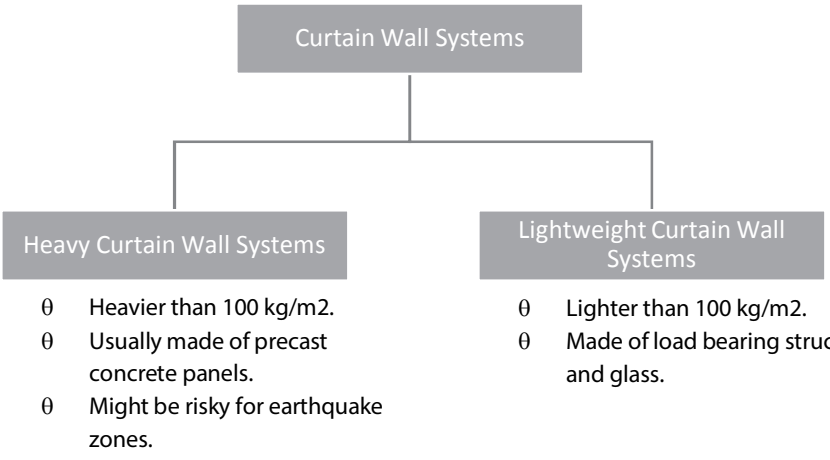

Figure 3 Curtain Wall Systems (Sev, 2009).

Lightweight Curtain Wall Systems: Stick system, half panel system, panel system, structural silicone can be examined under four headings. In the stick system, the vision and parapet units are fixed in separate sections to the frame consisting of continuous vertical and segmented horizontal elements. The vision and parapet units are fixed to the frame consisting of continuous vertical and segmented horizontal elements in one piece (Figure 4).

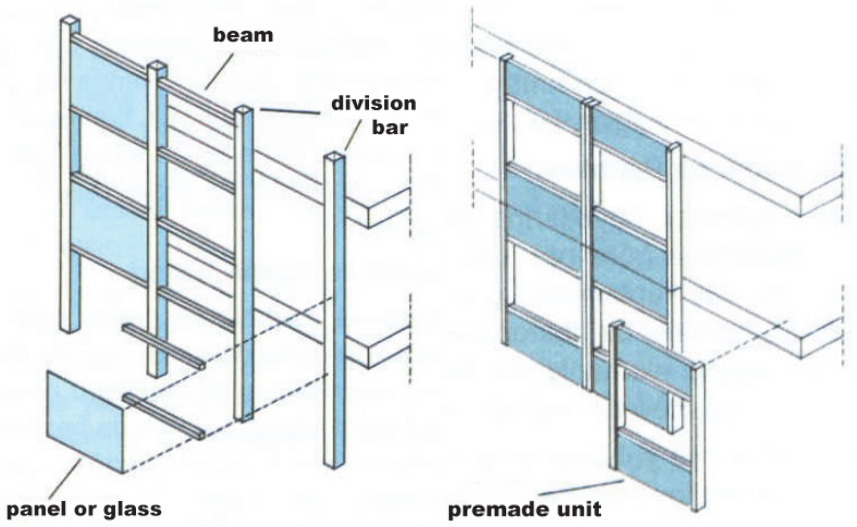

Figure 4 Stick Curtain Wall System on the left, Half Panel System on the right (Candemir, 2002).

Vision and parapet units are prepared in the production center and fixed directly to the structure. The glass panels are fastened directly to the structure of the facade without joinery with high-strength structural silicones (Figure 5).

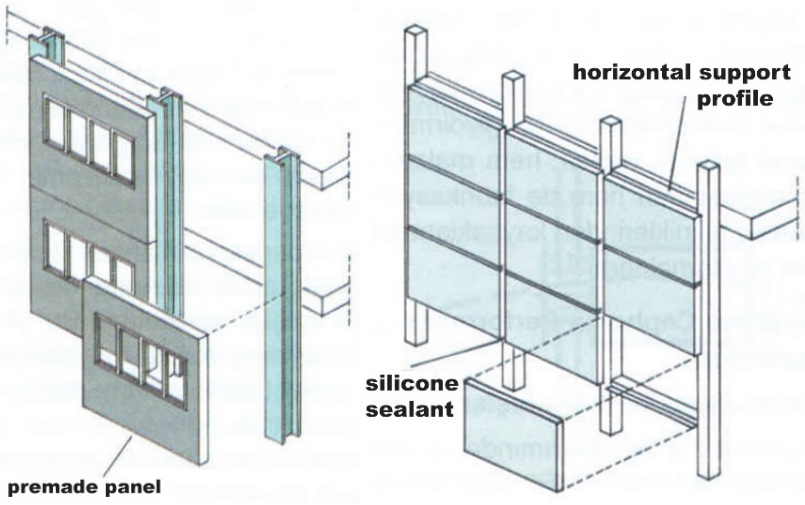

Figure 5 Panel System on the left, Structural Glass System on the right (Candemir, 2002).

2.3. Former Studies about Sustainable Building Facade Design

As mentioned earlier, since the facade is an important element that protects the building from the external effects, it can be very effective in the sustainability of the building. Particularly, if the correct measures are taken, building facades can contribute to energy saving at a good rate. In the literature, various research has been made on the improvements made in building facade systems and their effects on energy efficiency.

In 2018, Hachem-Vermette investigated the effect of photovoltaic panel facades on the thermal performance of the facade in Canada. In Canada, the researcher identified three forms in the study and compared them with the help of a simulation program. As a result of the study, it has been determined that the facade surfaces with sharp edges (protruding) have higher performance than the flat ones. It is stated that this method can also be used in high-rise buildings even if the study is done on small dwellings (Hachem-Vermette, 2018).

In another study, heat insulation and impermeability strategies on walls and roofs in Greece could reduce energy use by 20-40%. In the same study, it was also stated that the roofs and walls covered with blinds and light-colored materials provide approximately 30% benefit in cooling the interior spaces (Balaras, Droutsa, Argiriou, Asimakopoulos, 2000).

In Hong Kong's warm and humid climate, energy savings of 31.4% have been recorded in high-rise residential buildings with the help of passive systems. In residential buildings, measures such as the use of EPS (Expanded Polystyrene) as

the thermal insulation material on the exterior wall and the use of reflective coating material have been taken (Cheung, Fuller, Luther, Luther, 2005). In another study, in Hong Kong, DOE-2, an energy simulation program in the field of thermal insulation and heat transfer in facade design, provided an average of 35% of the cooling requirement (Chan, Chow, 1998).

In addition, studies such as comparing thermal imager images of facades made with different materials have been frequently encountered in the literature. In 2017, Alonso, Martin-Consuegra conducted a study in Spain to investigate the effect of facade finishing materials on the building's energy efficiency. Three optical parameters (color, solar reflection, emission) and three production systems (Madrid's traditional production system and 2 different systems proposed to improve thermal performance) were examined. The effect of reflecting surfaces on indoor comfort was found to be higher than the emission. It was concluded that the high reflectivity of the exterior surface of the facade has a significant effect on the indoor thermal performance. It is stated that the use of low emission materials during cold periods is beneficial because it reduces heat loss in the building shell (Alonso, Oteiza, García-Navarro, & Martín-Consuegra, 2016).

In 2015, Ihara, Gustavsen, and Jelle researched the importance of solar reflectivity and the U-values of the opaque and transparent surfaces of the window. In the selection of windows, the importance of window materials and U-values in the energy efficiency of the facade is emphasized (Ihara, Gustavsen, & Jelle, 2015).

In 2017, Djamel and Noureddine's study in Algeria examined the effect of window design on energy efficiency under specific climatic conditions. Different window designs of different sizes were made on Google Sketchup and tested in a simulation program. As a result of the study, it was determined that the excess of the window opening, type of glass (single glass, double glass, etc.) had serious effects on heating and cooling of the building under specific climate conditions (desert climate). Increased transparency leads to more energy consumption. The use of double glazing and three glazing increases energy efficiency. It is thought that it may be useful to use these data on building facades designed in a desert climate (Djamel, Noureddine, 2017).

Building sustainability can be improved by integrating passive and/or active systems into the design. Heating, ventilation, air conditioning (HVAC) systems with artificial measures, electricity and lighting systems, such as active systems can be counted (Sadieni, Madala, Boehm, 2011). Natural measures taken by material selection and design strategies can be defined as passive systems. Many measures to be taken in the facade design can be considered a passive system for the building. For example; measures such as blinds formed on the facade,

stratification of the facade for thermal insulation (and the distance of these layers to each other), natural ventilation and lighting with the spaces created, selection of a material that can provide insulation of the facade material, selection of the color of the facade material in the color that absorbs the heat, interior comfort in the building providing facade passive design strategies.

Contemporary facade design is expected to be energy efficient and environmentally friendly (Sadieni, Madala, Boehm, 2011). In order for the design to be successful in this regard, it is necessary for the sustainable design to meet the criteria such as energy efficiency, efficient use of water, sustainable material use, waste management, indoor and outdoor comfort. In 2009, Sev made several classifications in the field of sustainable architectural design. It has determined the criteria that a sustainable building must meet. When these criteria are examined on the basis of the facade, they can be examined as follows (Sev, 2009):

1. Energy-saving.
2. Provide natural ventilation.
3. Efficient use of water.
4. Avoid direct or indirect glare and glare.
5. Provide alternatives for color, texture and finish details.
6. Should be light.
7. Should be easy to install, maintain, clean.

Aesthetic effects such as; night view, facade lighting, the luxurious, prestigious look should be added to these criteria in order to meet today's social needs.

3. METHODOLOGY

3.1. Determination of Sustainable Design Criteria

The sustainable design criteria used in the study were created for the building facade by making use of the former studies found in literature review. It can be examined as follows:

1. Energy-saving: Considering the environmental data; it is possible to orient the building, to provide natural lighting and ventilation by creating occupancy and cavities on the facade, to provide adequate heat insulation, to select the coating materials and colors with respect to the heat, and to support the energy need with the help of active systems that can be integrated into the facade. In addition, careful selection of glass on transparent surfaces can contribute to energy conservation. Many glasses with different heat and light transmittance, UV filter and different colors are being produced today.

2. Provide natural ventilation: The facade must provide natural ventilation for both human health and energy savings. Natural ventilation is provided in high-rise residential buildings with double-skinned cladding facades designed with environmental data in mind.
3. Efficient use of water: In rainy climatic zones, systems that collect rainwater can be designed on the facade. In addition, rainwater collected or treated water can be used in the watering of floor gardens or vertical gardens formed on the facade.
4. Avoid direct or indirect glare and glare: The facade should not cause glare which may adversely affect the living spaces in the environment and users. This may cause heat to rise in the environment and deteriorate comfort conditions.
5. Provide alternatives for color, texture and finish details: One aspect that highly influences the performance of the facade is sealing. In order to achieve this, detailed design has an important place. Careful design of joint details, careful selection of materials and material colors, and if possible a local material selection, can contribute to energy savings.
6. Should be light: The lightweight of the facade system will reduce the load on the structure of the building or on the facade itself. This makes the structure smaller in size. In this way, the amount of material spent is reduced and the fossil fuels to be transported are reduced.
7. Should be easy to install, maintain, clean,
8. It should have a visual impact (such as prestige, night view).

These eight criteria were identified as sustainable design criteria in the study. The facades of the selected structures were evaluated in accordance with the criteria established. During this assessment, the LEED scores and the structural system of the facade related to these criteria were also taken into consideration.

3.2. Case Study

In this study, a total of 5 high-rise residential buildings from the Anatolian and European sides of Istanbul were selected for examination (Figure 6). During the selection process, high-rise residential buildings from different parts of the city, having different facade systems, having the same grade from the same sustainability assessment (LEED Gold Certificate) in the last 10 years were chosen. The facades of the selected structures were evaluated according to the sustainability criteria previously determined with the observation technique and the scores obtained from the certification system.



1-İstanbloom
2-Ağaoğlu Andromeda Gold
3-Varyap Meridian
4-Spine Tower
2-Orya Park

Figure 6 Locations of the case studies.

4. FINDINGS OF THE STUDY

4.1. Istanbloom

Located in Zincirlikuyu District, the building was designed by DB Architecture. The project was completed by Esin Yapı in 2013 and received the Gold (63 points) certificate in the LEED (http://www.usgbc.org/leed/certification#certify) New Building category (Şekil 8) (https://yapidergisi.com/).

Istanbloom's facade design expresses the cultural diversity of Istanbul and the harmony of the buildings of different sizes of the city with masses stacked on top of each other (Figure 7).

- The double skin facade provides 20% energy saving thanks to thermal insulation and heat recovery system.
- Low-e glasses are used on the facade.
- In this structure, which achieved full points in terms of water-saving within the framework of LEED criteria, local plants were preferred in the garden planting and plants consuming less water were used.
- Rainwater collection systems are not designed on the facade.
- With the help of floor gardens, it is aimed to revive the damaged ecosystem on the ground.

- Construction waste management has been established during construction and care has been taken to use recycled materials.
- Solar panels are placed on the roof instead of the facade and these roads provide interior lighting.
- Construction waste management has been established during construction and care has been taken to use recycled materials.

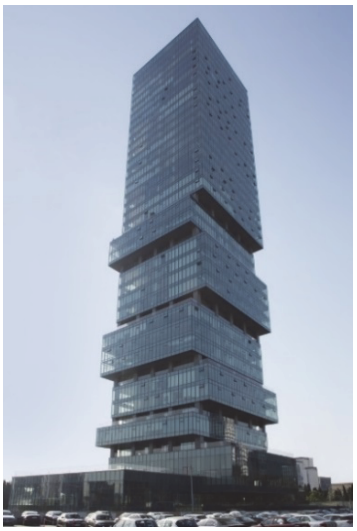

Figure 7 İstanbloom (http://www.yapidergisi.com/).

4.2. Ağaoğlu Andromeda Gold

Located in Ataşehir District, the building was designed by Tuncay Çavdar / Atölye T Mimarlık. The project was completed in 2013 by Ağaoğlu İnşaat and awarded Gold (61 points) in LEED (http://www.usgbc.org/leed/certification#certify) New Building category (http://v3.arkitera.com/).

- The structural silicone facade and the composite sheet coating provide a bright gold color on the facade. It is thought that this situation may adversely affect the visual and thermal comfort of the environment.
- The window areas and heights were kept wide so that the apartments could benefit from daylight as much as possible (Figure 8).
- In order not to endanger the health of the users, products such as paint, flooring, and coating are used which minimize the chemical effect.
- During the construction period, construction wastes were recycled and collected as domestic wastes to minimize environmental damage. At the

same time, various measures have been taken to prevent the spread of construction pollution to the environment, such as washing the wheels of trucks and applying silt curtains.



Figure 8 Ağaoğlu Andromeda Gold (https://tunayapi.com.tr/).

- Rainwater collection systems are not designed on the facade.

4.3. Varyap Meridian

Located in Ataşehir District, the building was designed by Dome Partners. The project was completed by Varyap in 2013 and received Gold certificate in LEED (http://www.usgbc.org/leed/certification#certify) New Building category and 2009 Best High-rise Building "and Best Real Estate Project in 2009, ArkiPARC Real Estate Awards 2013 First Place in Mixed-Use Category 2013 in 2013," Residential in Cityscape Global 2014 " Project Award - Built "(Best Completed Residence Project) (http://v3.arkitera.com/).

- The full areas of the façade, which is manufactured with a panel system, are covered with colored aluminum paneling panels. The facade is produced by breaking into standard modules in certain dimensions (Figure 9)
- In a panel, multiple colors are intertwined, giving the facade a natural look like a vivid texture.



Figure 9 Varyap Meridian Facade Construction (http://gezginharitaci.blogspot.com/2013/04/varyap-meridian.html).

- The effect of efficient shading prevents the heating of the indoor environment by the heated outdoor air.
- Transparent tinted glasses provide a good level of insulation between the indoor air and the outside air with its low heat transmission coefficient. These colorless, eye-free lenses minimize heat losses as well as comfort.
- The buildings are designed not to obstruct each other so that daylight is also introduced and wind corridors are formed.
- Rainwater collection systems are not designed on the facade.

4.4. Spine Tower

Located in Maslak District, the building was designed by Murat Kader. The project was completed by 2014 and the Soma Holding Gold LEED Core & Shell category (66 points) certificate (http://www.usgbc.org/leed/certification#certify) and the 2014 MIPIM Awards, "Turkey's Best Project" award (http://v3.arkitera.com/).

- In order to optimize the energy performance, the design was made by considering the location of the building, prevailing wind, sunlight, heat from the sun, surrounding buildings, trees, land shape.
- Although it is one of the tallest buildings in the city, natural ventilation is provided by opening windows.
- It is produced with a half panel system (Figure 10).
- Recyclable, regional materials are used; however, it can be said that it is a structure that is lacking in terms of the use of low emission materials.



Figure 10 Spine Tower Facade Construction (http://www.saytekno.com/).

- Rainwater collection systems are not designed on the façade.

4.4. Orya Park

Located in Ümraniye District, the building was designed by Kadir Üçvet (https://www.oryapark.com/). The project was completed by Oryataş in 2015 and awarded Gold (66 points) in the LEED Core & Shell category (http://www.usgbc.org/leed/certification#certify).

- When positioning buildings, orientation, natural lighting, and natural ventilation are made to provide maximum benefit.
- By the use of daylight, it is aimed to save energy and costs will be spent on lighting.
- The use of double glazed windows reduces heat losses and noise pollution from outside.
- A filter system is designed for the dirty air from outside and neighbors.
- In paints and coatings, products that could cause harmful gas release was not used.
- Rainwater collection systems are not designed on the facade.
- The panel system is used as a facade structure system (Figure 11).
- Almost all of the materials selected in the project consist of recyclable materials.



Figure 11 Orya Park Facade Construction (http://www.yapifabrikasi.com.tr/).

5. CONCLUSION

Nowadays, environmental pollution problems, the reduction of the emission of toxic gases and energy efficiency have become important due to the depletion of natural resources. It is thought that the sustainable design of building facades, which is one of the important building parts in ensuring the sustainability of the buildings, will be effective in the whole building.

The evaluation of the samples according to the sustainability criteria determined in the study is as in Table 1.

Table 1: Cases: İstanbloom, 2: Ağaoğlu Andromeda Gold, 3: Varyap Meridian, 4: Spine Tower, 5: Orya Park.

Case	Energy Saving	Natural Ventilation	Preventing Glare	Finishing Details	Lightweight	Reusable Materials	Easy to Clean and Maintain	Visual Effect
1	+	+	+		+	+		+
2	+			+	+	+	+	+
3	+	+	+	+	+	+	+	+
4	+	+			+	+	+	+
5	+	+	+	+	+	+	+	+

All investigated high-rise residential buildings:

- Are located in areas that are easily accessible,
- Use double glazing,
- Have a rainwater collection system outside the facade,
- Prefer finishing materials that do not emit toxic gases,
- Provide orientation according to environmental data in design,
- Have a lightweight facade system,
- Preferred recyclable materials.

The high-rise residential buildings built in Turkey (in order to be able to provide high performance) were designed with a facade system that is similar to other buildings with different functions. Meeting the sustainability criteria of the facade system, which covers a large part of the building, will reduce the environmental impact of the construction activities. In this context, the certification systems that evaluate buildings should examine the building in parts instead of examining them in general.

In LEED certification system, which is one of the most popular one in Turkey, it was seen that the building was considered as a whole and the facade was not examined alone. It is known that a well-designed sustainable facade can provide significant energy savings to the structure. Considering that there is a serious need for energy in Turkey, the importance of this evaluation system becomes indisputable.

In order to prevent environmental pollution and leave a livable world for future generations, it is necessary to produce and disseminate an assessment system for national needs on building facades. In further studies, it is planned to work on a new sustainable building design evaluation system design that might contribute to prevent environmental pollution. It is thought that a new certification system that examines the building in parts and treats the facade as opaque and transparent surfaces may be useful in sustainable high-rise residential building design. In addition to this, Turkish government should provide state support and legal arrangements, the chamber of architects should provide more workshops about how to integrate sustainable design elements to a building design and the education system should include classes about sustainability and environmental problems in schools.

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A COMPARATIVE STUDY ON DAYLIGHT EVALUATION IN KONYA ANATOLIAN SELJUKS AND OTTOMANS PERIOD

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ABSTRACT

Daylight control and energy efficiency in architectural design is accepted as one of the main inputs of sustainable architecture. Particularly the illuminance level in building design process, is related to visual comfort directly. Likewise, prayer spaces are the buildings which conserve prayers from outdoor conditions and maintain essential comfort standards. Particularly in mosques where are prayed collectively, high level of ambient lighting comfort conditions from the visual perspective is requested. Traditional mosques are operated to maintain homogeneous indoor ambient conditions to maintain comfortable thermal and visual environments. Especially in classical period traditional mosques the homogeneous sprawling sunlight which comes from the dome surroundings, both maintains the essential illuminance level for the indoor comfort conditions and also assists to create the sense of meeting under the dome.

Within the Izu Konya Silk Road City Research Project, built in different historical periods, three Anatolian Seljuks and Ottoman Mosques'(Aziziye Mosque, Sultan Selim and Tahir-Zuhre Mosque) interior spaces are shown with the plan sketches, therefore every mosque is evaluated particularly in summer term periods when users pray inside mosques in particular day and hour periods.

Evaluation results are tested by luxmeter device and maintained based on the facade windows' location. 'Design Builder' energy testing programme is used and each mosques' technical plans are modelled in 3D. Also illuminance control reports are maintained by the same simulation method. Natural illuminance level and daylight calculations are shown within the charts. Measures are done only when there is natural light inside mosque.

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Evaluation results are analysed based on the visual comfort level of prayers according to international standards. Within the scope of this Project, three chosen mosques constructed in Konya Anatolian Seljuks and Ottoman Historical periods which are both located in Konya city center, essential illuminance and visual comfort conditions are evaluated depending on the change in structural construction method and historical period.

Keywords: Daylight, Traditional Mosque Design, Interior Space Daylight Comfort

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BURSA KHANS REGION AS URBAN MONUMENT ARTIFACTS

Elif VURUCULAR KESİMCİ*

ABSTRACT

The important initial stage of the design process is reading the texture of the new building's place, the location in the city, the typologies of buildings around it and understanding the urban morphology. For the sustainability of the urban texture, the analysis of the urban environment is essential in the design process.

Monuments from Rossi's (1984) urban artifacts are the primary elements of the city. Monuments cannot be read and analyzed alone or separated from the surrounding urban morphology. Monuments belong to a system that depicts the city, and by controlling the system, they form a model for the structures to be built later. The monuments accelerate the process of urbanization, remain in the center, form around the buildings and the city begins to grow around these. Monuments become a reference point in urban memory, give the city an identity and the city is referred to as monuments. Urban artifacts often coexist as split in a particular order.

When the Bursa Khans Region is analyzed in the context of Rossi's urban artifacts, it is understood that the city began to form around the first monumental buildings built by Orhan Ghazi. Bursa was a small city within the castle when conquered by the Ottoman State. Then, it became the capital city and in the historical process, the city was built as a commercial center of the Ottomans. The first buildings which are Orhan Social Complex were built in the place of the market outside the city within the city fortress. The development of the city began with these monumental buildings formed a model for other monuments and urban texture. Bursa Khans Region is a split consisting of primary elements in the city. For centuries, the Region had become the identity of the city, which contains monuments in the memory of the citizen. The region became the intersection of significant trade centres and continued to maintain its commercial importance after the conquest of Istanbul. The first buildings of the republic period were also built in this region.

This paper's subject is the analysis of the Bursa's development, where it continues to grow rapidly, around monuments in time. The aim is to

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remind the monuments which are the symbols of the city and the protected urban morphology for the new buildings' design process which has to be respectful/ compatible with the urban texture, especially buildings constructed/ to be built near the Khans Region.

Keywords: Bursa Khans Region, Urban Morphology, Urban Monument Artifacts, Landmarks, Urban Development

1. INTRODUCTION

Bursa is one of the largest metropolitan cities Turkey. The city was also the first capital of the Ottoman State. After the Ottoman conquered Bursa and made it the capital, Bursa was ceased to be a small city and started to develop. With the Ottoman conquest of Istanbul, Istanbul became the capital. Although Bursa lost its capital feature, it had continued its development in this area due to its trade routes. Republican period showing improvements in the industrial sector in the city due to its proximity to Istanbul is one of Turkey's major metropolitan areas.

In this study, the condition of Bursa city during the Ottoman State and the history of the Republic until the 1970s were examined. Today's morphology of cities can be understood by examining how urban texture has changed in the historical process.

Urban morphology has guiding traces to understand the history of the city and the current situation of the city. The formation of urban identity and culture; it is realized by the joining of the urban spaces with the experiences throughout history. The historical background of each place in the city's memory constitutes the urban identity. Aldo Rossi (1984) argued that human activities in the city have been forgotten, but urban spaces continue to live in the city, even though sometimes changes its function. The city artifacts of Rossi (1984) are the buildings that provide the urban identity, are the landmark of the city and provide the development of the city. Monuments from Rossi's (1984) urban artifacts are the primary elements of the city. Monuments cannot be read and analyzed alone or separated from the surrounding urban morphology. Monuments form a model for the buildings to be built later.

This paper's subject is the analysis of the Bursa's development, where it continues to grow rapidly, around monuments in time. The aim is to remind the monuments which are the symbols of the city and the protected urban morphology for the new buildings' design process which has to be respectful/ compatible with the urban texture, especially buildings constructed/ to be built near the Khans Region.

2. BACKGROUND OF CONTEXTUAL FRAMEWORK

2.1. Urban Morphology

Moudon (1997) defines urban morphology as the analysis of the city as a human habitat. Street patterns, forms and scales of buildings, settlement textures, open and green areas are the main elements of morphological analysis. Examining the physical forms, buildings and components of the city and correlation them, is called that 'urban morphology'. These correlations and components are analyzed from the origin of the city to the present. Urban morphology provides to understand that the physical form produces the social structure. The evolution of the space is examined as the change of streets, buildings, parcels and open spaces from origin to the present, so the relationship with history and the city is understood. The combination of these elements constitutes the structure of the city. The different characteristics of parcels and buildings, which are the smallest elements of the city, define the city form and density. The way of their come together reflects the urban form and the socio-economic status of the inhabitants. These elements are constantly changing with function, culture and economic changes over time (Moudon, 1997).

One of the urban morphology approaches British School's pioneer Conzen was interested in the physical structure of the urban area. The settlement layers with all the systems and streets, the building textures and the landscapes that have evolved throughout history are important for understanding to changing of the urban form. Conzen focused on the development and process of the city. Conzen examined the city block and the changes in there over time and focused on the change of the parcels to the building structure, the change of the building structures and the changes in the city form (Whitehand, 2001).

The Italian School explores urban morphology associating it with urban design in a sub-scale from the English school. The Italian morphological tradition has always acknowledged a close link between tradition and innovation (Marzot, 2002). The reason why architecture and city planning are brought together during the historical process is the problem of transition between the historical core areas that have existed from the past to the present and the new urban textures created with the effect of modernization. Italian School's systematic concept was aimed to solve this problem and integrate the city. According to Panerai, (1979) and Moudon (1997), the urban form is only understood historically because of the continuous transformation of the city elements and a building replacement to another. Building typology is the basis of urban research. City form and structure consist of many actions, choices and ideas that occur in buildings and open spaces (Franck, 1994). Muratori considers cities as a living

organism and while expressing the urban form, it progresses from a single building to the entire region with an induction concept and defines the city form in all its aspects.

The Versailles School of Architecture in France emerged during the 1968 events. The school follows the philosophy of Muratori and focuses on the rediscovery of the roots of the architecture of past traditions. While urban morphology discussions between architects and geographers in England and Italy, sociologists, geographers, historians and planners work together to make sense of the city form in France (Moudon, 1994). Panerai, one of the important names of the school, examines urban analysis under four headings: a typology of elements, urban growth, articulation of urban space, landmarks and legibility. Panerai points to an understanding of the overall urban landscape and road scale, similar to Lynch's urban image (Panerai & Castex, 1970). The monuments that Aldo Rossi (1984) pointed out in the "Architecture of the city" are also important for Panerai. The pattern of the monuments in the city space, their inclusion in the city life, their contribution to the image of the city is important. According to Rossi, urban form is the result of a patchwork in which different features are stitched together. He envisages a coexistence of different features, each of which belongs to a clearly identifiable interpretation of city form; yet no one interpretation is able to encompass all the others within a single image, and no urban strategy is able to erase the pre-existing interpretation. New and existing views cannot then be gathered together into a unique morphological perspective (Marzot, 2002).

Cities as an organism are constantly changing over time. The urban monument artifacts are the significant effect of changing urban space.

2.2. Urban Monument Artifacts in Urban Morphology

Aldo Rossi was one of the leading architects and theorists who reacted to the multifaceted crisis of architecture that surfaced in the 1960s. A. Rossi, V. Gregotti, F. Tentori and C. Aymonino's group of 'Casabella-continiutà' which led by E. N. Rogers; J. Castex, J. C. Depaule and P. Panerai's group of 'Association pour le Developpement de la Recherche sur L'Organisation Spatiale' studied about urban, morphology and typology. With the emphasis on these tendencies, the concept of morphology, which has the meaning of lexicography, form knowledge, has been used in the sense of texture knowledge since the 1960s (the texture of the city, space, such as the texture of fabric, tree, leather). The concept of typology, which generally means categorization, has been used since the 1960s, with the emphasis on recurring patterns of habit (Bilgin, 2002).

Rossi's (1984) discourse is about urban which has become an important problem of architecture, especially with modernism. His book "The Architecture of the

City" is not a design methodology of architecture, it aimed to understand the dynamics of the city (Özkaya, 2006). The La Tendenza (neo-rationalist) movement, including Rossi, emphasizes that invariable rules that define architecture must be removed from the city and architecture's past. Rossi aimed to define the invariant rules of a timeless typology in his book (Bilgin, 1992). For Rossi, architecture is based on permanence and memory with typology. Rossi criticizes modern architecture for classifying the building only by its function. He supports his critique by showing examples of buildings that have existed for years and have become the collective artifact of the city. Citizens continue to appreciate some buildings that have lost function over time. Generally; the value of these artifacts is often hidden only in their form, which is an integral part of the general form of the city, its constant element. Often these artifacts depend on the elements of the city, the origins of the city and are counted among its monuments. This shows the importance of time parameter in the study of urban artifacts; it is one of the greatest mistakes of urban science to think of a continuous urban artifact as a single historical period. Rossi's collective artifacts which are monuments, complete to persistence and memory. Permanent spaces are more effective than transient events, for example, human activities. Urban artifacts, the source of the relationship between the past and the future, are physical buildings that include the entire history of the city, its geography, its connection with the general life, and the persistence of these urban artifacts ensures continuity between the past and the future (Rossi, 1984).

According to Rossi, architecture is a historical interpretation of a universal concept of type. Architectural history can then be considered nothing but a repetition of such archetypal configurations and their permanence over time is an implicit legitimization of their strength. According to this interpretation, the form should be considered as a permanent, universal and static matter (Marzot, 2002).

Monuments from Rossi's (1984) urban artifacts are the primary elements of the city. Monuments cannot be read and analyzed alone or separated from the surrounding urban texture. Monuments belong to a system that depicts the city, and by controlling the system, they form a model for the structures to be built later. Monuments become a reference point in urban memory, give the city an identity and the city is referred to as monuments. The city begins to grow around the monuments. Urban artifacts often coexist as split in a particular order.

3. METHODOLOGY

The important initial stage of the design process is reading the urban morphology of the new building's place, the location in the city, the typologies of buildings around it and understanding the urban texture.

Bursa Khans Region is an important commercial center in Bursa. The buildings in the Khans Region are landmarks and influence of the city identity. The khans and mosques in this area were referenced the other khans and mosques built after them. Rossi argued that monuments belong to a system that depicts the city, and by controlling the system, they form a model for the structures to be built later. This paper's subject is the analysis of the Bursa's development, where it continues to grow rapidly, around monuments in time as Aldo Rossi's urban artifacts.

4. FINDINGS OF THE STUDY

In this study, Bursa Khans Region is examined. Bursa, which has been on the commercial ways throughout history, is still an important commercial center, and this exclusive situation is still effective. The Grand Bazaar and the Khans Region around the Grand Bazaar still exists.



Figure 1 Bursa, Center of the Bursa, Inner Part of a Fortress and Khans Region

Bursa was a small city within the castle when conquered by the Ottoman State. Then, it became the capital city and in the historical process, the city was built as a commercial center of the Ottomans. The first buildings which are Orhan complex were built in the place of the market outside the city within the city walls. The development of the city began with these monumental buildings formed a model for other monumental buildings and urban texture. When the Bursa Khans Region is analyzed in the context of Rossi's urban artifacts, it is understood that the city began to form around the first monumental buildings built by Orhan.

Bursa Khans Region is a split consisting of primary elements in the city. For centuries, the Region had become the identity of the city, which contains monuments in the memory of the citizen. The region became the intersection of significant trade centers and continued to maintain its commercial importance after the conquest of Istanbul. The first buildings of the republic period were also built in this region.

4.1. Bursa Grand Bazaar and Khans Region at Ottomon Period

When the conquest of Bursa by the Ottoman Empire, the city was inhabited the inner part of the fortress. (Tanyeli, 1987). With the rapid development of the

Ottoman Empire during the foundation years, there was a development outside Bursa. In contrast to the castle interior, these new settlements which show a continuous development and change scheme; It has formed an alternative center with the buildings consisting of mosques, madrasas, imarets, khans and hammams, which are called as social complexes, where the Ottoman State gathered various functions together.

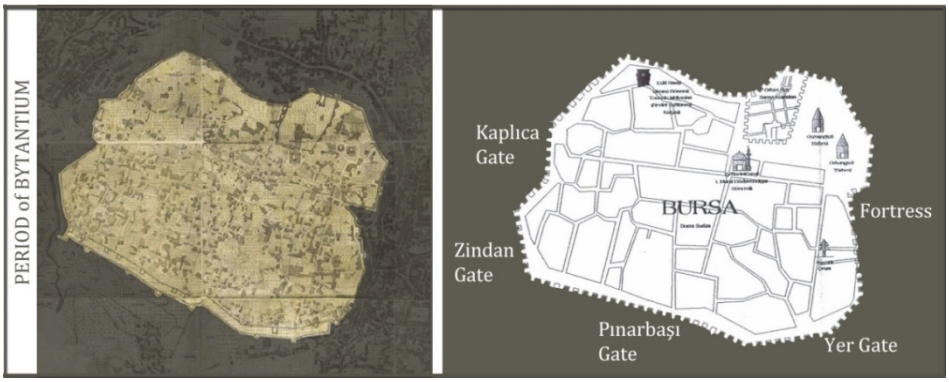


Figure 2 Bursa at Byzantium Period (Left Map was drawn up from Suphi Bey Map from Bursa Metropolitan Municipality, which was drawn in 1862, Right map was drawn up from Bursa Haritaları, n.d.)

In the first and middle ages, the most important condition for a settlement to be a city was that there was a market. Therefore, during the Ottoman period; the social complex consisting of mosque, khan, hammam, cafe, imaret and madrasah was the first building complex of Bursa city center. Orhan Social Complex was built at the second half of 14th century in the reign of Orhan Ghazi. Among these buildings that have survived to the present day, the khan is the Bey Han, or called Emir Khan, and was the largest commercial building of that period. The hammam is called Orhan Hammam and the mosque is Orhan Mosque still exist. The commercial building of the city was shaped around this complex. The mosque, built in 1339, has a "T" type plan and was the first mosque of the Ottoman State. The last section of the mosque was built with five sections, three small domes in the middle, a mirrored vault on each side is covered (Bursa Tarihi Çarşı ve Hanları, n.d.).

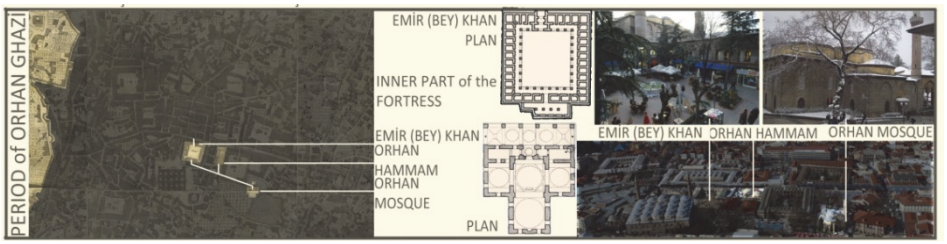


Figure 3 The Artifacts in Period of Orhan Ghazi (Buildings' Plans are from Bursa'da Erken Dönem Osmanlı Yapıları, n.d.)

After the Byzantine period, Emir Han, the first settled building, was built in the Horse Market area outside the city wall and the region became a commercial center.

Emir (Bey) Khan was known as old covered bazaar until 1522. Emir Khan, which consists of two-storey cloister and rooms, which opens to this cloister, is the first sample of Ottoman khans. Apart from the four square domes, the other parts are covered by vaults. There are 36 vaults, which are used as warehouses for the stuff, on the ground floor and there are 37 rooms on the top floor. The Khan, which is the center of Bursa Bazaar, has a water-tank with fountain and historical plane-trees in the middle of the Khan (Bursa Tarihi Çarşı ve Hanları, n.d.).

The artifacts of Orhan Bey period were gathered in the castle and in the lower city and this area determined the direction in which the city would develop. There are mosques and hammams in the castle, and in the new city, there were buildings related to social life such as mosques, khans and imarethanes. After this period, Bursa became the center of Anatolia.



Figure 4 The Artifacts in Period of Murat I (Hüdavendigar Complex' Plan from Gabriel, 1958)

Kapan Khan and Bakırcılar (Coppersmiths) Bazaar were built in the 14th Century in the period of Murat I. The Khan consists of a rectangle atrium, which contains cloisters and rooms around (Bursa Tarihi Çarşı ve Hanları, n.d.). The khan's plan is taken on the Emir (Bey) Khan's plan. Bakırcılar (Coppersmiths) Bazaar was used for coppersmiths. The bazaar was not planned as a khan and it has some shops.

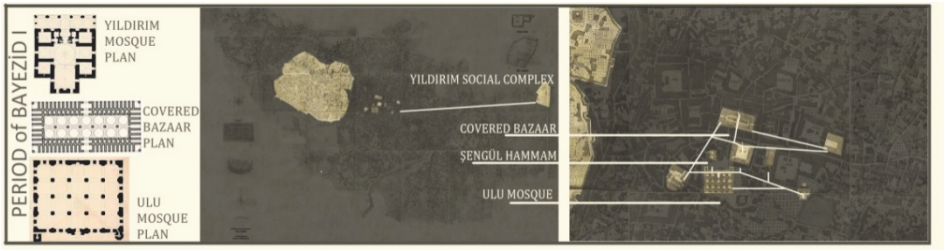


Figure 5 The Artifacts in Period of Bayezid I (Yıldırım and Ulu Mosque's Plans are from Bursa'da Erken Dönem Osmanlı Yapıları, n.d., Covered Bazaar's Plan from Osmanlı Mimarlığı, n.d.)

The area gained a central qualification with Covered Bazaar and Ulu Mosque which were built in the reign of Sultan Yıldırım Beyazıt, at the two sides of Emir (Bey) Khan as a part of Orhan Social Complex and it is one of the samples of Ottoman Khan. The trade building built after the Bey (Emir) Khan, was the Bedesten in 1400 during the Yıldırım Bayezid period, thus the region became a trade center. The Covered Bazaar's plan is unique in the whole trade area. The Covered Bazaar, which was covered by the same size domes and done business for the cloth, silk, valued goods and jewels, was very important in terms of being the first Covered Bazaar of Ottoman Empires. The inside sizes of the Bazaar are 15 meters and 56.6 meters and it is covered with fourteen domes, which stand on six feet. There are fifty-six ranged shops and thirty-two vaults in the Bazaar.

The Grand Bazaar has developed with Sipahi (Cavalryman), Bakırcılar (Copper-smiths), Yorgancılar (Quilt Makers), Sandıkçılar (Chest Makers), İplikciler (Yarn Makers) Bazaars and Aynalı (Mirrored) Bazaar day by day (Bursa Tarihi Çarşı ve Hanları, n.d.).

Ulucami was built in 1396-1399 in the period of Yıldırım Bayezid. Ulu Mosque, the largest mosque in the country, consists of 5 sections, each with four domes. In the middle of the 20 domes of similar size, the dome was made open and covered with wire, the raindrops were collected in the pool and the light illuminated the mosque. Today, when the dome is covered with glass, it has lost the function of collecting rainwater. There is an 18-corner fountain with a pool under the central dome (Bursa Ulu Camii'nin Tarihi, n.d.).

Also, The Yıldırım Social Complex was built by Sultan Bayezid I (Yıldırım); mosque, madrasah, hospital, hammam and tomb. The mosque is a monumental example of an inverted T-type (tabhaneli) mosque which's plan is similar to the Orhan Mosque's plan. There are two domes placed one after the other, small domed iwans on the sides and a room covered with vaults on both sides. The last congregation has five domes on strong feet. It is opened with five Bursa arches

on the sides. The first dome is 12 m in diameter and 22 m in height. The dome of the mihrab section rests on almonds. The two spaces are connected to each other by a magnificent marble arch of Bursa based on twelve rows of muqarnas consoles (Bursa Yıldırım Külliyesi, n.d.).

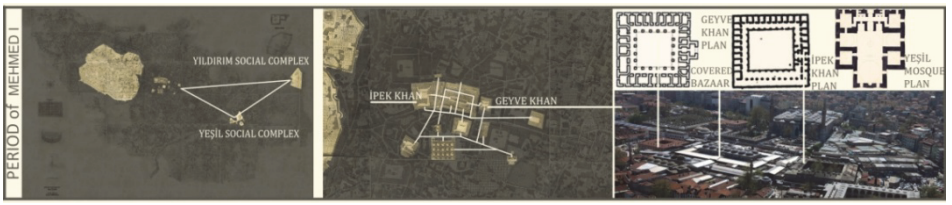


Figure 6 The Artifacts in Period of Mehmed I (Buildings' Plans are from Bursa'da Erken Dönem Osmanlı Yapıları, n.d.)

During the reign of Mehmed I, the site of the Green Complex opened up a major development path (Ergenç, 2006). The Green Social Complex, which consists of a mosque, madrasah, tomb, imaret and hammam, was built on sloping land. The mosque was built by Çelebi Sultan Mehmet for the architect Hacı Ivaz (Değerbilir, 2012). The building has an inverted "T" type plan. The harem consists of two sections, the prayer room in the south and the dome sofa adjacent to the north, and the covering system of both sections are in succession two large domes. There is an iwan opening to the domed hall to the east and west of the northern section and tannery rooms to the south and north. The northern side of the harem has two floors (Değerbilir, 2012).

İpek (Silk) Khan was built to provide income for Yeşil (Green) Social Complex in the period of Mehmet I. The Khan, which is known as Arabacılar (Carters) Khan, is one of the biggest khans of Bursa. There are thirty-nine rooms on the ground floor of the Khan and forty-two rooms on the first floor of the Khan.

Geyve (Lonca) Khan was built in the 15th century to provide income for Yeşil (Green) Mosque in the period of Mehmet I. There are cloisters, which are lined around atrium, and rooms, which are opened to those cloisters, in the building. There are twenty-six rooms on the ground floor and thirty rooms on the first floor. There is a water tank with a fountain in the middle of the Khan. The Geyve (Lonca) and İpek (Silk) Khans were made as classical Ottoman styles. The Khans' plans were referred to Emir (Bey) Khan's plan, and they have cloisters, which are covered with domes and vaults, in the front rooms (Bursa Tarihi Çarşı ve Hanları, n.d.).

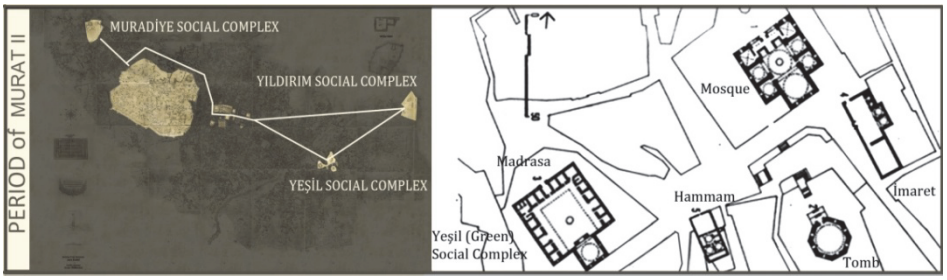


Figure 7 The Artifacts in Period of Murat II (Yeşil Social Complex' Plan from Gabriel 1958)

Muradiye Social Complex is the last complex built by the Ottoman Sultans in Bursa. The complex was built by Murad II in the 15th century and named after the district. Muradiye Social Complex, which consists of a mosque, madrasa, hammam, hospital and tombs. The tombs are known to built during the reigns of Fatih Sultan Mehmet, Bayezid II and Kanuni Sultan Süleyman (Muradiye Külliyesi, n.d.). The mosque has two large domes and large iwan. The mihrab section was raised. The last congregation place has five sections (Degerbilir, 2012).

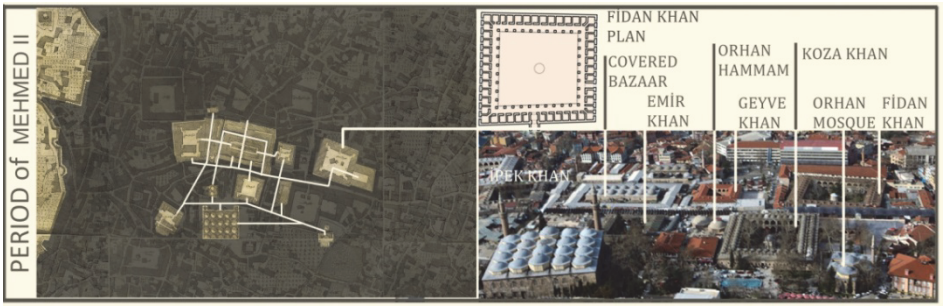


Figure 8 The Artifacts in Period of Mehmed II (Fidan Khan's Plan is from Bursa Erken Dönem Osmanlı Yapıları, n.d.)

In the Murad II period, the western side of the city, which was opened from below Hisar to Çınarönü, was fully settled along with the Muradiye district. The development that started with the Green Mosque on the eastern side of the city completed with small mosques further progressed with Emir Sultan and Zeyniler districts (Ergenç, 2006).

Fidan (Sapling) Khan was built in the 15th century in the period of Fatih Sultan Mehmet. The Khan is in the long Bazaar and has two atriums. There are a pool and a prayer room in the middle of the rectangle atrium. The Khan has 48 rooms are on the ground floor and 50 rooms are on the top floor.

Koza (Cocoon) Khan was built-in 1490 in the period of Bayezid II. There is an atrium part in the east of the khan that barns and warehouses are located. A crown door at the side of the Grand Bazaar has a monumental appearance. The Khan has three more doors, which open to south from the top floor, to warehouses in the atrium and to Orhan Mosque. The Khan has forty-five rooms on the ground floor and fifty rooms on the top floor. The Khan has a prayer room and a water tank with a fountain underside of the prayer room in the middle of the atrium.

Prinç (Brass) Khan was built in 1508 in the period of Bayezid II. The Khan consists of an atrium. There are thirty-eight rooms on the ground floor and forty rooms on the top floor (Bursa Tarihi Çarşı ve Hanları, n.d.).

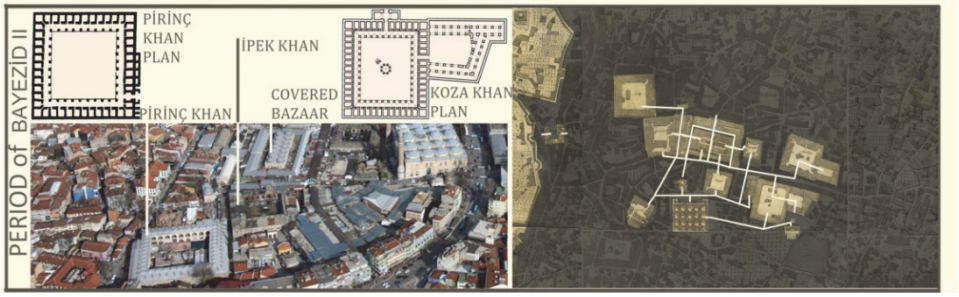


Figure 9 The Artifacts in Period of Bayezid II (Building's Plans are from Bursa Erken Dönem Osmanlı Yapıları, n.d.)

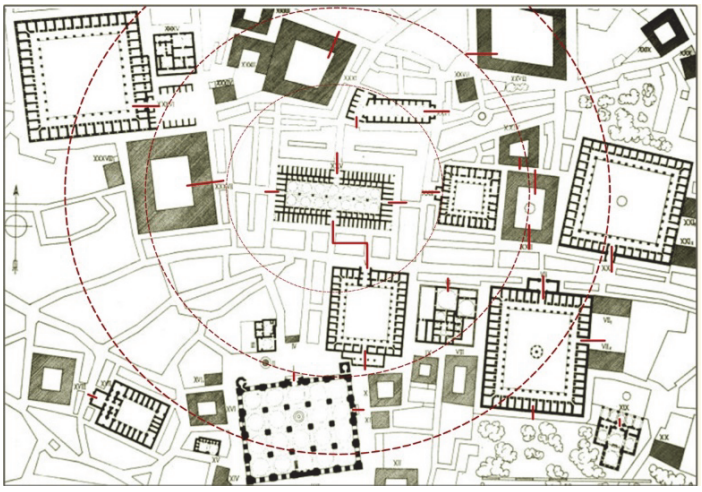


Figure 10 The Artifacts' development in The Bazaar (Market Neighborhood, n.d.)

Some of the researchers who studied Ottoman cities suggest that the bazaars develop around the central mosque, while some researchers suggest that the

city develops around the bedesten, which constitutes the most important commercial building (Grunebaum, 1955 and Ergenç, 1977). Some examples support both views in the Ottoman cities. Bursa city's development started around Orhan Mosque and Emir (Bey) Khan, continued with Ulu Mosque and Covered Bazaar.

Bursa became an important trade center in the 14th century and became the most important center of transition and connection between Europe- Asia and East-West. In the 15th century, Bursa has been one of the largest centers of the silk industry and trade (Çiftçi, 2005). In the 16th century, the construction activities in Bursa decreased, and the commercial and social buildings, which increased intensively. In the second half of the 16th century, it completed the development of a commercial and religious center, and the silhouette of the city became completely evident (Dörtok Abacı, 2005).

Bursa has become a big city from a small city, step by step, with its commercial buildings and social complexes during the Ottoman period. By following the urbanization policy of the Ottoman Empire, with the social complex built during the period capital of the Ottoman, from the first example of the social complexes with the mosque and the commercial building which was khan; the city had grown around and became a settlement where were not settled in the city. After Istanbul became the capital of the Ottoman, khans continued to be built, so that the city maintained its commercial superiority. The city grew, developed and commercial center in the Ottoman Period.

4.2.19th Century and After Republic

By the 19th century, technological developments in the world had a positive effect on the industrialization and economy in Bursa. The industrialization movement has shown its effect from the zoning of the city to other areas (Kağıtçıbaşı & Yaşar, 2005). In the 19th century, an earthquake was effective in the emergence of the transformation of urban space in Bursa, so Ahmet Vefik Pasha made plans for Bursa. The main target in these studies; to create the connection roads between the central and newly formed regions. These axes aim to reinforce the already existing urban focus identity of the Khans Region. During this duty of Ahmet Vefik Pasha (1863-64), who was influenced by the urban arrangements of the Haussmann period in Paris, and later during his stay in Bursa (1879-82) as a governor, he emphasized the transportation within the city and the factories. It has built new buildings and institutions that have opened new roads connecting the center with its region, restored historical monuments (Aslanoğlu, 1998).

Bursa Municipality Building is one of the institutions built by Ahmet Vefik Pasha as the First National Architecture Movement. The building's plan is similar to the Ottoman khans, and has large eaves covered with Turkish-style tiles.

The Government Building was built in the earlier of the Republic in 1925 and was one of the buildings built in the I. National Architecture movement.

The Courthouse was built by Ekrem Hakkı Ayverdi in 1926, opposite the Government Building. Courthouse Building consists of basement and 2 floors. The Courthouse has the feature of National Architecture Period (Kaprol, 2002).



Figure 11 The Artifacts in 19th century and Republic Period



Figure 12 The Artifacts in 19th century and Republic Period

A Community Center building, now known as the Ahmet Vefik Pasha Theater, was built across the Courthouse and Government Buildings. Because of Community Centers' anniversary of the 6th year, an architectural competition arranged in 1938 for the community center building in Bursa, and one of Turkey's first female architects Münevver Belen's project was selected. In the project, there were a large movie theater and classrooms on the ground floor of the building, and administrative departments on the first floor (Ahmet Vefik Paşa Tiyatrosu (Halkevi Binası), n.d.)

The project of Tayyare Cinema and Theater, which was opened in Atatürk Street near te community center, in 1940, one of the other important buildings of the Republican period, belongs to Arif Hikmet Koyunoğlu.

Türkiye İş Bank was designed by Arif Hikmet Holtay, as the formation of Neo-Classical facade and, classic roof coverings and building stone pediment.

Yapı Kredi Bank, designed by Emin Onat, was built in 1948. The Bank was designed as traditional and modern architecture (Kaprol, 2002).

With the Republican era, as in all of Turkey, an important commercial functions were located in Bursa. In the following process, with the development of transportation opportunities, industrial areas started to develop towards the north of the city. With the opening of İpek-iş and Merinos factories in 1933, Bursa, which is an industrial city today, gained this feature with these established factories. Besides, the development of the city towards the plain became more evident with the construction and subsequent urban development of Merinos and İpek-İş factories (Dostoğlu, 2005; İlkme, 2009; Kaprol, 2000 and Nazım Plan Office, 1999).

After the big fire in 1958, a 1/5.000 scale Bursa Master Plan was prepared in 1960 under the consultancy of Italian architect Luigi Piccinato. With this plan, it was tried to re-establish the development of the city on the east-west axis by creating a new axis on the edge of the plain in the north. Apart from preparing the Master Plan, Piccinato also carried out re-planning studies, considering that the original texture of the commercial center The Khans Region, the heart of the city of Bursa, which was destroyed by the fire, should be kept alive.

The most important point of the Piccinato Plan was that the Khans Region as the heart of the city and evaluated the region as an urban-commercial center (Kırayoğlu, 2004).

In 1966, with the proposal of Piccinato, the establishment of Bursa Organized Industrial Zone has strengthened its commercial identity, which has been the dominant identity of Bursa since the first day of its establishment. With the increase in the business area, the labor force needed in the city was provided by immigration from the surrounding provinces and the targeted population densities in the plan were exceeded unexpectedly (Bursa Metropolitan Municipality, 2012).

5. CONCLUSION

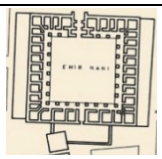
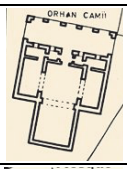
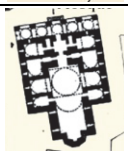
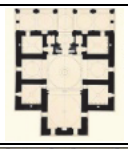
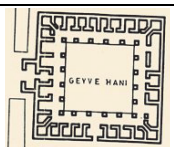
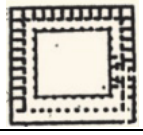
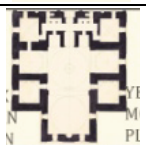
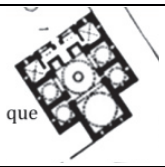
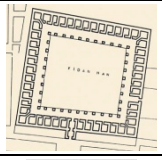
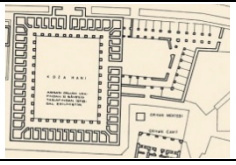
Urban morphology has guiding traces to understand the history of the city and the current situation of the city. The historical background of each place in the city's memory constitutes the urban identity. Rossi (1984) argued that human

activities in the city have been forgotten, but urban spaces continue to live in the city, even though sometimes changes its function. The city artifacts of Rossi (1984) are the buildings that provide the urban identity, are the city's landmark and provide the development.

In nowadays Bursa is one of the largest metropolitan cities in Turkey. Bursa remained a small city until conquered by the Ottoman State. Bursa was declared as the capital, and the first buildings outside the city fortress were the Orhan Social Complex. In the area known as the Horse Market, Emir (Bey) Han was built as the first commercial building. Bursa had become a big city, step by step, with its commercial buildings and social complexes during the Ottoman period. Although the city showed continuity in the housing settlement during the first years of the Ottoman Period from the Byzantine Period, the commercial area did not show continuity. The trade zone, which was in the city fortress during the Byzantine Period, started to form a trade center outside the city fortress with the first commercial building built in the Horse Bazaar in the Ottoman Period. In accordance with the urbanization policy of the Ottoman Empire, the social complex which was included, mosque, the trade building khan, imaret, hammam and hospital with the reference to the Orhan Social Complex, which was built during the period when Bursa was the capital of the Ottoman Empire. Some residential areas started to form with the social complexes. The Horse Bazaar became the center of trade with khans and covered bazaar. The reach of important trade routes to Bursa is an indication of the city's position and superiority in trade. After Istanbul was declared as the capital, khans continued to be built in Bursa so that the city could maintain its commercial importance. During this period, the construction of mosques was not on the outskirts of the city but on the scale of the neighborhood within the city in order to create a new settlement. The city grew up during the Ottoman Period and became an important and developed city. The buildings of the Khans Region cannot be examined alone as Rossi (1984) argued, they can be examined with their relations with other buildings in the region, affecting each other, similarity to the previous building and creating a reference to the next building.

The first buildings built in Bursa with the Republic are administrative buildings. With the construction of cultural buildings, Bursa was turned into one of the modern Republic cities, and these new buildings were designed with an understanding of the modern architecture of the era. Also, these buildings built in the Republic era were built in the Khans Region. In this period, it was given priority to the construction of factories in the city, which was developing in the industrial area, since it was close to Istanbul.

Table 1. Bursa Khans and Mosques in the Social Complexes (Building's Plans are From Bursa Erken Dönem Osmanlı Yapıları, n.d. and Eyice, n.d.)

	Khans	Mosques
Period of Orhan Ghazi, Emir (Bey) Khan and Orhan Mosque in Orhan Social Complex		
Period of Murad I, Hüdavendigar Mosque in Hüdavendigar Social Complex		
Period of Yıldırım Bayezid, Yıldırım Mosque in Yıldırım Social Complex		
Period of Mehmet I, Geyve Khan in Khans Region and Yeşil Mosque in Yeşil Social Complex İpek Khan in Khans Region	 	
Period of Murat II, Muradiye Mosque in Muradiye Social Complex		
Period of Mehmet II, Fidan Khan in Khans Region		
Period of Bayezid II, Pirinç Khan in Khans Region Koza Khan in Khans Region	 	

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SPACIOUSNESS AND EMOTIONAL RESPONSES TO CURVED SPACE BOUNDARIES

Tuğçe ELVER BOZ*, Halime DEMİRKAN*

ABSTRACT

Properties like size, light, texture and color unite to make a composition to form a space. Various properties that affect people's attitudes and emotions towards a space are critical issues that have an impact on people's life quality. Quality of life is a concept related to cognitive and affective assessments that are based on the matching of one's expectations with the properties of physical space. Therefore, an interior architect design spaces while concentrating on the properties of that space. The study explores the perceived spaciousness of a 3D virtual model with curved boundary types using a Head Mounted Display (HMD) to find out the influence of specific space properties (size, light, texture, and color) and to associate the relationship between spaciousness and emotional responses.

The perceived spaciousness level of two-curved boundary types (horizontal and vertical) of interior spaces was analyzed with a HMD related to one of the specific properties varying in two levels of intensity; high and low. Sixteen different physical property spaces were designed to measure. Total of 128 participants assessed their emotional responses corresponding to three variables (pleasure, arousal, and dominance). The survey included both ranking and open-ended questions for each setting. According to the ranking results, perception of spaciousness was positively related with the curved boundaries and large size, bright light, lateral texture, and cool color of the spaces. In all specific properties, more spaciousness was perceived firstly in curved horizontal than vertical boundaries. Besides, curved boundaries evoked pleasing, satisfying, relaxed and happier emotional responses in perception of spaciousness of individuals. Also, according to the open-ended questions, three multiple-choice questions were provided in order to have an overall view of behavioral intention that were focused on time span, enjoyment and feel friendly level. As a result, the behavioral intentions (approach-avoidance behaviors) are different in

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the four settings in terms of specific properties. It is concluded that different, intensities of space properties could be used to control the amount of spaciousness level in interiors. Also, these levels provoke strong differences in emotional responses of individuals. Besides, designers and architects could use the findings to manipulate curvilinearity of the boundaries with many specific properties to provide a high level of perception of spaciousness.

Key words: Spaciousness, Emotional Responses, Curved Space Boundaries, Virtual Reality

1. INTRODUCTION

Life quality in an environment is affected by the people's attitude and evoked feelings that are the results of physical space properties (Elver 2018). Previous theoretical and experimental studies in environmental psychology showed that space perception and evoked feelings are the essential components of spaces. This study explores the perception of spaciousness with respect to specific physical properties and supports the idea with emotional responses as components of feelings. Although numerous studies are carried out in order to analyze the impact of perception on spaciousness, those were limited to one boundary type or one specific property and few emotional aspects. Thus, this study aims to fill this gap while analyzing the impacts of boundary types (curve horizontal-vertical) and specific properties (size, light, texture and color) on perception of spaciousness with the related emotional responses.

2. SPACIOUSNESS IN THE ENVIRONMENT

Humans spend approximately 90% of their time indoors with enclosure and they interact intimately with these spaces (Vartanian et al. 2013). Main components of a space are perceived, evaluated and evoke feelings in humans towards that space (Gifford 2002). Space has both psychological and physiological influences on and interactions with people. Environments that do not provide sufficient space are ambient stressors and, thus they should be avoided, and if they are unavoidable, their effects should be mitigated as much as possible (Stamp 2011).

Spaciousness is also investigated with respect to human behavior both in built and natural environments. This study mainly focuses on the built environment and the literature is investigated within this framework. Bharucha-Reid and Kiak (1982) analyzed the human perception of rooms (spacious, adequate, well-arranged) that varied in floor area from 4.7 to 22 square meters. They reported that the larger room is evaluated more positively than the smaller room. Also, research on spaces with emphasis given to environmental feelings reported that people prefer larger or more open spaces to smaller or more constricted ones (Ozdemir 2010).

Some previous studies reported general assessments of humans based on spaciousness. However, in some cases, people also could prefer smaller or more private spaces according to their specific needs. Perception and measurements of the environmental properties could be determined by various factors (Nasar 2008). Spaciousness could be measured by the length, width, and height of a space, but holistic judgments of spaciousness could rely on more to one of these measurements compared to the others (Stamp 2011).

One of the fundamental human needs is having enough space for living and spacious atmosphere for both physical and psychological order (Stamps 2009). Several physical properties of a space could affect the human perception of spaciousness in various ways. One of the effective aspects of the physical properties is the boundary of a space and its' properties. The space boundary is a spatial enclosure which is surrounded with walls in order to prevent free ingress or egress (Stamp 2010a; Stamp and Krishnan 2006). Spaciousness then becomes the apparent size of the region within the boundary.

The physical characteristics of an environment, the human and the conducted activities in that environment are defined by people-place relationships (Dazkır and Read 2012). In this study, as an environmental characteristic, the physical properties of the boundary are related to the sense of spaciousness. The boundary properties could change spatial human perception in the environment. These changes occur, like an illusion conducted by the architects, according to the situation of the space and human needs (Bokharaei and Nasar 2016; Sadalla and Oxley 1984).

2.1. Environmental Emotions

Physical properties of an environment could evoke an emotion generated towards the environment. Many studies analyzed people and environment relationship with respect to the emotional responses (Franz, Von der Heyde and Bülthoff 2005) or the built environment in terms of its' effects on human emotional responses (Bokharaei and Nasar 2016; Mehrabian and Russell 1974; Russell 1992; Russell and Mehrabian 1977; Russell and Pratt 1980; Russell, Ward and Pratt 1981). Besides many researchers investigated the taxonomies of feelings while using empirical protocols (Mehrabian 1995; Mehrabian and Russell 1974; Osgood, Suci and Tannenbaum 1957; Osgood, May and Miron 1975).

Russell and Mehrabian (1974) defined three dimensions of emotions, which are pleasure (pleasant-unpleasant), arousal, and dominance, that summarize the emotional responses to all types of environment. Furthermore, Mehrabian and Russell (1974) explained that a feeling is described as projection of pleasure, arousal and dominance. According to their theory, pleasure is demonstrated

through facial gestures (such as smiling and frowning) and by scales (such as annoyed-pleased, and happy-unhappy, bored-relaxed, unsatisfied-satisfied, melancholic-contended, despairing-hopeful). Arousal is indicated by human activities and alertness (such as skin responses) and by scale (such as unaroused-aroused, calm-excited, sluggish-frenzied, dull-jittery, sleepy-wideawake, relaxed-stimulated). Dominance is indicated by scales (such as in control-cared for and autonomous-guided) (Mehrabian and O'Reilly 1980; Stamps 2010b).

Later, Russell and Mehrabian (1977) conducted a research using verbal reports and they concluded that the emotion-eliciting quality of an environment affects people's approach toward that environment. In addition, Russell (1992) created affective appraisal in order to measure how people evaluate their built environments. According to the Russell's (1992) theory, affective quality is the determinant of human response to environment.

2.2. Emotions and Curved Space Boundaries

Several architectural studies focused on the curved space boundaries with the related feeling components. Initially, Alp (1993) conducted an experimental study with rectangular, triangular and circular (curvilinear) geometric configurations for architectural spaces and analyzed their emotional effects. The findings showed that all three configurations elicited highly significant emotional responses. Especially circular (curvilinear) space had higher ratings than rectangular and triangular spaces.

The aim of Madani Nejad's (2007) study was to investigate the emotional effects of curvilinear forms in interior space settings where the architectural forms gradually changed from being fully rectilinear to curvilinear. The qualitative and quantitative findings demonstrated that curvilinear form tends to make the observers feel safer, and perceive the space to be more private and pleasant, and less stressful.

Then, Dazkır and Read's (2012) research study focused on pleasure and approach reactions towards rectilinear and curvilinear stimulated interior settings. Their study is related to furniture forms and their influence on people's emotional responses towards created 3D interior settings. As a result of the study, curvilinear forms were found to be significantly stronger and more pleasurable than rectilinear forms. With regard to emotional judgement, the study indicated that curvilinear settings showed higher amounts of pleasant-unarousing emotions that contain the feelings of relaxation, peacefulness and calmness.

Later, Vartanian et al. (2013) analyzed three architectural variables, which were curved versus rectilinear contours, openness and ceiling height in beauty-

judgement and approach-avoidance behaviors. This research suggested that, people were more likely to judge curvilinear spaces as more beautiful than rectilinear spaces, and that judgment of beauty for curvilinear spaces was supported by emotion, human behavior and brain functions. The authors inferred their results to indicate that, in architecture, sharp contour might not serve as an early warning signal for potential dangers, as it might elsewhere.

Furthermore, Shemesh et all. (2016) investigated the human reactions to square, round (domed), sharp-edged and curved spaces. The findings related to the virtual reality (VR) environment experience revealed that non-design students had a tendency to prefer curvy shaped spaces and design student had a tendency to prefer sharp-angled spaces. Findings based on people's mental reactions encoded with an electroencephalogram showed that participants perceived symmetrical space differently from asymmetrical space with unconscious brain ability. Also, the results pointed to a difference in people's mental reactions towards different geometric forms of space. Emotional responses are the main components of feelings that provide a relationship with this study.

Virtual reality technologies enable users to immerse virtually in spaces. Defining the boundaries of an architectural immersive environment imitates that of a visual living space. Therefore, it enables to walk through space as if one were in the existing location. Implementation of properties like size, light, texture, and color to the boundaries of that space help to create the viewer's sense of place within the environment, enriching the experience by enhancing engagement and meaning for the viewer more than a three-dimensional space is. Making sense of place within a virtual environment must draw attention to the sensations, feelings, thoughts and emotions of viewers of that space. Executing this within a space includes employing recognizable elements within the design of boundaries of the surrounding environment. Virtual environment boundaries should be carefully designed to achieve the most significant understanding and knowledge gain for the viewer, regarding the spatial world. By creating virtual environment, two conducted research questions are analyzed in this study.

Research Question 1 **(RQ1)**: How do the horizontal and vertical curved boundaries influence peoples' perceptions of spaciousness with emotional responses under specific properties of space (size/ light/ texture/ color)? Research Question 2 **(RQ2)**: Does horizontal or vertical curvilinear boundaries have a more influence on the perceived spaciousness?

3. METHOD

3.1. Environmental Stimuli and Procedures

In this research, the perceived spaciousness level of two-curved boundary types of interior spaces are analyzed; namely, curved Horizontal Boundary (HB) and curved Vertical Boundary (VB). HB space is bounded by four walls and the boundaries of each wall are connected with horizontal concave connections. There is no 90-degree edge in horizontal plane of the space as there are in standard room connections. VB space is bounded by four walls and the boundaries of each wall are connected to ceiling as vertically concave links. There is no 90-degree connection of vertical walls and ceiling as standard space connections.

The perceived spaciousness includes two-curved boundary types (HB and VB) of interior spaces and each boundary type involves four specific properties (size, light, texture, and color) of the surrounding surfaces that are composed of two levels of intensity; high and low. The four specific properties namely as; size (small-S and large-L), light (dim-D and bright-B), texture (longitudinal-LT and lateral-LR), and color (cool-C and warm-W).

First hypothesis **(H1)** is that there is no difference in perception of spaciousness between boundary types (HB and VB), and between each boundary-specific property (S/L, D/B, LT/LR, C/W) and the interraction between boundary types and each specific property . Furthermore, second hypothesis **(H2)** is that emotional responses based on the curved boundary types (HB/ VB) are a function of spaciousness. Besides, third hypothesis **(H3)** is that emotional responses based on the specific properties (size/light/texture/color) of the curved boundaries have a positive influence on the perception of spaciousness in interior spaces. The study variables shown in Figure 1.

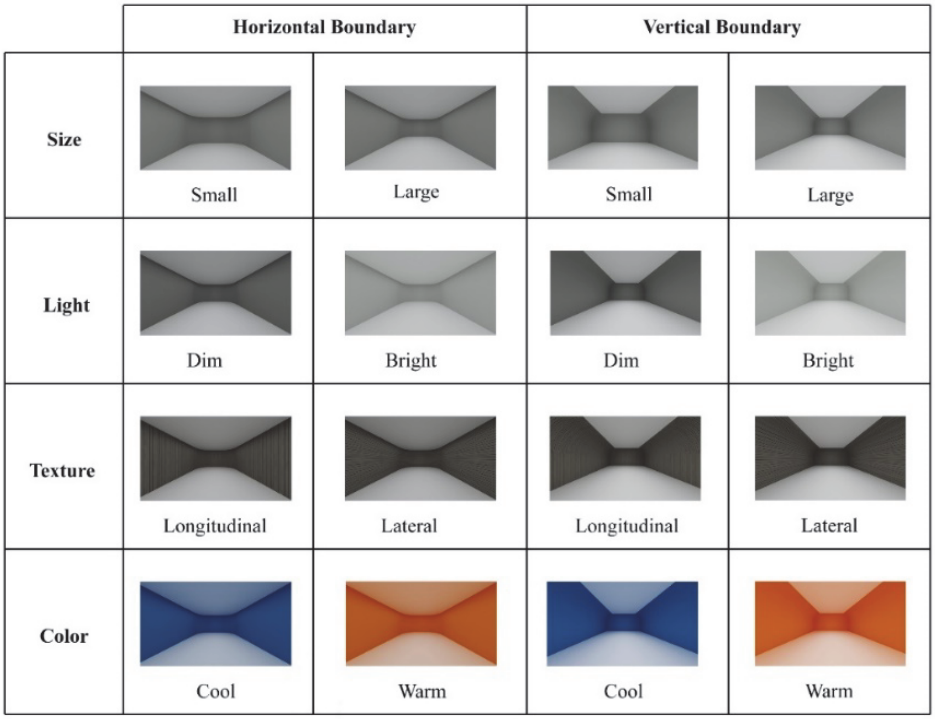


Figure 1. Study variables and their visualizations

3.2. Instruments

Each participant rated one set of survey that consists of four virtual interior spaces with two-curved boundary types (HB and VB) and having only one of the specific properties (size/light/texture/color). The spaciousness level of four 360-degree spaces was determined by using a Gear VR, Head Mounted Display (HMD), equipment (Samsung SM-R325 Gear VR). Visual stimuli were showed, with the same layouts, that there were no materials and openings in the created space in order not to affect the perception of specific property with boundary type.

All spaces were designed to have the same size (4.5 m in width, 9 m in length and 3 m in height), and the lighting was non-directional and created equal illumination in all parts of the space. In this study, both spaces in each specific property have the same floor area (40.5 m2). Moreover, based on the study of Hopkins, Kagan, Brachfeld, Hans and Linn's (1976), the moderate curve (4 ½ in.) was chosen as the curvature of the horizontal and vertical boundaries. Also, the movements of the participants were based on egocentric frame of reference (i.e. one's body) during simulations in virtual environments (Sancaktar and Demirkan 2008).

This procedure was repeated for all curved boundaries (HB and VB) for size (S-L), light (D-B), texture (LT-LR) and color (C-W) independently in four experiment sets. The created 3D 360-degree simulations were experienced using Gear VR by participants. Also, participants answered all questions in virtual environment. Using VR test is an advantage to compare using immersion level test because this does not allow interruption in simulation.

Firstly, the participant identified the spaciousness level for an interior space. Spaciousness of the interior space was rated for one of the specific properties with the direction of the curved connections of the boundary type. The 5-point Likert scale is used to identify the immediate responses of participants' perceptions on four interior spaces. One refers to the lowest level (extremely negative) and five shows the highest level (extremely positive) of perceived spaciousness.

Then the perceived spaciousness levels were assessed and associated with the relevant emotional responses' adjectives. The selection of relevant adjectives ensures appropriate methods of measurement for the effect of curvilinear architectural form on human emotional responses (Dazkır and Read 2012). The words chosen for emotional responses set are adapted from Mehrabian and Russell (1974) and Dazkır and Read (2012). The emotional responses consist of two variable components and these are as follows: Pleasure Variables (PL) and Arousal Variables (AR).

Centering on the more specific impressions, the second stage of the study obtains the ratings of twelve items of emotional responses from 12 pairs of bipolar adjectives with semantic differentials with an added "neutral" between each pair. For the sets from one through twelve, negative preference is noted as the first set of words, while positive preference is the last word.

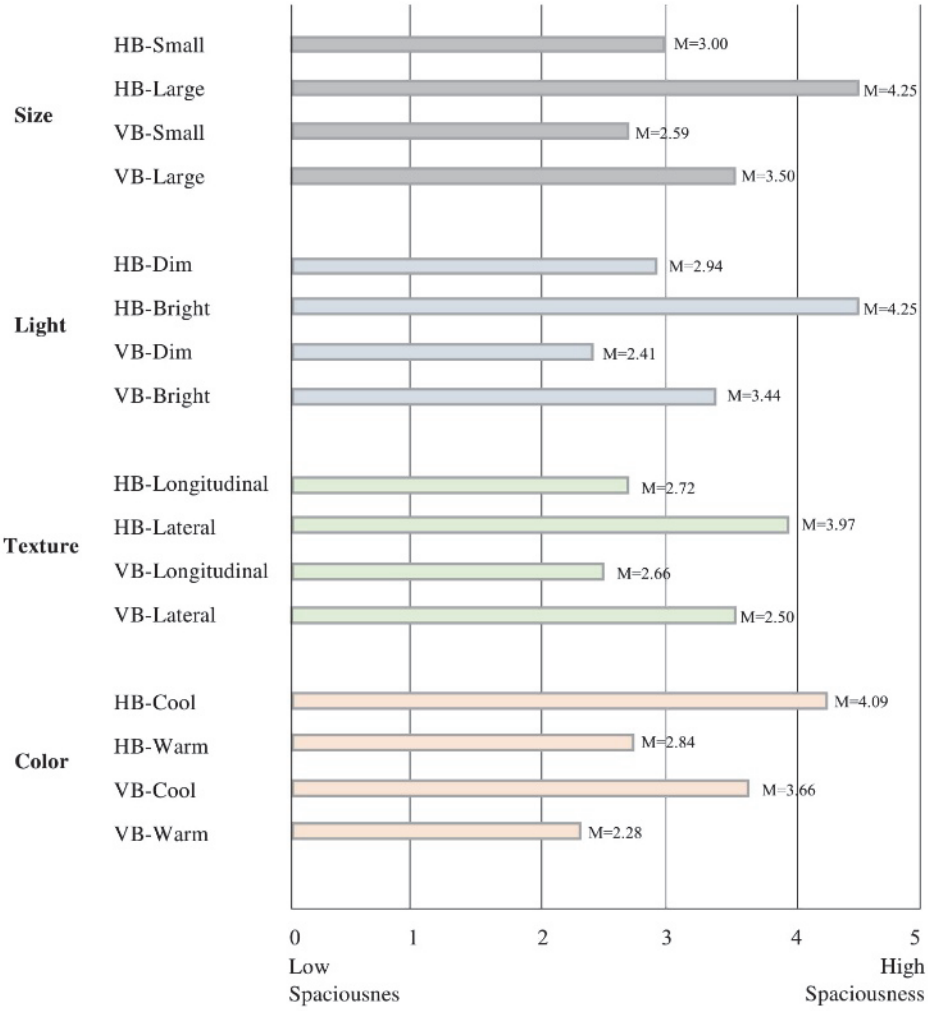
3.3. Participants

The participants are chosen on voluntary basis by stratified sampling among the students of I.D. Bilkent University at Ankara, Turkey. Ishihara electronic color blindness test is used to analyze whether the 134 participants have an appropriate color perception or not before the experiment. Total of 128 eligible graduate and undergraduate students, 64 males and 64 females participated in the experiment from the social science and design departments. The age range of the participants was 19 to 29 years. All the participants provided the written informed consent form and the Ethics Committee of I.D. Bilkent University approved this study (No: 2018_01_18_04).

4. RESULTS

4.1. Perception of Spaciousness

Considering each specific property, in size L, in light B, in texture LR, and in color C spaces were considered to be more spacious as seen in Figure 2. In all specific properties, more spaciousness was perceived in HB spaces and it was followed VB spaces. It is concluded that although they have the same preferred specific property, HB spaces are perceived more spacious compared to VB spaces.



Note. **HB** = Horizontal Boundary and **VB** = Vertical Boundary

Figure 2. Mean scores for perception of spaciousness in size, light, texture and color

4.2. Boundary Types, Specific Space Properties and their Interactions

Four different two-way independent variance analysis (ANOVA) were conducted in order to understand the relationship between curved boundary types (HB and VB) and four specific properties (size, light, texture, and color) of interior spaces. For size properties, A two-way unrelated ANOVA showed that significant effects on spaciousness were obtained for curved boundary types ($F(1,124)=8.86$, $p= 0.004$, partial $\eta^2 = 0.067$) and size property ($F(1,124)=30.81$, $p < 0.0005$, partial $\eta^2 = 0.199$), but not for their interaction ($F(1,124)=0.78$, $p=0.378$, partial $\eta^2 = 0.006$). Also for light properties, significant effects on spaciousness were obtained for curved boundary types ($F(1,124)=16.98$, $p < 0.0005$, partial $\eta^2 = 0.120$) and light property ($F(1,124)=51.67$, $p < 0.0005$, partial $\eta^2 = 0.294$), but not for their interaction ($F(1,124)=0.74$, $p=0.390$, partial $\eta^2 = 0.006$). For texture properties, the test indicated that significant effects on spaciousness were obtained for texture property ($F(1,124)=29.65$, $p < 0.0005$, partial $\eta^2 = 0.193$), but not for curved boundary types ($F(1,124)=1.91$, $p= 0.170$, partial $\eta^2 = 0.015$) and for their interaction ($F(1,124)=1.116$, $p=0.290$, partial $\eta^2 = 0.009$). Also for color properties, significant effects on spaciousness were found for curved boundary types ($F(1,124)=10.48$, $p= 0.002$, partial $\eta^2 = 0.078$) and color property ($F(1,124)=72.24$, $p < 0.0005$, partial $\eta^2 = 0.368$), but not for their interaction ($F(1,124)=0.164$, $p=0.686$, partial $\eta^2 < 0.0005$).

Considering each specific property and the curved boundary type independently, it was found that there was a significant impact of boundary type; and size, light, and color properties on spaciousness except the texture property of the interior space boundary. First hypothesis **(H1)** was that there is no difference in perception of spaciousness between boundary types (HB and VB), and between each boundary-specific property (S/L, D/B, LT/LR, C/W). All hypotheses were rejected, except texture specific property (LT/LR) and all interactions between boundary types and specific properties.

4.3. Emotional Responses of Spaciousness

Since statistically analysis showed that there was no effect of the interaction between boundary types and the specific properties of interior spaces on spaciousness, the multiple regression analysis for emotional responses is conducted under two headings as boundary types and specific properties. The items of the emotional responses' dimensions are the independent variables where the perception of spaciousness is the dependent variable.

4.3.1. Based on Boundary Types

It was hypothesized **(H2)** that emotional responses were based on the boundary type (HB / VB) as a function of spaciousness. The results showed that for the size,

the highest significant levels was felt as 'pleased' (PL) item, for light were felt as 'pleased' (PL), 'relaxed' (PL) and thought as 'stimulated' items, for texture felt as 'pleased' (PL), 'satisfied' (PL) and 'happy' (PL) items and for color as 'pleased' (PL), 'hopeful' and thought as 'frenzied' items.

4.3.2. Based on Specific Space Properties

It was hypothesized **(H3)** that emotional responses were based on the specific properties (size/ light/ texture/color) as a function of spaciousness. The results showed that for the size, the highest significant level was felt as 'happy' (PL) item, for light were felt as 'bored' (PL) and 'relaxed' (PL) items, for texture was felt as 'satisfied' (PL) item and for color as 'pleased' (PL) item.

Table 1 and 2 shows all the boundary type and specific property for emotional response items. The highest level of adjectives showed with symbols (**).

Table 1. Emotional responses of spaciousness in boundary types

Size	Light	Texture	Color	Emotion Scale		Size	Light	Texture	Color
				Pleasure (PL)					
				Annoyed	Pleased	HB**	HB*	HB	HB**,VB
				Unhappy	Happy	VB		VB**	
				Bored	Relaxed		VB**		
				Unsatisfied	Satisfied		HB	HB**	
				Melancholic	Contended				
				Despairing	Hopeful				
				Arousal (AR)					
				Unaroused	Aroused				
				Calm	Excited				
				Sluggish	Frenzied	VB			HB**
VB				Dull	Jittery				
				Sleepy	Wide-awake				
				Relaxed	Stimulated		VB**		

Note. *Significant at p<0.0005 and **Significant at p < 0.002 (**HB =** Horizontal Boundary and **VB =** Vertical Boundary)

Table 2. Emotional responses of spaciousness in specific space properties

Size	Light	Texture	Color	Emotion Scale		Size	Light	Texture	Color
				Pleasure (PL)					
				Annoyed	Pleased		D,B		C**
				Unhappy	Happy	S,L*		LR	
	D**	LT		Bored	Relaxed		B**		
				Unsatisfied	Satisfied	S		LT**	
				Melancholic	Contended				W
				Despairing	Hopeful				
				Arousal (AR)					
			W	Unaroused	Aroused	L	D		
				Calm	Excited				
				Sluggish	Frenzied				
				Dull	Jittery				
				Sleepy	Wide-awake				
				Relaxed	Stimulated		D,B		

Note. *Significant at $p < 0.0005$ and **Significant at $p < 0.002$ (S = Small, L = Large, D = Dim, B = Bright, LT = Longitudinal, LR = Lateral, C = Cool, W = Warm)

5. DISCUSSION AND CONCLUSION

This study investigated the relationship between the perception of spaciousness and curved space boundaries with different specific properties of the environment such as size, light, texture, and color. Furthermore, the aim was to associate the relationship between spaciousness and the emotional responses of the participants in a virtual environment. According to the results, perception of spaciousness is positively related with the curved boundaries. However, findings of this study are in agreement with the previous findings that claimed that perception of spaciousness increases with large size (Bokharaei and Nasar 2016; Franz, Von der Heyde and Bülthoff 2005; Stamps, 2009, 2010b) bright light (Bokharaei and Nasar 2016; Stamps 2010a), lateral texture (Bokharaei and Nasar 2016; Sadalla and Oxley 1984; Stamp 2011), and cool color of the spaces. It was also found that the emotional responses support the perception of spaciousness with Pleasure (PL) and Arousal (AR). Curved boundaries evoked pleased, happy, relaxed, satisfied, frenzied, and stimulated emotional responses in perception of spaciousness of individuals. The findings of this study suggested that designers and architects can manipulate curvilinearity of the boundaries with many specific properties to provide a high level of perception of spaciousness.

The design implications for interior designers were developed in detail with the relevant specific properties and curved horizontal boundary types that affect the

perception of spaciousness in a high rating. There are some suggestions for further research thet the relationship between curved boundary type and any other geometric form of space boundaries could be tested with these specific properties and emotional responses of the participants could be investigated as well. This study can be repeated by adapting context to virtual reality stimuli. Various interior settings could be tested including residential settings, restaurants, cafes, office environments, classrooms, hospitals, hotels, dormitories, etc.

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SESSION 7A

Theme: Transportation, Accessibility and Networks

15 October 2020 Thursday, 09.30 – 10.30

Chairperson: Prof. Dr. Ela BABALIK

Jonatan GONZALEZ, Özer KARAKAYACI

The Effects of Transport Improvements on Economy and Development: A Research in Example of Konya High-Speed Rail

Şirin Gülcen EREN, Jesugbemi Olaoye AJIBOYE

Isparta Bicycle Route: The Conflict between Private and Public Interests

THE EFFECTS OF TRANSPORT IMPROVEMENTS ON ECONOMY AND DEVELOPMENT: A RESEARCH IN EXAMPLE OF KONYA HIGH-SPEED RAIL

***Jonatan GONZALEZ*[*], *Özer KARAKAYACI*[**]**

ABSTRACT

In the last two decades, a major question in "Economic Geography" has experienced that growth of regions is related to the scale and nature of transport infrastructure's contribution to the broader economy. Since the effects of transport infrastructure investments has sought to go beyond direct benefits resulting from the reduction in transport costs, understanding of the general economic effects generated by changes in transport infrastructure quality has taken on greater importance. However, it has not been possible to reach a general consensus on the typology, magnitude and way of the mechanisms that operate in this relationship, although theoretical and practical discussions coincide with affirming the existence of causal mechanisms between transport infrastructure and economic activities. This causal relationship may have different economic effects due to the variability of the other factors that define the particular economic behaviour of each geographical area. Upon on an accessibility approach, this paper aims to identify and analyze the effects of transport infrastructure investment in economic growth at regional level in Turkey. In this study, Konya High Speed Rail (KHSR) providing fast access to and from major metropolises such as Ankara and Istanbul has been chosen as the case study since Konya has experienced significant economic developments, together with the high speed train connection.

Keywords: High-speed rail; accessibility; transport improvement; economic growth; Turkey

1. INTRODUCTION

Recent theoretical models in the framework of Economic Geography have developed the knowledge of transport impacts on the economy and the relevance of transport to regional development. While in the beginning,

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transport investment´s contribution to economic development was limited to effects on location of economic activities and productivity as result of transport time/costs. Currently, the effects of transport infrastructure investments are supposed to go beyond direct benefits resulting from the reduction in transport costs. Thus, transport-growth relationship analysis makes need to understand the causal mechanisms linking transport and development. These mechanisms create changes in the context in which economic activities are carried out, thereby changing the characteristics of economic activities as a whole: production, distribution and consumption (Bonanno & Constance, 2001; Knowles & Ferbrache, 2016; Puga, 2002). Causal mechanisms are as complex as imaginable; they can produce different results by different dynamics in different regions (Aschauer, 1989).

Upon on an accessibility approach, this paper aims to analyze the effects of transport infrastructure investment in economic growth in Konya-Turkey as a background for study the causal mechanism behind this relationship. In this study, KHSR providing fast access to and from major metropolises such as Ankara and Istanbul has been chosen as case study since Konya has experienced significant economic developments, together with the high speed train connection started ten years ago.

This document is organized as follows. The second section provides a brief review of the different schools that have studied the relationship between transportation and economic behaviour. At the end of this section, from the New Economic Geography (NEG), the theoretical support for accessibility as a key tool in understanding the relationship between transport and economy is developed. The following section presents our case study and describes the methodology developed for estimating the study variables. The fourth section presents the results of the changes in accessibility and their relationship with the variables that describe the socio-economic behaviour of the regions. Finally, the conclusions of the research are presented and some recommendations are put on the table to take into account in future research.

2. BACKGROUND OF CONTEXTUAL FRAMEWORK

2.1. General Background

The relationship between Transport-Development has been a matter of considerable theoretical interest and practical importance, and one of those that has occupied the most attention for several years among different approach researchers in economics. Hoyle (1973) pointed out that the quality and model of transport is a critical factor that affects economic and cultural progress, and

therefore must be taken into account in development plans at local, regional and country levels. Similarly, based on the need for transport in all economic activity and its importance as a variable that defines the market cost of any product, Hoyle asserts that the importance of the effect of transport on development is not questionable. Economic and cultural progress depends on the quality and model of transport. Besides, other authors point out that in spite of positive effects, given the limited capital resources condition, transport investment excess may generate adversely affects on economic behavior (Canning & Pedroni, 2004; Ansar, Flyvbjerg, Budzier, & Lunn, 2016). Then, it is necessary to question whether invest in the improvement and expansion of the transport network, in instead of other fields, is the most effective way to achieve development goals.

Geography and economics have been the sciences with the greatest interest in this field. For geographers, the importance of transport comes from its characteristic as a guiding factor of the location and distribution of economic and social activities. For economists, the effect of transport on the broad economic becomes relevant under the implementation of endogenous economic models. These models define public capital – where transport infrastructure is one of the largest investment items – as one of the main factors in production, along with capital and the labor (Hoyle, 1973). According to Romer (1986), Barro (1990) and Rebelo´s (1991) economic models, an increase in public capital generates a permanent increase in growth rates. Recognizing the importance of spatial variables and economic models, both sciences have moved away from the unquestionable axiom which state that transportation investment automatically generates development, and accepted that transport is only one of the variables that defines development behavior and it does not necessarily cause positive effects in all cases (Kocherlakota & Yi, 1992; Yu, De Jong, Storm, & Ml, 2012; Crescenzi, Di Cataldo, & Rodríguez-Pose, 2016).

From a macroeconomic perspective, several studies have been carried out in this field. However, the wide range of results and the discrepancy in temporal and geographical aggregation levels make it impossible to reach a consensus on the nature of this relationship. (Aschauer, 1994). In the same way, macroeconomic model´s analytical apparatus remains as a black box (Lakshmanan, 2011; Aschauer, 1994).

In the attempt to make out the factors that determine the location of economic activities in space, the NEG looks at the mechanisms inside this black box. According to the NEG, the spatial location of firms and consumers is oriented by accessibility to spatially dispersed markets (Fujita & Thisse, 2002). The economic actors act in search of greater efficiencies caused by economies of scale, economies of spatial agglomeration, expansion and restructuring of the market,

and benefits of innovation. All these are part of a series of mechanisms that can be stimulated through investment in the improvement of the transport network (Lakshmanan, 2011; Yu, De Jong, Storm, & MI, 2012). Under this approach, the NEG defines proximity as one of the key factors in the location and development of economic activity. From a geographical point of view, proximity, since it has the ability to define the local market area of a region, has the ability to generate effects of change on the broad economy through demand. Krugman (1991a) shows how regional agglomeration patterns depend on the interaction of three variables: increasing growths due to economies of scale, transport costs and demand. Krugman (1991a; 1998) points out how the modification in the cost of transport, under certain initial conditions, can generate specific processes of regional economic divergence or convergence.

From a NEG´s approach, the concept of proximity is not limited to its geographical meaning. Proximity gains greater relevance when considering, within the processes that guide the creation and location of economic activities, its cognitive, organizational, social and institutional dimension. From this approach, accessibility, as an indicator of proximity, becomes a very useful tool to estimate the effects of transport infrastructure investment on economic behavior (Andersson & Karlsson, 2004). This measure represent the spatial distribution of economic agents and their activities in a simple way that imposes a very clear structure upon the relationship between these agents and their activities and their environment (Karlsson & Gråsjö, 2013). Weibull (1980, 54) maintains that accessibility measures can be seen as measures of (i) nearness, (ii) proximity, (iii) ease of spatial interaction, (iv) potential of opportunities of interaction, and (v) potentiality of contacts with activities or suppliers. From the point of supply (production), accessibility plays a fundamental role in internal production processes: flow of knowledge, adoption of technologies, breaking up of lock-in barriers, formation of social capital, labor mobility, etc. (Vickerman R. , 1996). Karlsson & Gråsjö (2013) pointed out that accessibility measures can be used in empirical explanations of various spatial phenomena, such as patent output, new firm formation, the emergence of new export products, and economic growth in different spatial units. In the study of the causal mechanisms that link transport and economic development, it is observed that accessibility plays a fundamental role in the generation and incentive of conditions that foster growth.

2.2. High Speed Rail Characteristics

It is necessary to bear in mind that the effects generated by transport on economic behavior are not independent of the characteristics of its infrastructure. Factors such as mode of transport, scale of infrastructure, scope, capacity, type of service,

cost (time/monetary) and characteristics of the operation define the type and magnitude of the effects on economic behavior. From this point of view, high speed rail (HSR) has particular characteristics that have the ability to guide the way in which the economic behavior of a region will be influenced after the implementation of a transport network.

It is possible to classify between two types of transport infrastructure according to the scale of their impact area. Puga and Venables (1997), Puga (2002), and Ottaviano (2008) have distinguished between the economic effect of long-distance interregional transport infrastructure, which affects overall "accessibility" and provokes further economic concentration, and short-distance or intraregional infrastructure, that generally facilitates the diffusion of public services and the formation of human capital within peripheral regions. Studies outside the NEG framework focusing on core-periphery differences in factor endowments have reached similar conclusions (Vickerman, 1995; Cappelen et al., 2003; Rodriguez-Pose and Fratesi, 2004). A HSR network generally constitutes a transport service on an interregional scale, even beyond the borders of the countries. Thus, the HSR network has the potential to intensify agglomeration economies. Its operating characteristics - high speed and easy logistics - make its ability to encourage agglomeration even more efficient.

In terms of service, HSR networks normally carry only passengers, and not goods. For this reason, it is expected that they will not have a greater effect on the location of the manufacturing industry, Puga (2002). From a production point of view, HSR only transport labor. Therefore, its effect is supposed yo be stronger in activities that require specialized work, for example, business services, financial services, R&D activities, among others (Graham, 2007). Vives (2001) exposes how the reduction of transport costs, due to the implementation of the Madrid-Barcelona TAV line, together with lower communication costs, reinforcing the location of administrative units in the capital, give rise to a change in the production structure and development of cities. Puga (2002) points to the existence of informal evidence that the construction of the Paris-Lyon HSR line led to the relocation of the administrative headquarters from Lyon to Paris.

The impact of new HSR is found to be similarly mixed. For the Shinkansen, there is evidence that regions with a station experienced faster population growth, per capita income growth and employment growth, particularly in sectors classified as 'information exchange industries'. Effects were particularly strong for cities with both an expressway and a Shinkansen station (Nakamura and Ueda 1989). New research also suggests that it has increased business links, with firm-to-firm trade enhanced by proximity to Shinkansen stations (Bernard et al. 2014). In EU the HSR impact across the countries has been varied. "Development has been

inconsistent across station locations, as impacts have been variable and highly localized. The extent of development has depended on the overall economic strength of the local economy and the presence of service sector firms requiring access to Paris" Bannister and Berechman (2001). For Germany, there is evidence of increased economic activity at intermediate stations along the Cologne – Frankfurt high speed line (Ahlfeldt et al, 2010).

2.3. Study Case.

Interpreting transport as one of the main key factors for regional economic development, Turkey has made a great investment in modernizing, developing and making more effective the national transport network that will serve as the basis for regions development and integration. To this aim, in the last two decades, Turkey has decided to promote the national railway network. The key point of this project focuses on high-speed train lines that, due to their technological characteristics, have the capacity to reduce distance in terms of time between regions, mitigating geographical barriers and promoting social, political and economic interaction withing and between regions.

Konya region is one of the most important economic centers benefiting from the implementation of the first lines forming the HSR network. Following the introduction of the Konya-Ankara HSR line in 2011, in 2014 by integration to Ankara-Istanbul HSR line, Konya-Eskişehir-Istanbul HSR line goes into operation and brought Konya to a relevant position in terms of the railway network. Table 1 summarizes the change in journey time. These investments will bring about significant changes in the social and economic dynamics of the Konya region.

Table 1 Journey time before and after HSR

Jorney	Jorney time (hour:min)	
	before[1]	After[2]
Konya - Ankara	4:30	1:45
Konya - Eskişehir	5:00	1:40
Konya - İstanbul	11:00	4:30

In this context, this study aims to identify the impact of the Konya-Ankara and Konya-Eskişehir-İstanbul HSR lines in significant changes on economic dynamics of the Konya region. The methodology used to estimate the impact of the HSR network consists of two stages.

1 Average duration of bus travel

2 HSR travel time, www.wbilet.tcddtasimacilik.gov.tr

3. METHODOLOGY

The objective of this study is to analyze whether the implementation of the HSR line linking Konya Region with the main cities of the country has an appreciable effect on the economic behavior of the region. In this context, the study is based on the assumption that increase in accessibility resulting from HSR network promotes regional integration that serves as a platform for economic growth.

The reduction in travel time can also be understood as an increase in proximity. For our particular case, as we have mentioned previously, the change in accessibility conditions only impacts on the mobility of the labor. Therefore, the change in proximity, at first glance, would not have considerable effects on the demand and supply of consumer goods. Therefore, the effects are more likely to manifest themselves on the demand and supply of services. However, under the NEG, increased proximity, in its various dimensions, has the ability to facilitate interaction between economic actors. Thus, promotes both increased productivity and the development of new economic activities to through the different economic sectors (Venables, Laird, & Overman, 2014). In the same way, to the extent that proximity promotes the interaction of economic actors, it becomes a key factor that determines how R & D-generated knowledge contributes to economic growth, (Karlsson, Gråsjö, & Andersson, 2006).

In this framework, the relationship between investment in transport infrastructure and the economic performance of Konya region is analyzed with linear regression[3] method. Linear regression model is as follows (Greene & H., 2003, p. 8).

$$Y_i = B_0 + B_1X_1 + B_2X_2 + B_nX_n + \mu \qquad (1)$$

For this purpose, *X* represents the independent variables, accessibility potential; while *Y* represents the dependent variables, socio-economic variables.

3.1. Variable independinte: Accesibility Measure

The first part consists of estimating the change in accessibility of the study region as a result of the start-up of the HSR network. There are a variety of approaches to measuring accessibility, for an overview see Geurs and Van Eck (2001). However, the potential model is the most widely used to express the effects of transport

[3] Linear regression analyses analyze relations between dependent and independent variable. In regression analysis, causality is certainly in question. Main aims of the regression analysis is to estimate the given values of independent variables and the given values of dependent variable, To examine whether independent variables have an important impact on dependent variables or not, and to anticipate average values of dependent variable and given values of independent variable or to estimate the value it will have in the future.

investments (Gutiérrez, Condeço-Melhorado, López, & Monzón, 2011; Stępniak & Rosik, 2013). The generalized formulation of potential accessibility is guided by a gravitational approach. That is, as the distance between two points decreases, the greater the value of accessibility potential between them. In this context, there are different functions to incorporate the negative effect of distance in the calculation of the accessibility potential. These functions are called Decay Funtion. For our case study, with a national and regional scale of analysis, the use of a negative exponential function is recommended (Song, 1996; Handy & Niemeier, 1997; Haynes, Lovett, & Sünnenberg, 2003):

$$PA_i = \sum_j P_j \exp\left(-\beta t_{ij}\right) \qquad (2)$$

where PA_i is the accessibility of unit *i*, *Pj* represents the attractiveness of the destination *j* (i.e. population) and t_{ij} is a travel time between *i* and *j*, β is an adjustment coefficient for user perception that reflects their travel preferences according to: travel purpose, available means of transport, travel distance and local socio-economic conditions, see Geurs & Van Eck (2001). For our case study, β will be constant and equal to 0,039[4].

The impact on accessibility is analyzed on two geographical scales: local, interaction within Konya; regional, interaction with other regions. As destination purpose, the population variable at Local Administrative Units (LAU-1) geographical scale has been defined. As a result, two estimates of the accessibility potential are obtained for each administrative unit; see Fig. 2 and Fig. 3. The potential accessibility values for the region will correspond to the population weighted average. Additionally, according to the characteristics of transport infrastructure under study, it is expected that the effects will differ between the center and the periphery. Table 3 summarizes the statistical behavior of the independent variables.

The transport network of the accessibility model for estimating travel times is made up of the national road network and HSR network. This transport network includes modal exchange in the nodes of HSR network. Fig. 1 summarizes the accessibility model used.

[4] Based on impedance funtion for potencial job accesibility by public transport in accordance with Dutch National Travel Survey (Geurs & Van Eck, 2001). Due to the lack of a comprehensive national travel survey in Turkey, there are difficulties defining a β value to the local conditions of our case study.

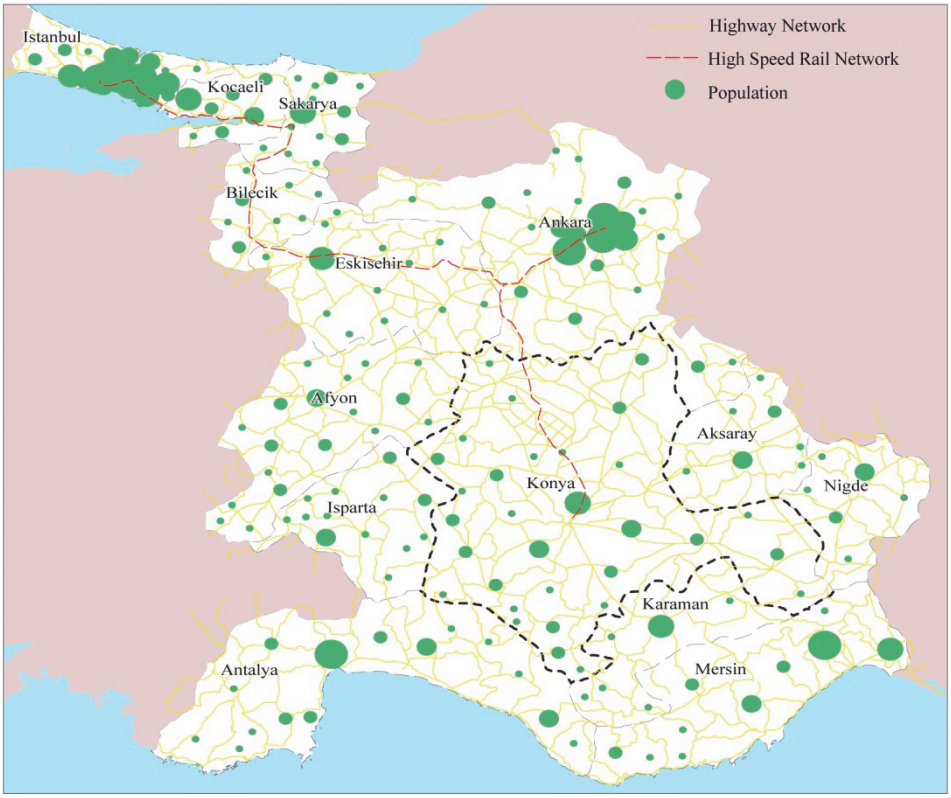

Fig. 1 Accesibility model.

3.2. Dependent Variable: Konya's economic behavior.

Using statistical information from Turkish Statistical Organization (TurkStat) and Turkish Patent and Trade Mark for Konya region during the study period, the relationship between economic behavior and change in accessibility is analyzed. In light of these data, 5 variables related to the economic behavior of the industrial, services, tourism and GDPC sectors were obtained. These variables and their statistical behavior are presented in Table 2.

Table 2 Dependent Variables

Codes	Variable	Data Periode	n	Min.	Max.	Mean	Std. Deviation
GDPC	Gross Domestic Product per Capita (Thousand TL)	2007-2012	12	8.976	30.054	17.071	7.102,9
NEI	New Entrerprises on Industry	2009-2017	9	87.508	99594	91.405	4.437,3
NT	Number of Tourist	2007-2018	12	11.790	63.598	40.974	14.802,4
PT	Patents Registration	2007-2019	13	1.644	4104	2.972	1.003,3
NESS	New Enterprises on Servis Sector	2009-2017	9	1.441	1.909	1.656	175,4

4. FINDINGS OF THE STUDY

4.1. Potencial Accessibility Change.

It was previously mentioned that HSR networks, due to their own operation characteristics, tend to concentrate the benefits spatially. For our case study, given that the Konya region has only one access station to the HSR network, which coincides with the largest population center, the changes in the potential for regional accessibility are strongly concentrated on this area, see Fig. 2.

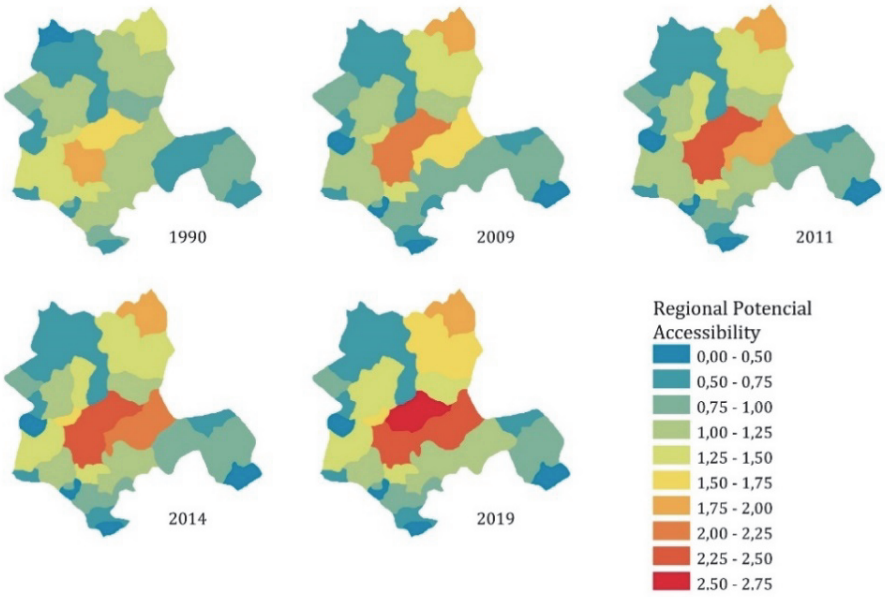

Fig. 2 Changes in Konya Regional Potential Accessibility.

Taking into account that HSR network constitutes an interregional mobility option and does not present routes that can supply the demand for trips within Konya region, it is possible to expect that the accessibility potential of the different LAUs will not present appreciable changes. However, as observed in the Fig. 3, the potential for local accessibility presents a divergent trend. While the larger-central cities increase their potential for local accessibility, the smaller-peripheral cities maintain their value almost constant. It should be noted that prior to the start-up of the first HSR line in Konya (year 2011), the differences in local accessibility potential remain relatively stable.

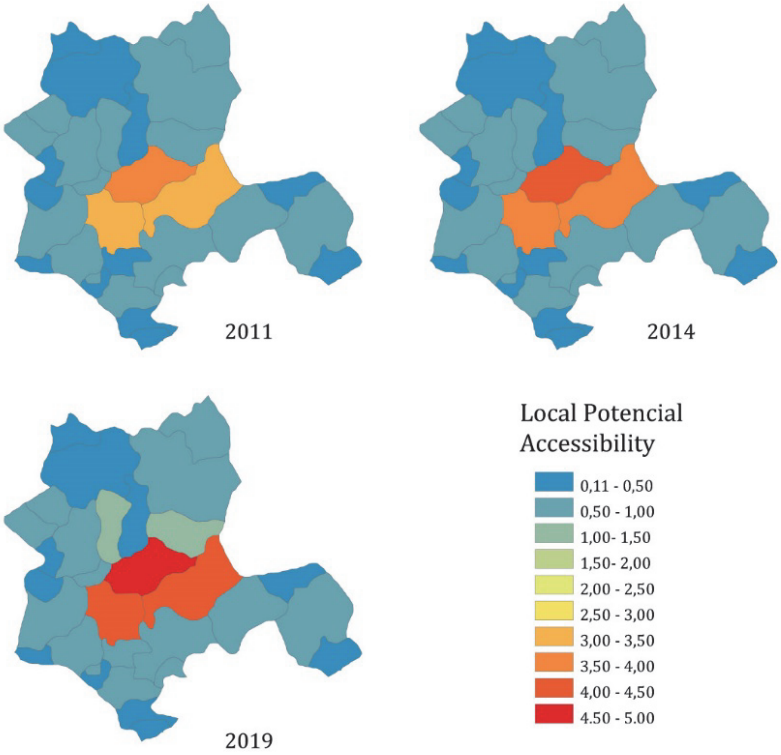

Fig. 3 Changes in Konya Regional Potential Accessibility

The results, both at the regional and local level, confirm a divergent trend between the accessibility values of central cities and those of the periphery. Although, prior to the TAV the differences in accessibility between the center and the periphery were already appreciable, the implementation of the TAV presents a multiplier effect of this difference.

Table 3 Region Potential Accessibility

Relative Potential Accessibility		Min.	Max.	Mean	Sta. Deviation
Regional	Konya	1,51	1,93	1,74	0,15
	Konya Core	1,97	2,47	2,26	0,19
	Konya Periphery	1,01	1,12	1,06	0,04
Local	Konya	2,18	3,02	2,57	0,30
	Konya Core	3,57	4,54	4,01	0,36
	Konya Periphery	0,70	0,75	0,72	0,02

4.2. Correlation Between Accessibility and Economic Behavior.

In order to analyze the impact of changes in accessibility, we have carried out a statistical study between the accessibility potential of the region – Independent

variables – and the economic variables under study – dependent variables. First, the relationship between independent variables is analyzed by means of a Pearson Correlation Test. The results can be seen Table 4.

A high degree of correlation is observed between the Konya and Konya Core variables in both geographic scales. Thus, statistically, it is possible to affirm that these two variables are strongly dependent on each other. Therefore, it is valid to affirm that one of the two variables can represent the other one. Regarding the correlation between the accessibility potential between the core and periphery, at both regional and local scales, the low value found confirms the independence between both variables.

Table 4 Correlation Matrix

Potencial Accesibility			Regional			Local		
			Konya	Konya Core	Konya Periphery	Konya	Konya Core	Konya Periphery
Regional	Konya	Pearson Cor.	1,00	,976**	0,29	,622*	0,55	-0,10
		Sig. (bilateral)		0,00	0,34	0,02	0,05	0,74
	Konye Core	Pearson Cor.	,976**	1,00	0,25	0,50	0,50	-0,12
		Sig. (bilateral)	0,00		0,41	0,08	0,08	0,69
	Konya Periphery	Pearson Cor.	0,29	0,25	1,00	0,02	0,16	,820**
		Sig. (bilateral)	0,34	0,41		0,94	0,61	0,00
Local	Konya	Pearson Cor.	,622*	0,50	0,02	1,00	,891**	-0,01
		Sig. (bilateral)	0,02	0,08	0,94		0,00	0,97
	Konye Core	Pearson Cor.	0,55	0,50	0,16	,891**	1,00	0,23
		Sig. (bilateral)	0,05	0,08	0,61	0,00		0,45
	Konya Periphery	Pearson Cor.	-0,10	-0,12	,820**	-0,01	0,23	1,00
		Sig. (bilateral)	0,74	0,69	0,00	0,97	0,45	

** significant at the 0.01 level, * significant at the 0.05 level.

Based on the statistical analysis of the independent variables, four equations have been proposed to relate the accessibility potential with the economic variables under study. These four equations have the purpose of allowing comparison between: (i) the relevance of accessibility at the local scale vs accessibility at a regional scale (eq. 3 and eq. 4), (ii) the relevance of the accessibility of the core vs the accessibility of the periphery (eq. 5 and eq. 6).

$$\Delta Y_i = X_{CL} + X_{PL} \qquad (3)$$

$$\Delta Y_i = X_{CR} + X_{PR} \qquad (4)$$

$$\Delta Y_i = X_{PR} + X_{PL} \qquad (5)$$

$$\Delta Y_i = X_{CR} + X_{CL} \qquad (6)$$

where *Y* represents the economic variables and *X* the variables of potential accessibility. Being C = Core, P = Periphery, L = Local, R = Regional; suffixes that define the nature of the variable.

For each equation, linear regression analysis was performed with each of the dependent variables. In order to take into account the variability in time, linear regressions have been carried out with the delta data for each measure.

Table 5 Linear regression results for relationship between local potential accessibility and economic variables

Independent Variable		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	R
		B	Std. Error	Beta			
GDPC	Cte	7,25	3,04		2,38	0,04	0,57
	Periphery Local	-0,83	1,64	-0,14	-0,51	0,62	
	Core Local	2,90	1,41	0,58	2,06	0,07	
NEI	Cte	1,16	1,40		0,82	0,44	0,27
	Periphery Local	0,30	0,45	0,26	0,67	0,53	
	Core Local	0,04	0,56	0,03	0,07	0,95	
NT	Cte	-0,34	10,06		-0,03	0,97	0,46
	Periphery Local	-3,14	5,44	-0,18	-0,58	0,58	
	Core Local	7,10	4,66	0,46	1,52	0,16	
PR	Cte	-1,86	9,35		-0,20	0,85	0,47
	Periphery Local	-6,39	4,95	-0,37	-1,29	0,23	
	Core Local	5,88	4,34	0,39	1,35	0,21	
NESS	Cte	1,97	2,88		0,68	0,52	0,28
	Periphery Local	-0,53	0,93	-0,23	-0,57	0,59	
	Core Local	0,54	1,15	0,19	0,47	0,65	

When comparing the results of the regression between the local accessibility potential (Table 5) and the regional accessibility potential (Table 6), according to the adjustment coefficient R, it is easily possible to notice that the accessibility at a regional scale describes with greater precision the economic performance of the region, especially in the tourism and service sector.

Although the effect of regional accessibility is greater, the results do not rule out the relevance of local accessibility as a conditioning factor of the economic behavior of the region.

Table 6 Linear regression results for relationship between regional potencial accessibility and economic variables

Independent Variable		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	R
		B	Std. Error	Beta			
GDPC	Cte	9,76	2,44		4,00	0,00	0,49
	Periphery Regional	0,30	1,70	0,05	0,17	0,87	
	Core Regional	1,24	0,78	0,48	1,59	0,15	
NEI	Cte	2,07	0,70		2,97	0,02	0,51
	Periphery Regional	-0,07	0,41	-0,06	-0,18	0,87	
	Core Regional	-0,26	0,19	-0,49	-1,34	0,23	
NT	Cte	0,15	5,67		0,03	0,98	0,75
	Periphery Regional	0,58	3,95	0,03	0,15	0,89	
	Core Regional	5,94	1,82	0,74	3,26	0,01	
PR	Cte	11,52	6,91		1,67	0,13	0,48
	Periphery Regional	-8,52	4,91	-0,50	-1,73	0,11	
	Core Regional	0,87	2,25	0,11	0,39	0,71	
NESS	Cte	5,08	1,16		4,40	0,00	0,72
	Periphery Regional	-1,17	0,68	-0,50	-1,71	0,14	
	Core Regional	-0,46	0,32	-0,42	-1,42	0,20	

Table 7 Linear regression results for relationship between periphery potential accessibility and economic variables

Independent Variable		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	R
		B	Std. Error	Beta			
GDPC	Cte	10,81	2,47		4,37	0,00	0,34
	Periphery Regional	3,40	3,17	0,60	1,07	0,31	
	Periphery Local	-2,99	3,27	-0,51	-0,91	0,38	
NEI	Cte	1,91	0,48		4,00	0,01	0,74
	Periphery Regional	-1,39	0,55	-1,22	-2,53	0,04	
	Periphery Local	1,46	0,55	1,27	2,64	0,04	
NT	Cte	5,06	6,90		0,73	0,48	0,52
	Periphery Regional	15,87	8,83	0,91	1,80	0,11	
	Periphery Local	-14,86	9,11	-0,83	-1,63	0,14	
PR	Cte	5,06	6,90		0,73	0,48	0,50
	Periphery Regional	15,87	8,83	0,91	1,80	0,11	
	Periphery Local	-14,86	9,11	-0,83	-1,63	0,14	
NESS	Cte	4,69	0,93		5,03	0,00	0,77
	Periphery Regional	-3,07	1,07	-1,31	-2,87	0,03	
	Periphery Local	2,06	1,08	0,87	1,91	0,10	

Table 8 Linear regression results for relationship between core potencial accessibility and economic variables

Independent Variable		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	R
		B	Std. Error	Beta			
GDPC	Cte	7,18	2,95		2,44	0,04	0,60
	Core Regional	0,74	0,81	0,28	0,91	0,39	
	Core Local	2,01	1,56	0,40	1,29	0,23	
NEI	Cte	1,08	1,18		0,91	0,40	0,59
	Core Regional	-0,35	0,20	-0,65	-1,77	0,13	
	Core Local	0,48	0,52	0,34	0,92	0,39	
NT	Cte	-0,57	7,45		-0,08	0,94	0,75
	Core Regional	5,80	2,05	0,72	2,83	0,02	
	Core Local	0,78	3,93	0,05	0,20	0,85	
PR	Cte	-2,68	9,88		-0,27	0,79	0,36
	Core Regional	-1,75	2,69	-0,22	-0,65	0,53	
	Core Local	6,27	5,18	0,41	1,21	0,25	
NESS	Cte	1,53	2,18		0,70	0,51	0,69
	Core Regional	-0,82	0,36	-0,74	-2,24	0,07	
	Core Local	1,42	0,96	0,49	1,47	0,19	

Comparison between the results of the linear regression of accessibility in the periphery (Table 7) and accessibility in the core (Table 8) do not indicate the prevalence of either of the two in economic behavior. However, in relation to the dependent variable GDPC, core accessibility presents a considerably higher adjustment value R. While accessibility in the core has a strong effect on the number of tourists, periphery accessibility describes in a better way the development of new enteprises in the industrial sector.

CONCLUSION

In the first place, it is observed that the implementation of the HSR network, in general, has generated a positive effect on the accessibility potential of the region at both regional and local scale. Similarly, the change in accessibility has a positive effect both in the core and in the periphery. However, in relative terms, it is found that HSR network functions as a potentiating factor of the difference in accessibility core and periphery.

We have found that the variables that best describe economic behavior are the accessibility potential at a regional geographic scale and core potential accessibility. These results indicate a growth for the region supported mainly in the core zone and put into question whether said growth occurs at the expense of the peripheral zone. It is possible that these dynamics reinforce an environment of economic interaction with a tendency to agglomeration in the center at the expense of the periphery. The analysis of the socio-economic variables at the LAU-1 scale is pending for a future investigation with the purpose of advancing

in the understanding of the effects of the HSR network on the center-periphery economic interaction.

During the development of our case study, according to what was expressed by Puga (2002), the relationship between the potential for accessibility in the development of new ventures in the industrial sector is weak. On the contrary, confirming what was expressed by Graham (2007), we have found that the effects of TAV have a greater relationship with organization of activities in the service sector with a strong concentration of specialized labor: information and communication, finance and insurance, administrative and support.

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ISPARTA BICYCLE ROUTE: THE CONFLICT BETWEEN PRIVATE AND PUBLIC INTERESTS

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ABSTRACT

Isparta, one of the most livable cities of Turkey, is a rapidly growing, medium-sized city in inner Anatolia with a large academic and student population. In 2016, with limited financial means, the Isparta Municipality sought to make the city more livable by constructing a network of bicycle lanes intersecting in the city center. The politicians and roadside businesses or shop owners opposed this scheme, as a survey has shown. In July 2018, the main, central section of the bicycle route was closed by the same municipal administration which introduced it following political pressure and in line with economic demands. The closed lanes were converted to on-road car parking spaces. Only a part of the network on the main transportation axis towards the perimeter of the city still exists today.

The decision to close the bicycle lanes contradicts the ideal of the smart settlement. It disturbed cyclists, drivers and the general public, created tensions among them, lowered urban livability standards and made the city more dangerous for its inhabitants. Despite the universal struggle to create smart transportation systems and smart settlements, rules and regulations for promoting the use of the bicycle and integrating it into urban life and spatial planning in Turkey appear to be insufficient. This paper reviews the interests at play and their prioritization while making an impact-based assessment of the decision of the municipality to close the bicycle route. It questions the impact of the closure of the route on the local economy of a city on the way to becoming a smart settlement.

The survey uses a quantitative research method based on a survey. Three (3) populations were sampled – namely, a local bicycle advocacy group, the general public and roadside businesses. Questionnaires were administered through a systematic random sampling technique. The findings are accompanied by interviews with decision makers, the public and cyclists and a descriptive analysis and a review of the literature on bicycles in cities,

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the economic returns of cycling in the city and bicycle routes as a smart means of transportation. The paper concludes with a critical evaluation of the legitimacy of the closure decision from the point of view of the public interest. It finds that private interests and political disputes, and the related tensions, are non-negligible obstacles which decision makers have to overcome in order to create smart settlements. It also warns that decisions of this kind taken without properly determining the economic impact are baseless.

Keywords: Smart Settlement, Sustainability, Bicycle, Public Interest, Private Interest.

1. INTRODUCTION

The call for smart settlements has received, and continues to receive, global attention across all disciplines. Like many other developing countries, Turkey still has impediments to address in this area. One of these is the state of urban transportation. Urban transportation issues continue to be among the foremost planning issues and a major concern to every player in the transportation sector, particularly those planners and other policy makers who long for smart transportation as an element for achieving smart (competitive) settlements (Oni,1999; Sınmaz, 2013; Rodrigue et al., 2017).

Among the solutions widely suggested for overcoming urbanization problems and reorganizing our towns and cities as smart, sustainable and livable settlements are means of transport which consume less energy, use entirely clean energy (human energy), are driven by renewable energy or can carry greater numbers of passengers. One means of transport which supports and satisfies this development is the city bike system. Most academic studies on city bike systems and networks have concentrated on the environment-friendliness of the bicycle and on urban design standards (Uz, 2004; Uz and Karaşahin, 2004; Forsyth and Krizek, 2011; Pasha et al., 2016).

Although smart transport systems have become more common, there are few studies which examine the relationship between these systems and the local (urban) economy. According to Pasha et al. (2016:472), numerous studies have explored the effects of socio-economic factors on choices of sustainable modes of transportation, and found that social factors clearly affect the decision to commute by bicycle. However, limited work has been done on the effects of the bicycle on economic growth or its impact on urban markets, or on the influence of economic means and concerns on decision-making about city bike systems.

In November 2016, the municipality of Isparta in Turkey, rightly concerned about problems related to transportation, embarked on a project to make the city a

smart, sustainable and livable settlement. In this context, the municipality constructed a bicycle route to various parts of the city by introducing bicycle lanes on some of the existing roads **(Figure 1).** The integration of a bicycle route into the street network was also a response to the growing use of bicycles and the demands of citizens, commuters and cyclists. The broader goal was to reduce the existing over-dependency on automobiles, encourage social integration, decongest the city center and give the city back to the people (i.e., pedestrians and cyclists).



Figure 1. Dismantling of Bicycle Lanes (Hürriyet, 2018).

The bicycle lanes were justified on the grounds of the city's dimensions, the large numbers of students and low-income groups, the large numbers of service enterprises serving student demand, and the practicality of motorbikes and bicycles. The bicycle route was extended as far as the university campus. The bicycle lanes in the city center received mixed reactions and created tensions among road users with different interests such as drivers, motorcyclists, cyclists and roadside businesses, all of whom are presumed here to look favorably on smart urban development. The debate also involved businessmen and politicians seeking to protect their own interests regardless of whether the city became livable, sustainable or not.

After the Bicycle Advocacy Group's visit to the Mayor of Isparta in March 2018 to thank for the bicycle network construction (Milliyet Haber, 24.03.2018), some lanes were closed in July 2018 by the Municipality. A way is given to the objections and compromised its plan for a smart transportation system, as a subset of a smart settlement. The municipality closed the bicycle lanes and converted them into roadside parking spaces **(Figures 2-3).** And, monetization has started. The municipality claims to have acted upon the request of commercial interests, especially businesses located on the affected roads. According to a newspaper report, 72% of these businesses asserted that the bicycle route made it more

difficult for motorists to reach their premises, resulting in lower sales of goods and services (Hürriyet, July. 2018). This report contrasted with an earlier report mentioned in the same newspaper (Erçakır, Feb. 2018) in which public interest groups spoke out strongly in favor of retaining the bicycle lanes and against their cancellation or conversion to other uses.



Figure 2. Bicycle Lanes Converted to Parking Spaces (by the Authors, 2018).



Figure 3. Monetization samples of-street parking (by the Authors, 2020).

Many developed and developing countries and their municipal authorities are plying the route of repositioning their cities as smart settlements by revising their transportation systems in favor of smart transportation. Infrastructure and facilities such as bicycle lanes, bike-friendly traffic lights and bicycle sharing facilities are being introduced to encourage cycling as a smart means of transportation. In spite of this, the Isparta Municipality decided to close the bicycle route, in accordance with the interests of the roadside shop owners, and to convert the bicycle lanes in the city center into on-road parking spaces so that drivers would have easy access to the shops (Haber32, 2018). The municipality neglected other interest groups and obliged cyclists to use the same roads as the motorists. This also created a risk of traffic deaths among cyclists and motorcyclists. An oppor-

tunity for smart transportation was ruined, and the tensions between public and private interests in the city were solidified.

This paper addresses the tensions between public and private interests and seeks to answer the question: **"**When actions or programs, policies and plans lead to a contest between livability and market interest, which one should be given priority?" The question can then be simplified as follows: "When divided interests exist in a city, in what order should these interests be satisfied for the livability and sustainability of the city?" To complement these major questions, the study also provides answers to questions like: What was the reason and motive behind closing the bike lanes? What means of transportation should be advocated for a smart settlement? Does the level of availability of protected bicycle lanes affect bicycle usage? And is there is any economic relationship between the existence of bicycle lanes and sales in the shops?

The paper therefore aims to provide the view of decision-makers, to develop a method for assessing the impact of a market-sided decision taken by a public authority and to make use of this method to critically evaluate the legitimacy of this decision with respect to the public interest. In support of these aims, the related literature on non-motorized and smart city transportation systems is reviewed, and primary sourced data is analyzed and integrated with the available secondary available data. Empirical surveys were conducted among samples of three (3) populations. As sales cannot be dependent on one single factor at any given time, the results are crosschecked with neighborhoods in other places that did not have bike lanes and discussed with the economic trends in the country or the city.

Following this introduction, which identifies the issue, the next section of the paper sets out the conceptual framework regarding the relationship of the bicycle and the road system to smart and sustainable urbanization. The paper then goes on to explain the methodology of the study. In the subsequent section, the city of Isparta and the events surrounding the construction and removal of the bicycle lanes in this particular city are described, together with the results of the field surveys and individual interviews that set out the points of view of the different sections of society. Views of bike users, citizens and shop owners have been combined with in-depth interviews. This section contains the findings from the field concerning the effects of the closure of the bicycle lanes on the public benefit and private benefits. The final section makes a critical evaluation of the private benefits and political perspectives that interfere with smart and sustainable urbanization, the bicycle routes and the systematic relationship between them.

2. SMART SETTLEMENT; SMART TRANSPORTATION

The requirements of livable, smart and sustainable settlements must be summarized to understand the relation between smart settlements and smart transportation. Firstly, there are five fundamental aspects of a livable city that is highlighted by the liveable City organization (livablecity.org, 2018) and Ling et al. (2006): Accessibility and sustainable mobility; vibrant public spaces; a diverse and resilient local economy; affordability, and complete neighborhoods. Parameters developed for use in livability rankings are deduced from these five aspects. Secondly, with respect to the ranking of smart settlements, smart transportation should be adopted as the determining parameter. Thirdly, the components of a sustainable settlement are economic, ecological and are merged with human factors.

Mohanty et al. (2016) define the smart (or sustainable) city as an innovative city that makes use of information and communication technologies and other means to improve the quality of life. This city improves competitiveness as well as the efficiency of operations and services in the urban area to meet the present needs of the people without jeopardizing future generations.

Among the approaches to smart settlements, the "smart growth", "ecological city/ecocity", "low carbon cities", "urban renaissance" and "livable cities" approaches, in particular, favor the integration of various transportation options headed by the bicycle. Bamwesigye and Hlavackova (2019) concluded that **"**If a city will be smart, smart solution needs to be accorded to all components making up the city". The smart environment can be designed to solve environmental related issues with the help of smart transportation. The main goal of smart transportation is to ensure an energy-efficient transportation system while reducing carbon emissions from motor vehicles (Bamwesigye and Hlavackova, 2019).

Successes have been achieved in these respects – notably, through the emergence of means of transportation that consume less energy, the use of fully clean energy (human energy), and the introduction of vehicles driven by renewable energy and vehicles capable of carrying larger numbers of people. The provision of protected bicycle routes and pedestrian walkways has topped the list of smart means of transportation for city centres (Mohanty et al., 2016). This has been the most common form of smart transportation adopted (Bamwesigye and Hlavackova, 2019).

2.1. Bicycle in The City

Dekoster and Schollaert (1999), Grava (2003) and Heinen et al. (2010), are some of the planners who have conducted research and advocated for sustainable cities

and the use of bicycles in the city. Grava (2003), for instance, affirmed that among all machines and animals that move, the bicycle remains the most efficient device for transporting weight over a distance for a fixed amount of energy consumption (about 0.15cal/g.km). Heinen et al. (2010) and Hook (1994) support this argument while also highlighting other beneficial aspects of bicycle usage such as limited space requirements, low noise pollution, environmental friendliness, and the contribution to public health. Dekoster and Schollaert (1999) note that cycling is discrete and accessible to all members of the family, and they add that, above all, a bike is faster than a car over short urban distances.

Alison (2008)'s question on what appropriate use of public space should be came with varieties of answers. A general response revealed that the use of public space should be one which benefit the community, fair and contribute to the economic and sustainable use of land. In accordance to this Alison's response, planners like Dekoster and Schollaert (1999) have advocated for comprehensive restrictions on the use of motor vehicles in city centers as the only way of maintaining mobility as city centers become more and more crowded and congested with traffic. Making the city smart, sustainable and livable or car-free does not connote a total ban on motorized transportation, since some people may be unable to walk long distances, have physical disabilities or be unable to cope with cycling conditions (Grava, 2003). The need for some forms of public transport persists.

Schutte (2015) blamed the misuse of space in the city on the enormous amount of car usage. Andrew et al. (2013) identified three alternatives to the use of a car: the bus (mass transportation), walking and cycling. Among these, cycling appeared as the best alternative since the use of buses comes with limitations in terms of poor network coverage at times, while there is a limit to how far people can be expected to work. Another planner, Abel (1950), referred to by Hass-Klau (2015), called for a strict separation of modes of transport as the only way to ensure the survival of our cities.

Widening existing city-center roads is proposed as an alternative. The idea of road-widening and massive road construction within cities was denounced by May (1963), who considered this a misguided investment and an erroneous operation on the city organism. It was not the city that should be changed to accommodate traffic, he argued, but traffic that should be changed to accommodate the city. This response is regarded in UNESCAP (2012) as a temporary fix, which is neither economically productive nor environmentally sustainable, because a few years after the capacities of the roads have been increased, they will become congested again. Moreover, road-widening and construction will lead developers to build more new commercial and residential

developments alongside the roads leading to a further increase in the use of vehicles.

Jaffe (2015) discussed the topic extensively while presenting the San Francisco Examiner's Report (2015) on challenges made to plans to add protected bicycle lanes to Polk Street in San Francisco. These plans endured some two-and-a-half years of rigorous debate stemming from the arguments of local businesses that the creation of the bicycle lane and consequent loss of 140 parking spaces in the area would cause them financial losses. The businesses also asserted that drivers were wealthier than other alternative transport users and pointed out that cars have boots to carry goods, unlike cyclists and pedestrians. The findings of Lee Alison (2008) in her study of Melbourne, Australia, challenge the assumption that car parking has been an integral component of the economic success of inner-city shopping strips.

With respect to the potential economic impacts of on-street parking, Dekoster and Schollaert (1999) reflected that motorists are not better customers than cyclists, pedestrians or the users of public transport and that in certain categories cyclists may even be the better customers, buying in smaller quantities each time they travel, but always on a regular basis as their frequent cycling exposes them to the temptation to shop. Similarly, Jaffe (2015) suggests that replacing on-street parking with bicycle lanes has little or no impact on local business, and in some cases might even increase business as a result of cyclists making more frequent shopping trips than motorists, albeit spending less per trip, as reflected in studies of Portland (Oregon), East Village (New York City), Dublin (Ireland), Toronto (Canada), Vancouver (Canada) and Los Angeles (California).

Jaffe (2015) recounts Alison's findings concerning the shopping behavior of cyclists and drivers in Melbourne and compares the areas of space needed to park cars and bicycles, showing that six bikes fit into a single automobile parking space. Car owners spent more money per hour in shops, with an average of $27, compared to $16.20 per cyclist, but if adjustment is made for the number of bikes that would fill the same space as one car, the six cyclists would spend much more ($97) than one driver. A validation of Smith (2004)'s assumption of the Port Phillip City that majority of the incomes by the local shops are generated from the locals who trade. Thereby justifying the need to remove car spaces and replaced with a footpath (the Acland Street).

Renate (2015) states that when Max Van den Berg first revealed his revolutionary policy of expelling cars from the city center of Groningen to create space for pedestrians and cyclists rather than destroying the old neighborhood to accommodate more vehicles, the fiercest opposition came from the shop owners

and entrepreneurs who deal directly or indirectly with commuters (the road multipliers) and derive earnings from them. They feared that closing the city center to traffic would destroy their businesses. An assertion described baseless by Alison (2008). The end, however, justified the means, according to Max Van den Berg as the pleasant urban environment attracted more people to the center and its shops and the center became more accessible for cyclists.

In the hierarchy of the city center transportation, pedestrians have first right of way followed by cyclists and then, finally, drivers. In other words, the automobile user must always defer to the cyclist and likewise, the cyclist or bike rider must always give way to the pedestrian both on footpaths and on shared lanes. Otherwise, the city will be insecure.

The presumed or proven advantages to be gained from cycling have been established by different authors. Dekoster and Schollaert (1999) summarized the benefits to communities, individuals, companies and commerce as follows: Economic benefits (such as the decline in the share of the household budget devoted to the car, the reduction in working hours lost in traffic jams, and the decline in health costs due to the effects of regular exercise); political advantages (such as a reduction in energy-dependence and saving of non-renewable resources); social progress (such as the democratization of mobility, greater autonomy and accessibility of all facilities to both young and elderly people), and ecological impacts, with a distinction between local, short-term effects (the notion of the environment) and non-localized long-term effects (the notion of ecological balance).

2.2. The Need for Bicycle Lanes

For a smart city and transportation there is a need for a transportation infrastructure, including cycling, constructed with required feasibility and standards and has detailed design. The generalization of the bicycle as a road vehicle is a fundamental issue because it puts the bicycle – a lighter machine which coexists uneasily with other vehicles as shown by the frictions between the cyclist and other road users – in the same category as automobiles. This agrees with the final report by Michigan Department of Transportation on Community and Economic benefits of Bicycling in Michigan (2014) and aside from weather condition, identified lack of cycling infrastructure and safety concerns due to unprotected bicycle route as major factor/ barriers to cycling.

In this paper, the concepts of cyclists and drivers are used separately. The need for well-defined routes for cyclist arises from their quest for safety on city streets. Bicycle lanes are tracks that provide barriers between bicycles on the one hand and cars and even the pedestrian on the other.

The choice for automobiles even for a short distance according to Stinson and Bhat (2002) was attributed to the convenience and availability of transportation infrastructure designed primarily to accommodate automobiles. In the same vein of thought if bicycle infrastructure is developed, convenient and safe bicycle routes will be created.

In agreement, Grava (2003) summarized the need for bicycle lanes as a factor that will inevitably encourage cycling, since a specific allocation of road space will be made and the level of stress associated with cycling will decrease. The cyclist will have an unobstructed path and drivers will be signaled that the cyclist has rights. Dekoster and Schollaert (1999), Parkin and Meyers (2010) and Souzaa et al. (2014) all made similar remarks and traced the decline in cycling to the absence of cycling facilities and unfavorable policy towards cycling. Puncher and Buehler (2017) recommended provision of infrastructures, programs and policies supporting cycling on the basis of the successes recorded in the Netherlands, Denmark and Germany where cycling preference over other transport means are placed.

Research shows that one of the factors behind the use of bicycles is the availability of protected or marked bicycle lanes which make the cyclist feel safer while cycling. Monsere et al. (2014) reveal that the cycling rate rose from +21% to +171% as a result of the provision of protected cycle lanes in US cities. The UK Department of Transport (DOT) (2013) reported that 48% of existing cyclists and 65% of non-cyclists think that it is dangerous to cycle on roads. Pucher and Buehler (2016) noted a drastic reduction in the level of road accidents due to the establishment of protected bicycle lanes. The closure of bicycle lanes, or their conversion to other uses, is therefore tantamount to returning the city to its former state characterized by congestion and pollution while also increasing the number of accidents.

The successes recorded by Dutch cities with respect to means of transportation and standards of infrastructure, as reported by Renate (2015), have been evaluated and studied repeatedly by transport planners. These cities remain bicycle capitals of the world today. They cleverly reject the dominance of cars in the city and give the roads back to the cyclist and the pedestrian.

Copenhagen has encouraged the use of cycling by installing cycling infrastructure to facilitate cyclist mobility and prioritizing them in the transportation hierarchy (Bamwesigye and Hlavackova, 2019). According to Bamwesigye and Hlavackova (2019), Copenhagen success story showed that attaining pedestranisation, bicycling and other sustainable transportation means is a progressive process. Renate (2015) notes the emergence of the initial steps: When they began to

promote cycling in the city in the 1970s, Dutch politicians already understood that the general emphasis on cars would eventually cause problems. The oil crisis of 1973 also contributed to the adoption of a new lifestyle and of energy-saving means of transport.

As a result, today's Dutch city is equipped with an elaborate network of cycle-paths and lanes that are safe and comfortable even for toddlers and elderly people. The provision of facilities for cycling, such as the construction of networks of cycle paths, has enabled the Netherlands to encourage more people to cycle. The Netherlands boasts 22,000 miles of cycle paths and lanes, compared with the 2% in the UK; this is 38% in Amsterdam and 59% in the university city of Groningen (Renate, 2015).

The Houten district in the Dutch city of Utrecht is a world-famous cycling suburb with an estimated 129 kilometers of cycle paths and lanes. At least one bike is owned by the 98% of the households. The average is 3.4 bikes per household. The design of the suburb puts pedestrians and cyclists before drivers, limiting the use of cars in the urban area. The area is connected by extensive networks of paths and cycle lanes of well-filtered permeability allowing the cyclist a thoroughfare to the city center.

3. METHODOLOGY

In this paper, the quantitative research method has been used, based on surveys. The analysis of the tension between public and private interests in public spaces and of the economic impact of the closure of the bicycle lanes are questioned based on two (2) major data sources – namely, a reviews of the related literature and the data set obtained via the survey conducted with samples taken from three (3) interest group populations: the Isparta bicycle advocacy group (Bisiklet Topluluğu), comprising professional and frequent cyclists; the general public and the roadside businesses/shop owners. The data used were primary and secondary sourced data, otherwise referred to as individual-level and aggregate-level data (Buehler et al., 2015), obtained from a reconnaissance survey, the processing of questionnaire results, satellite imagery and consultations with relevant bodies.

For the primary data, sourced through the use of a questionnaire with different structured questions for each sample group, a total number of 170 questionnaires were administered (42 questionnaires for the bicycle advocacy group, 82 questionnaires for the general public, and 46 for roadside shop owners (26 for areas with bicycle route and 20 for those without bicycle route) in 2018 and 2020. This is done in order to figure out the interests of the related actors and financial gains and losses. Each survey queried the level of bottom-up participation of all

the interest groups before and after the closure of the bicycle lane and the numbers of trips per day. The demographic and socio-economic characteristics of the respondents are limited to a variable on bicycle and/or car ownership and the difference in market returns before and after the closure of the lane.

For the general public, a simple random sampling technique was used to eliminate biased sampling and ensure that every member of the public has an equal chance of been selected. For the roadside businesses, a systematic random sampling technique was employed involving the selections of shops at every fourth interval on traffic routes bicycle routes were previously constructed or nonbuilt. An electronically designed questionnaire (Google forms) was used for the bicycle advocacy group.

Secondary data are sourced from interviews with various decision-makers, the public and cyclists; institutions, including the provincial police office traffic department and the Isparta Municipality Departments of Planning and Technical Works. Data were also sourced from relevant materials, from journals, text books, articles, and the internet. The majority of these peer-reviewed studies relate to bicycle-friendly cities like Utrecht, Amsterdam, Groningen, Copenhagen and Portland (Jaffe, 2015). A descriptive analysis and a review of the literature on bicycles in cities, the economic returns of cycling in the city and bicycle routes as a smart means of transportation were also conducted.

In determining the length of bicycle routes in the city, landsat images of the study area were sourced and processed using Geographical Information System (GIS) applications. Use was also made of the Isparta City Development Plan in NETCAD format.

The data collected through the surveys were analysed using relevant statistical methods through simple computation. Descriptive data were analysed using Statistical Packages for Social Sciences {SPSS} software to determine frequency distributions and correlations with the variables. Parameters were developed to make a comparison of interests.

4. THE ISPARTA CASE

The province of Isparta is located at the meeting point of Turkey's Aegean, Mediterranean and Central Anatolia regions **(Figure 4)**, with coordinates of 37°45'52'' N and 30°33'8'' E. The central city of the province, also called Isparta, has a population of approximately 258,375 (Nufusu.com, 2019), distributed among various neighborhoods. The city serves a wide geographical area. It has a rich flora and fauna, which positively affects the quality of life, and the temperate climate makes cycling possible most of the year round.

Due to its human proportions, the persistence of organic agriculture in the province, a reasonable quality of urbanization and good access to urban facilities, Isparta is one of the country's most livable cities (index value of 0.6745 based on 41 indicators) (Turkish Statistical Institute, 2017). The university, established in 1992, has contributed to the quality of living in Isparta. It has transformed it from a settlement largely dependent on agriculture with a rural character to a city having a regional development role strengthened by rapidly developing service and education sectors and an increasingly urban outlook.

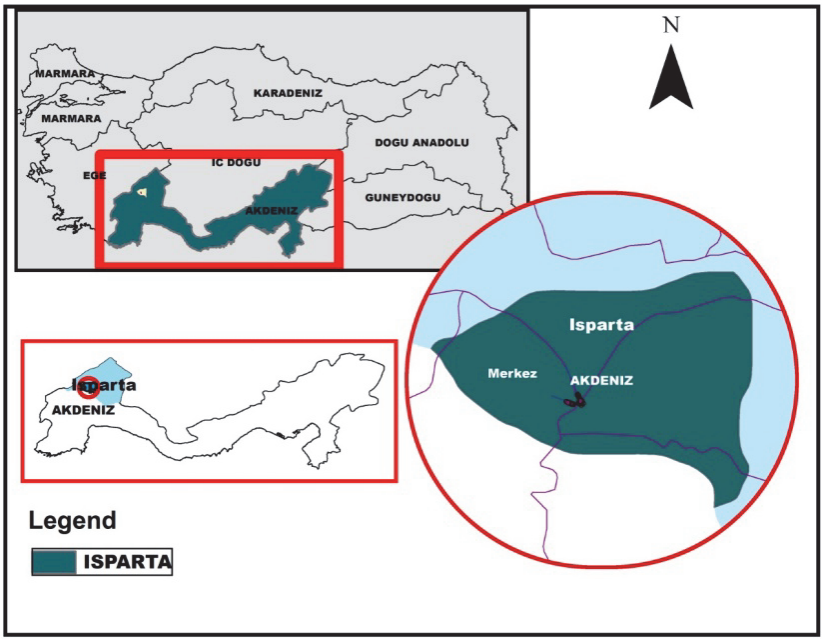

Figure 4. Geographical location of Isparta in Turkey (by the Authors, 2019).

The lay-out of the city has displayed a shift from the monocentric model towards the sectoral model described by Hoyt (1939) as the university, industrial enterprises, the airport and new housing areas have developed in different peripheral locations along the main axis **(Figure 5).** The city centre is a space of human proportions with historical roots used jointly by the inhabitants of the city, immigrants and people from the rural areas.

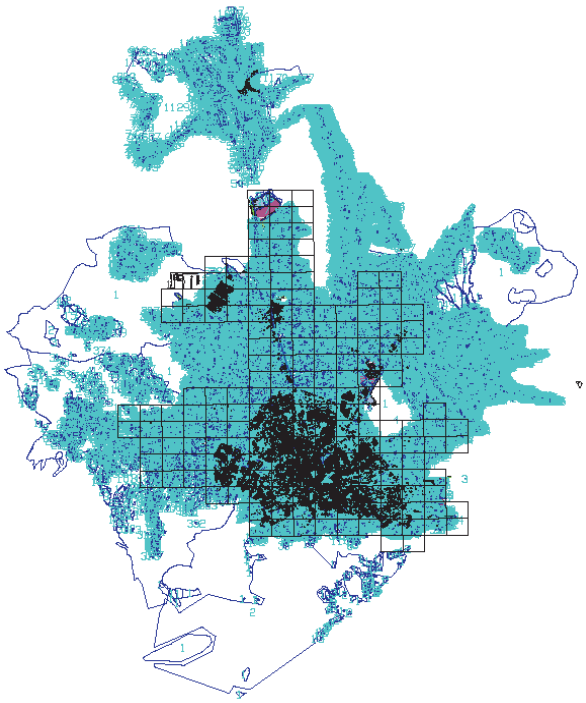

Figure 5. Isparta Development Master Plan (decreased from1/5000 scale) (Source: Isparta Municipality, 2019).

4.1. Findings of the Study

The transportation networks in the city of Isparta consist of three (3) elements: the pedestrian paths and sidewalks, the bicycle lanes and the roads for motor vehicles. The total length of the bicycle lanes was 9.9km when first constructed. The designated/protected bicycle routes which are now closed **(Figure 6)** have a total length of 7.4km, starting from Gölcük and continuing along Sinan Cami Caddesi, Cumhuriyet Caddesi and İstanbul Caddesi **(Table 1)**. The lane on the route towards Süleyman Demirel University and the Isparta Applied Sciences University is still functioning.

Traffic roads in Isparta are generally ranging from 15m to 50m wide **(Table 1)**. It is technically possible to create a bicycle lane (1.2m wide) in each direction. With a bicycle ownership percentage of 45.1% for individuals and 76.6% for households (see below), Isparta already has a strong cycling and motorcycling tradition (Akyokuş, Feb. 2018).

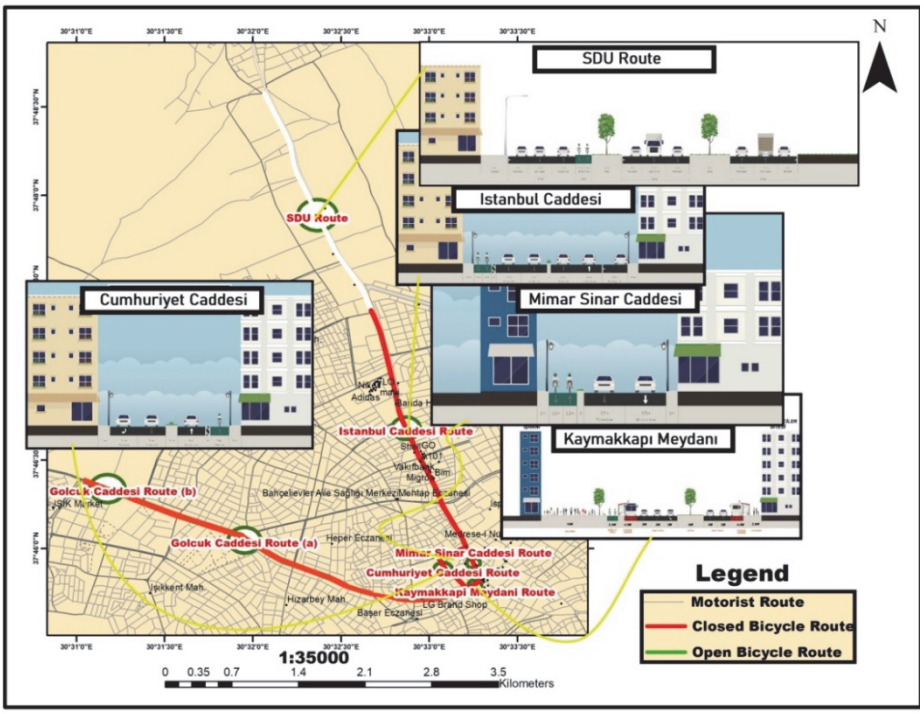

Figure 6. Isparta Cycling Routes, 2018 (Source: Field Survey, 2018).

Table 1. Isparta Cycle Route Lanes (Source: Field Survey, 2018).

ROUTES	DESCRIPTION	CURRENT STATUS	LENGTH (km)	WIDTH OF ROAD (m)
SDU Route	Two-way route	Open	2.5	50
Istanbul Caddesi Route	Two-way route	Closed	2.5	35
Mimar Sinan Caddesi Route	Two-way route	Closed	0.5	15
Kaymakkapı Meydanı Route	Two-way route	Closed	0.2	18
Cumhuriyet Caddesi Route	Two-way route	Closed	0.7	15
Gölcük Caddesi – Route (a)*	One-way (two sides)	Closed	2.7	15
Gölcük Caddesi - Route (b)*	One-way (one side)	Closed	0.8	15

* The Gölcük Caddesi route is in two (2) parts: (a) single lane starting from the city center to the fringe subsequently continues as (b) a two-directional lane from the fringe along Gölcük Tabiat road).

The study identified and questioned two major interests: public and private interests: The public interest calls for a smart and sustainable transportation system to make the city livable. The private interests include interests such as

those of shop owners and politicians. The political interest also focuses on winning support from affluent people in the city who do not only support the closure of the bicycle lanes but are also in favor of expanding the existing road network for motorized transport in the city – a policy which was later prioritized by the new mayor elected from the opposing party in 2019.

4.1.1. Bicycle ownership

Table 2 shows the levels of bicycle ownership among the general public. Among individuals, 45.1% own bicycles. Among the individuals' families, there was at least one bicycle in 76.8% to of families: 34.1% of families owned one bicycle, 28% two bicycles, 9.8%, three bicycles and 4.9% four or more bicycles.

Table 2. Bicycle Ownership among the General Public (Source: Field Survey, 2018).

INDIVIDUAL BICYCLE OWNERSHIP			NO. OF BICYCLES OWNED BY ALL FAMILY MEMBERS		
	No. of respondents	Percentage (%)		No. of respondents	Percentage (%)
YES	37	45.1	ONE	28	34.1
NO	45	54.9	TWO	23	28.0
TOTAL	82	100.0	THREE	8	9.8
			FOUR OR MORE	4	4.9
			NONE	19	23.2
			TOTAL	82	100.0

4.1.2. Trips made by the cyclists

The types of journeys made were classified as trips to work, recreational trips, shopping trips and trips for other purposes **(Table 3).** Out of 32.9% of the respondents of the survey conducted on the general public on the usage acceptability of cycling cycle for all kinds of journey. On the other side, 2.4%, 22.0% and 4.9% of respondents used bicycles solely for travelling to work, recreational activities and shopping trips respectively. The remaining 37.8% of respondents were those who did not own a bicycle.

4.1.3. Impact of the closure of bicycle lanes on cycling in the city

Prior to the closure, the availability of designated bicycle routes contributed to the use of bicycles in the city. Of the cyclists belonging to the bicycle advocacy group surveyed, 50% stated that they used the route both because it gave them a direct, unobstructed and rapid route to their varying destinations and because

it protected them from friction with motorists. Another 26.2% selected only the option related to protection from friction with motorists while 16.7% cited only the fast route factor. The rest cited other reasons (4.8%) or have no particular reason (2.4%) **(Table 4)**.

Table 3. Trips Made by Bicycle among the General Public (Source: Field Survey, 2018).

	No. of Respondents	Percentage (%)
JOURNEYS TO WORK	2	2.4
RECREATIONAL ACTIVITIES	18	22.0
SHOPPING TRIPS	4	4.9
ALL OF THE ABOVE	27	32.9
NONE	31	37.8
TOTAL	82	100.0

Table 4. Reasons stated by Bicycle Advocacy Group Members for using Bicycle Lanes (Source: Field Survey, 2018).

	No. of Respondents	Percentage (%)
DIRECT, FAST ROUTE	7	16.7
PROTECTION	11	26.2
BOTH OF THE ABOVE	21	50.0
NO REASON GIVEN	1	2.4
OTHER REASONS	2	4.8
TOTAL	42	100.0

Table 5. Frequency of Cycling among the General Public after the Closure of the Bicycle Route (Source: Field Survey, 2018).

	No. of respondents	Percentage (%)
NOT VERY OFTEN	31	37.8
OFTEN	14	17.1
AVERAGE	6	7.3
OFTEN	2	2.4
NOT AT ALL	29	35.4
TOTAL	82	100.0

The closure of the bicycle route was found to have caused a setback to cycling in the city, as 54.9% of the general public stated that they no longer went out on their bikes **(Table 5).** Separately, 73.8% of the bicycle advocacy group members and 46.3% of the general public stated that the closure of the bicycle lanes had affected the number of journeys they made by bike **(Table 6).** The percentage rates by which cycle journeys differentiated are shown in **Table 7**.

Table 6. Impact of the Bicycle Route Closure on the Frequency of Cycling (Source: Field Survey, 2018).

	GENERAL PUBLIC		**BICYCLE ADVOCACY GROUP**	
	No. of respondents	Percentage (%)	No. of respondents	Percentage (%)
YES	38	46.3	31	73.8
NO	15	18.3	11	26.2
NO REPLY	29	35.4	0	0
TOTAL	82	100.0	42	100.0

Table 7. Number of Journeys Made per Day before and after the Closure of the Bicycle Route (Source: Field Survey, 2018).

	GENERAL PUBLIC				BICYCLE ADVOCACY GROUP			
	BEFORE		AFTER		BEFORE		AFTER	
	No. of respondents	Percentage (%)	No. of respondents	Percentage (%)	No. of respondents	Percentage (%)	No. of respondents	Percentage (%)
1-2	21	25.6	38	46.3	22	52.4	20	47.7
3-4	21	25.6	10	12.2	12	28.6	10	23.8
5-6	6	7.3	3	3.7	3	7.1	4	9.5
7 OR MORE	4	4.9	1	1.2	3	7.1	1	2.4
NONE	30	36.6	30	36.6	4	9.5	7	19.1
TOTAL	82	100.0	82	100.0	42	100.0	42	100.0

4.2. Conflicting interests

The reason and motive behind the construction and closing of the bicycle routes in Isparta is a result of conflicting interests over space and time. The Isparta

bicycle route's story evolved over three phases within two different political dispensations: First is the pre-construction and construction phase when the municipality deem it to fit to give back the city to the pedestrians and cyclists (a thought towards sustainability). This is a decision attested to by the Isparta Municipality Department of Development and Urbanisation as part of the Municipality's commitment in directing her development towards sustainable urban growth and smart city. This saw to the construction of Isparta bicycle route along major shopping strips of the city in 2016. The second phase was when constructed bicycle lane clashed with private interests, received backlash from the road-side shop owners, evolved into a gulf dividing interests between road side shop owners, and dismantled. Opposing party politicians and several shop owners protested against the bicycle lanes on the notion that they affect their daily returns and a conflict have risen between them and the public who advocated for the route to be preserve.

The third phase is the closure period when the bicycle route facilities in the city were dismantled to pave way for on-street parking and monetizing. The post-closure period witnessed a misuse of the on-street parking as traffic volume increased. A representative from the Traffic Department added that motorists misused the on-street parking and parked cars side by side occupying two lanes. And, this has affected the traffic flow despite the availability of municipality's designated car parks in the close surrounding.

In the post-closure period, the political party that constructed and dismantled the lanes have lost the Municipal election in 2019. The second political thought continued from where its predecessor stopped and in the quest to proffer solution to the traffic problem resulting from over-occupation of the road, introduced the monetization of the on-street parking. This is costlier than using the Municipality's indoor car parks. This is also the force that organized and put pressure for the dismantling of bicycle lanes in the year 2018.

In this respect, the major stakeholders representing main interest groups were assessed. The actors involved are; (i) the roadside businesses/shop owners and partially the politicians, (ii) the public (representing general perceptions) and (iii) the bicycle advocacy group (advocating in the interests of frequent cyclists), (iv) Isparta Municipality Department of Development and Urbanization, and (v) Isparta Chamber of Commerce. The interests of these groups can be classified as shown in **Chart 1**.

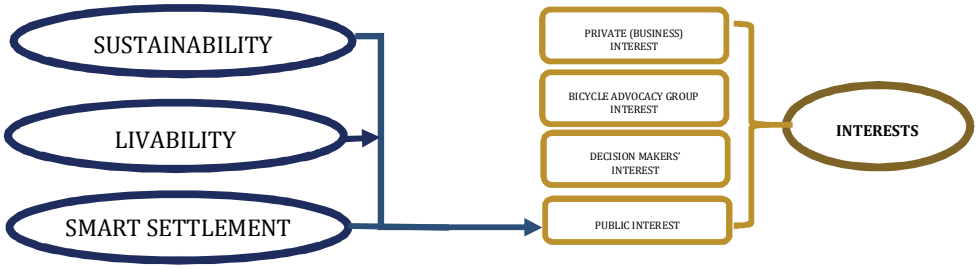

Chart 1. Interest Categorization (by the Authors, 2019).

Private interests are composed of interests of road-side shop owners who are disturbed with an uncertainty in the economic returns and of a change in the usual road structure will bring and the politicians, who mounted pressure for the closure of the bicycle route and the expansion of roads for motorized vehicles. They prioritized their economic needs above other things and the public interest. They also asserted that road-side car parks remain an integral part for an economically stable city and that the construction of the bicycle lane restrains customers/automobile owners from accessing their shops or offices. The claim is here; ''instead of their customers to easily access their shops, they left for other alternative commercial areas or places where they can easily park their vehicle and buy what they need'' (Interviews with Isparta Chamber of Commerce, 2020; Department of Development and Urbanization, Isparta Municipality, 2018).

High number of crashes of motorists with pedestrians is a claim raised by the head of the Municipality (Hürriyet, 06.07.2018). The head of the municipality states that the routes are constructed by the will of the public and can be closed as there is a request from some shop owners (Hürriyet, 22.02.2018). Two opposing provincial party directors and a congressman's pressure can be observed during the second phase.

According to an interview with the Isparta Municipality Department of Development and Urbanization representative, the municipality in her quest to find holistic solution to the above mentioned issue, conducted a survey showing 70-80% of the shop owners demanding for the closure of the bicycle route (This is against 53.8% found in the survey conducted by the authors in 2018 presented in **Table 12**). It is this report that the municipality acted upon and closed some parts of the bicycle routes. However, other stakeholders like the public and the Bicycle Advocacy Group weren't consulted while it is prepared (Isparta Development and Urbanization, 2018, 2019).

In tandem with this, and according to the results of the survey conducted with roadside businesses (shops), to examine and validate the impact of bicycle route

closure on daily earnings of their business, only 26.9% shop owners along the lanes dismantled reported an increase in their daily earning after the closure of the bicycle route. A decrease in daily earnings have been stated by 15.4% of the respondents and 57.4% reported no change **(Table 8).**

Table 8. Change in Daily Earnings of Roadside Businesses/Shop owners after the Closure of the Bicycle Route (Source: Field Survey, 2018).

	No. of respondents	Percentage (%)
INCREASED EARNINGS	7	26.9
NO/NEGLIBLE CHANGE	15	57.7
DECREASED EARNINGS	4	15.4
TOTAL	26	100.0

While the shop owners along the bicycle route complained and protested for bicycle route closure, 22% of shop owners along traffic routes with no bicycle lanes constructed ever before supported their colleagues in closure of the bicycle route. Majority of the shop owners existing on these routes without bicycle lanes opined that bicycle lanes had no to negligible impact on their economic returns, as there hasn't been loss in their economic returns across the years of construction, presence and closure of bicycle routes **(Tables 9-10)**.

Table 9. Change in Daily Earnings of Roadside Businesses (in areas without bicycle routes) after the Closure of the Bicycle Route (Source: Field Survey, 2020).

	No. of respondents	Percentage (%)
INCREASED EARNINGS	2	10
NO/NEGLIBLE CHANGE	17	85
DECREASED EARNINGS	1	5
TOTAL	20	100

Table 10 . Perception of Shop owners/Shopkeepers in areas without bicycle routes for the closure of bicycle routes (Source: Field Survey, 2020).

	No. of respondents	Percentage (%)
Yes / Approved	2	10
Not Necessary	2	10
No / Not Approved	16	80
	20	100

Though there exist no detailed data on the economic status of the Isparta shopping strips, a wider picture, reflecting the yearly economic returns of Isparta Municipality shown that there is steady growth in the economic returns with or without bicycle route in between 2016-2018 **(Table 11)**.

Table 11. Isparta regional statistics on industry and services and Gross Domestic Product (Source: TUIK, 2020).

Year	Industry (1000 TRY)	Services (1000 TRY)	GDP (1000 TRY)	Economic Growth Percentage (%)	
2018	2937777	8495564	15284266	18.49039099	from 2017 to 2018
2017	2486951	6924701	12848446	12.31193953	from 2016 to 2017
2016	2067137	6072136	11227125	0	0

Against the anti-bicycle lane advocators are the Bicycle Advocacy Group (Isparta Bicycle Federation) and the general public whose interests and advocacy are similar. They demand the preservation, opening or re-opening of the bicycle lanes. They supported the preference of pedestranization over the acceptance of automobiles in the city center citing it as civilization and a sign of development and a prerequisite of sustainability.

Table 12 shows that 100% of the respondent (Bicycle Advocacy group (Isparta Bisiklet Topluluğu)) disapproved the closure of the bicycle route in the city center. The Bicycle Advocacy group have registered their displeasure in a visit to the Municipality council and held a series of media campaigns (Interview with Aydin Akyokus, 2018). A common example of such media campaign is the "Arabadan in, Bisiklete bin'' in 2017 (www.bomba32.com). **Table 12** also presents a strong similarity between the interests of the bicycle advocacy group and the general public. As part of the survey all three groups were asked if they approve the closure of the bicycle lanes or not. None of the members of these groups approved the closure of the bicycle routes. On the other hand, 53.8% of the shop owners approved the closure of the routes.

Table 12. Opinions on the Closure of Bicycle Routes (Source: Field Survey, 2018).

	ROADSIDE BUSINESS/ SHOP OWNERS		PUBLIC		BICYCLE ADVOCACY GROUP	
	No. of respondents	Percentage (%)	No. of respondents	Percentage (%)	No. of respondents	Percentage (%)
APPROVAL OF CLOSURE	14	53.8	0	0	0	0
DISAPPROVAL OF CLOSURE	12	46.2	82	100.0	42	100.0
TOTAL	26	100.0	82	100.0	42	100.0

Below is a summary of how the results of the interest assessment are compared with the key elements of the concepts of livable cities, smart settlements, and sustainable settlements **(Table 13)**:

Table 13. Interest Assessment (by the Authors, 2019).

CONCEPT		PRIVATE (BUSINESS) INTEREST		POLITICAL INTEREST		PUBLIC INTEREST	
		Yes	No	Yes	No	Yes	No
LIVABILITY	Accessibility and sustainable mobility		★		★	★	
	Diverse and resilient local economy	★				★	
	Vibrant public space		★		★	★	
	Affordability					★	
SMART SETTLEMENT	Smart transportation		★		★	★	
SUSTAINABILITY	Economic	★			★	★	
	Ecological		★		★	★	
	Human	★		★		★	

5. CONCLUSION

Agenda 2030 has strengthened the momentum towards 'Sustainability' and 'Sustainable Development' – the concepts which have been initiated 33 years ago in the Brundtland Report (1987), "Our Common Future". The quest for sustainable and smart cities is a global call which has been gaining ground. Countries and governments have been orienting their activities towards this call. In order to make cities sustainable, their current situations must be ascertained, their development and planning visions, aims and objectives must be defined, and strategies and action plans must be developed.

In the case of Isparta, the creation of a bicycle route through the addition of a bicycle lane to some of the city roads sparked disputes and debates among cyclists, shop owners, drivers and ultimately decision makers (i.e., planners, politicians and municipality representatives). The route was seen by some interest groups as a cause of commercial loss and of a decline in the economic dimensions of the city. Dekoster and Schollaert (1999) have debunked this way of thinking and shown that the usual equation "vitality of commercial enterprises = access by car" was far from being borne out by the facts. Alison (2008)'s findings also challenged the assumption that placing car park as an integral component of economically successful in urban shopping strip. This research also showed that the bicycle lanes are not the cause of commercial losses, but are needed by the public and can achieve sustainability while saving lives.

The study also affirmed this, revealing that the act of closure made low to no serious contribution to the city economy as the closure only led to an increase in the daily earnings of 26.9% of the respondent in an economic environment where there are no sudden fluctuations or crises. A finding that can be linked to an early review by Rostow (1991) as recorded by Walter Hook (1960) that vast economic development experienced by cities in the United States in the era following World War II was a result of their use and preference for automobiles[1]. In this way, he implied that the use of non-motorized modes of transport such as bicycles would result in a lower level of economic development.

However, the fact that 15.4% of the shop owners placed on the routes dismantled in our survey reported decline in their daily earnings and a very low number of shop owners on roads where there was no lanes before had economic losses due to the bicycle route closure contradicts the views of the decision makers and

[1] Hook (1960) has given the example of the non-motorized post World-War II transport system in Japan, which in the long run appears to have had far more impressive achievements and contributed to a faster rate of economic growth than the system in the United States.

otherwise supported the position of Hook (1960) rather than that of Rostow (1991). Hook (1960) stated that associating economic backwardness with the use of non-motorized vehicles is a fallacy. The loss of earnings experienced by some of the roadside shop owners in the phase two constitutes insufficient proof of the proposition that closing a bicycle route improves the economic returns in general. City policy and decision makers are proposed to adopt an interest assessment policy including all actors and their thoughts before carrying out any action affecting progress towards a smart settlement.

The present study on the impact of the removal of the bicycle lanes in Isparta concludes that Isparta Municipality has forgone livability for market interests (returns) shaped by a certain section of private interests. This is in line with Schutte's (2015) submission that closure of the bicycle route reduces the bikeability or cyclability index of the city. The later introduction or monetization of the closed bicycle route as on-street parking space for automobiles further confirmed that the closure decision isn't just for an easy access of motorists to road-side shops as professed by the private interests (business owners and local authority). This also affirmed of Alison (2008)'s submission that local government's emphasis on the importance of short time parking against the academics emphasis on pedestrianisation and making the city sustainable and smart.

It shows that Isparta Municipality is currently unable to prioritize the requirements of livability, sustainability and a smart settlement when faced with external interests, or that it is incapable of putting interests in an order of preference that favors the development of a healthier livable city. Likewise, the study shows that the interests of all groups should receive adequate consideration in a bottom-up participatory planning approach.

Promoting cycling as a means of transportation is a step taken in the right direction in the quest for a smart city. The closure or removal of the related facilities is in conflict with the promotion of cycling and discourages the use of the bicycle. Efforts should be made to ensure that the decision maker's primary concern is to make the city livable regardless of other external factors. The interest assessment concerning the preference for smart, sustainable and livable settlements revealed that the public interest optimally satisfied the call for a smart sustainable and livable settlement while the other interests concerned are private. This tends to validate Rull's (2011) statement contradictory interests of sustainable development and capitalism. The call for a sustainable and livable city is beyond debate and should not be compromised for private interests. At least all interests must be carefully studied.

Ironically, the decision came at a time when the central authority responsible for urbanization in Turkey was publishing reports on sustainable and smart cities. In

addition, legal arrangements have been made in favor of the entry of the bicycle into urban life and space. The Regulation on the Design and Construction of Bicycle Lanes, Bicycle Stations and Bicycle Parking Places published by the Ministry of Environment and Urbanization spells out the physical specifications for bicycle lanes and makes it mandatory for development plans for networks to be made within five years, including for university campuses. An amendment made to the Development Act in 2018 makes it obligatory for all new settlement plans to be drawn up in the country from 1 January 2019 onwards to include bicycle lanes and parking stations for use as a means of transport. However, the regulation does not refer to the re-introduction of lanes that have been abolished or to penalties for local administrations which do not construct the networks within the envisaged time frame.

The Isparta Municipality has announced in the year 2020 the extension of the route coming from the center along the Ankara road towards the university. This is a route where there is no commercial concentration and no oppositions may raise.

Just as Amsterdam sticks to the long-term goal to achieving sustainability in transportation, which according to Schutte (2015) involves continual installation of bicycle friendly infrastructure, denying complacency or giving itself to interest-influenced rhetoric during its implementation's short run similar to what Isparta municipality now face, the Isparta Municipality should embrace cycling as the best alternative means of transportation and provide appropriate facilities. Instead of closing bicycle lanes or converting them to on-street parking space in the city center, the centers must be reachable for all.

Miller (2007)'s validation; that adding parking is not usually best solution to a growing trend of automobile commuters, a reaffirmation of Banfield's (1997) that availability of car space or widening of roads does increase the use of automobile should be understood. Policies encouraging increase in the use of alternative modes for commuting and seeking to make the city bicycle-friendly by encouraging the use of bicycles and giving them priority in the urban transport system should be considered. Instead of closing bicycle route, Isparta city should be given the time to patiently identify and inculcate bicycling as a social norm. In the same vein, car parking spaces should also be progressively removed and gradually should be replaced with cycling routes. Highlighting the health, socio-economic and environmental benefits of cycling and reopening the bicycle lanes would also re-emphasize the government's commitments to sustainability in the context of Agenda 2030.

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SESSION 7B

Theme: Architectural/Urban Design, Art and Aesthetics

15 October 2020 Thursday, 09.30 – 11.00

Chairperson: Prof. Dr. Kemal Reha KAVAS

Nazende YILMAZ
Hermeneutics of Dome Space in Ottoman Architecture

Gülçin KAHRAMAN, Zeliha Büşra ERYİĞİT, Türkan HARMANBAŞI
Top Covering Development of Konya Mosques in Anatolian Seljuk and Ottoman Period

Ayça ARSLAN
An Investigation into Spatial Dome Structures of Mimar Sinan Projects

Serhat ANİKTAR, Şahika ÖZDEMİR, Ahmet KURNAZ
Design Typologies of Mosques and Madrasas Belonging to Seljuk and Ottoman Civilizations in Konya

HERMENEUTICS OF DOME SPACE IN OTTOMAN ARCHITECTURE

Nazende YILMAZ*

ABSTRACT

Needs and beliefs are the leading elements of architecture. A dome giving a building a stupendous appearance has a stronger effect on people compared to other covering systems when considered in terms of inner volume. Due to this strong impression, dome has frequently been preferred as the top cover of religious buildings throughout history. Examining the background of this preference based on religious tradition can reveal the purpose of building a dome and what it stands for in society. For this reason, primarily the symbolism of dome in the world will be discussed and the representation and hermeneutic understandings of dome in Ottoman culture will be addressed through architectural, literary and religious texts expressing ontological perception in the study.

The development of dome structure in Islamic architecture can be traced starting from the Great Seljuk constructions. The notion of a central dome gained prevalence in the early Ottoman period before the conquest of Istanbul. The dome of the Hagia Sophia was a goal to be accomplished for Mimar Sinan (Architect Sinan), who carried dome architecture to its zenith. While this goal is often perceived as the ideal of building the largest dome covering a large rectangular space, it has the idea of making a higher version of a symbolic volume behind it. In order to address this subject, it is necessary to evaluate the architectural texts describing the symbolism of dome and its hierarchy within the structure. Starting from the symbolic expressions and analogies in these texts, examining the religious ontological texts which will explain the subject in more detail will allow for a better hermeneutic understanding of the dome in Ottoman culture.

Keywords: Ottoman Architecture, Dome Space, Hermeneutics, Architectural Symbolism, Ontology

1. INTRODUCTION

In human history, domes appear as forms of cover that endow buildings with iconic superiority and beautify the space where they stand, in proportion to their

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size. While it can be the focal point in the silhouette of the structure from the outer façade, it constitutes a central, upward-directional volume that establishes continuity in the interior. As an architectural top cover element, the dome is a matter addressed in terms of different forms and construction techniques. There are also some remarkable studies on the symbolism of the dome. In this study, the dome will be examined through a reading of philosophical and literary texts that describe the symbolic meaning it adds to the structure. First, the question of "what is the hermeneutics of architecture?" will be answered. In this study, the dome hermeneutics of buildings belonging to different periods and beliefs in the historical process will be evaluated while discussing the hermeneutics of the dome in the Renaissance, one of whose contemporaries was the classical Ottoman culture. Finally, the hermeneutics of the Ottoman dome -- the main topic of this study -- will be in the limelight.

First of all, putting forward the common symbolism of the central dome form in the structures of different beliefs throughout history is a necessary step to be able to do a hermeneutic reading. When we look at the studies on the symbolism of dome, we[1] first encounter the comments made by the representatives of the traditionalist/perennialist school. The first was an article by Ananda K. Coomaraswamy, one of the founding figures of this school. The author explains the symbolic meaning of the dome mainly through Hindu ontology, while also giving similar accounts of other beliefs. René Guenon published in 1962 a book titled Symboles fondamentaux de la Science sacree (Fundamental Symbols; The Universal Language of Sacred Science) and covered this topic in a chapter titled 'Dome Symbolism'. Titus Burckhardt wrote on the same subject in Sacred Art in East and West (Coomaraswamy, 1938) (Burckhardt, 2001).

The first work in the field of Art History belongs to Karl Lehmann (Lehmann, 1945). Lehmann, in his work entitled 'The Dome of Heaven', explains how the dome in the Christian European culture evolved as a system of shelter reflecting the cosmic structure of the skies, starting with pagan structures. Alexander Coburn Soper, with an aim to expand this work towards Eastern culture, wrote an article entitled 'The Dome of Heaven in Asia' (Soper, 1947). Soper states that the idea of a celestial dome passed from the West to Asian cultures from the Hellenistic period on. Although the direction of the interaction route followed by Soper does not correspond to today's findings, it is remarkable in that it reveals examples of the sky-like dome in Asia. Earl Baldwin Smith's research on the dome has detailed the symbolism of the dome in different civilizations. (Smith, 1971)

[1] Traditionalism/Perennialism: is a perspective in spirituality that views all of the world's religious traditions as sharing a single, metaphysical truth or origin from which all esoteric and exoteric knowledge and doctrine has grown.

Oleg Grabar dealt with the sky-like dome in Islamic architecture (Grabar, From Dome of Heaven to Pleasure Dome, 1990). Samer Akkach's work on cosmology and architectural relations in Islam draws attention to the major texts in order to understand the hermeneutics of Islamic architecture (Akkach, 2005). The works of Semra Ögel and Ali Uzay Heper explains the symbolic background of the Seljuk and Ottoman structures.

Since the study will be on hermeneutics, while describing the symbolism of the dome it will be necessary to examine how these symbols appear in the texts from the era in question. The reason why the Ottoman dome hermeneutics' counterparts in different civilizations are widely mentioned in this text is an attempt to "look at it from the perspective of vertical history. There is a human history that is interconnected and advances in a constant interaction. It would be incomplete to evaluate a cultural fact that is obvious in originality and freedom without relating to different times and civilizations.

2. HERMENEUTICS

In this section, the concepts 'Hermes', 'Hermetic Knowledge' and 'Hermeneutic' will be primarily explained. 'Hermetic Knowledge' is a concept that should be explained at this point because of its relation to the texts evaluated in the 'Hermeneutics of the Dome'. Then the question of how to handle the 'Hermeneutics of Architecture' will be answered and throughout history the 'Hermeneutics of the Dome' will be addressed through examples from different cultures and the subject will be addressed.

2.1. Hermeticism and Hermeneutics

Before moving on to the hermeneutics of architecture, it is necessary to explain the concept of hermeneutics. For this reason, it would be adequate to first define the concepts of 'Hermes' and 'Hermetic' and 'Hermetic Corpus'. The word Hermeneutic is Greek and originates from the name of the Greek god Hermes. In Greek mythology, Hermes is known as the son of Zeus and Maia, the messenger, the protector of shepherds, travelers, the god of secret agreements, sorcerers and commerce (Hançerlioğlu, 2004). The roman pantheon is equivalent to Mercury. It means 'knower' in Syriac. The Egyptian equivalent is Toth. It appears as 'Hanoch' or 'Uhnuh' in Hebrew. It takes the name 'Husheng' in Iran. In particular, 'Hermes Trismegisthos' or 'three times the great Hermes' was seen as a prophet. While Muslim scholars identify it with the Prophet Idris, it is said to be 'Buddha' in the Indian tradition. In any case, this figure is known as the conveyer of the divine message to humanity, the founder of knowledge. The 'Hermeticism' derived from this is the name of the school consisting of the unification of

Egyptian and Greek traditions in Alexandria. (Kılıç, Hermesler Hermesi; İslam Kaynakları Işığında Hermes ve Hermetik Düşünce, 2017)

Hermetic texts are a corpus of seventeen books written from the third century B.C. The Hermetic Corpus includes the texts written in Greek *Corpus Hermeticum* and Stobaios' *Anthologion,* in Latin *Asclepius,* and in Coptic *Nag Hammadi* (Kılıç, Hermesler Hermesi; İslam Kaynakları Işığında Hermes ve Hermetik Düşünce, 2017). In these books, the process of God's creating the cosmos and man is explained in detail. It is a narrative that is similar to kabbalist and Sufi (Islam) texts and the creation mythologies of many cultures. It describes the initiation stages that man must undergo in order to reach the level of god. Renaissance intellectuals who formed the Christian Kabbalah and interpreted the Hermetic texts had narratives about divinization and hence producing art (Yılmaz, 2019). The hermeneutics of the dome discussed in this study also lead us to the ontological equivalent of the dome in the hermetic text. This element of structure, which is described as a sky dome in many cultures, is identified with cosmic skies in hermetic ontology. In ancient Greece, Hermes established the link between earth and the sky, and the interpreter of the above: hermesneuta led to the emergence of the so-called "Hermeneutic" interpretation (Kılıç, "Ebu'l-Hukemâ": Hikmetin Atası, Hermetik Felsefenin İslâm Düşünce Tarihinden Görünümü, 1998).

Suhrawardī, the founder of the School of Ishrāqiyyah (Enlightenment) in Islamic mysticism, is an important figure that introduced the hermetic approach into Sufism. Muhyiddin ibn al-Arabi and his followers have integrated the *ishrāqī* philosophy with the philosophy of *wahdat al wujūd* (Kaya, 2001). There is an ontological concept that can be called Hermetic and Neo-Platonic in the Ibn Arabi school, also called the Akbari Tradition. When we consider that the Ottoman madrasah system was established by a devotee of this school, Dāvūd al-Kayserî, the perception of creation and cosmology in Ottoman culture would be better understood. Naturally, this perception did not remain one that exclusively belonged to scholars; Sufi tradition, particularly through such works as Muhammadiyah and Mi'rajiyah, planted this conception of creation in the layperson's mind as well. This approach, which Sufism claims in order to interpret the religion in depth, is a hermeneutic philosophy.

2.2. Hermeneutics of Architecture

Hans-Georg Gadamer explains the stages of understanding in *Truth and Method*. A sequence that begins with the experience of the work of art is finished with the interpretation of historical texts. During this dialogue, it is technically impossible for the observer to be free of prejudice. One should be able to determine the

point where one will stand, recognizing their own history, existence and prejudices, and make interpretations accordingly (Gadamer, 1975).

Selen Bahriye Morkoç examined the hermeneutics of Ottoman Architecture through architectural treatises. As a first step, she discussed how to make the hermeneutics of architecture. Although architecture is considered to be the most static form, the architectural experience itself contains dynamism. Considering different angles, directions, interior and exterior, it becomes an element that accompanies, limits and directs life. Accordingly, studying the hermeneutics of architecture, not only architectural texts but also texts on human cultural life will be required. The architectural work emerges in an ongoing style that connects the past and the future times. It does not only reflect the moment it appeared. It carries the traces of the past to future times (Morkoç, 2006).

In architecture, two methods can be used to make an organization based on time: synchronic and diachronic. Synchronic refers to comparisons made in the same time period, and diachronic refers to comparing the same or different cultural works from different periods. Since both methods may have impasses, Lindsay Jones recommends evaluating four factors together to make a sound hermeneutic assessment of comparative architecture:

1) In indigenous (ritual) experiences of architecture; 2) in academic interpretations of single ritual-architectural situations; 3) in synchronic, morphologic comparisons of religious architectures from different contexts; and 4) in diachronic, historical comparisons of the various architectural events in which a particular work is involved over (and in) time, that is in the composition of comparative ritual-architectural histories. (Jones, 2000)

2.3. Hermeneutics of the Dome Throughout History

If we look at the history of the dome, informed by the history of religions, we can also begin to do a hermeneutic reading. Josef Strzygowski states that the origin of dome architecture is the domed houses of Mesopotamia and the tombs in Iran and Anatolia. He thinks that the starting point of these architectural structures is the form of a Turkish tent seen in Central Asia and Asia Minor. The form of this structure, called “earth house” or “Yurt Tent”, represents the sky-dome in Turkish culture (Mülayim, 2002). The hole at the top of the tent is said to represent the cosmic mast (Eliade, Patterns in Comparative Religion, 1958).

Mircae Eliade explains that central symbolism is similar in every belief. A vertical line, also called axis mundi, is the center of the world. This central line points to the sacred mountain, which is believed to be the connection of the underworld, earth and the celestial realms, the holy city and the sacred temple on it (Eliade,

Patterns in Comparative Religion, 1958). The fact that the upper cover of the temples is similar to a dome or dome is the result of the perception of the celestial world as a dome from the surface of the earth. From the outer façade, it resembles a sacred mountain. Examples of this understanding are stupas in India with a central plan, pagodas in Far East Asia and other central domed temples. Coomaraswamy also describes the symbolism of the dome in Hindu and Buddhist buildings, while mentioning the universal axle and the realms on the upper and lower planes. The foundation stones of the structure are created by piling the point that corresponds to the head of the snake, which is believed to carry the earth. The column is the plane that unites the worlds, i.e. axis mundi. Architectural action, on the other hand, consists of actions that essentially repeat creation in the Buddhist Stupa or residential structure, and space defines six-way creation. (Coomaraswamy, The Door in the Sky: Coomaraswamy on Myth and Meaning, 1997)

The cosmic tree on the Axis mundi line represents the line of communication between the celestial realms above and the underground worlds below. In Central and North Asian mythology, the seven or nine branches of the cosmic tree symbolize the seven or nine layers of the skies. The shaman or priest who communicates with the lower and upper worlds leads the religious ceremony on this axle (Eliade, Images and Symbols; Studies in Religious Symbolism, 1952). This central cosmic axle is encountered in the concepts of leader (imam) and pole (qutub) in the Ihwān-ı Safa and The Karmatis, New Pythagoreans and The Sabiîs' prayers and in the pleas for help of the ancient Hermetic and gnostic cultures and in the ishraqi thought in Islam (Kaya, 2001). The aforementioned schools are esoteric currents, and in Sufism, which is the theosophical thought of Islam, there is a great emphasis on the esoteric teaching, which cannot be achieved by ordinary people or through the senses (Gül, 2017).

Lehmann examined the origin of the iconographic template in Christian domes in Etruscan and Hellenistic examples. As a result of this investigation, we see that the pagan and astrological elements that formed the celestial dome template in civil and public architectural structures at different periods of Rome were continued in a similar way with some identity changes after Christianization. For example, while the Pantocrator figure at the center of the dome was Jupiter in Rome, in Christianity it became the Cosmocrator or Christ Pantocrator. While the figures in the four corners of the dome were sirens[2] in the Etruscans, in the Byzantine dome pendentives they change into the four evangelists (Lehmann, 1945). It is important to remember that the evangelists are depicted in a similar

[2] Sirens were known in archaic Etruria as heavenly demons of astrological character.

way to mythological figures. Mostly all four are depicted with wings. Each has a different attribute, which corresponds to four elements and four directions; Matthew is represented by the angel, Marcus is the lion, Lucas is the bull, and John (Saint John) is represented by the Eagle. If we follow the lineage, Christian Rome originated mainly from the pagan Rome. The pagan Rome originated from Greeks, Egyptians and Etruscans. The Etruscan belief system is based on Mesopotamia and perhaps Asia. Lehmann, too, states that Etruscan astrology originated in Mesopotamia. The figure known as Lamassu or lion, bull, eagle and human head and appears as protective figures on castle gates. In Greek cosmology, the Triple-Dragon God Phanes is the equivalent of Cherubim. This winged figure incorporates human, bull, lion and various creatures and can be depicted in different forms (Hall, 2005). As a result, Christian iconography in the dome is essentially like a rearranged version of ancient pagan templates. In general, Lehmann conducted an iconographic analysis evaluating ancient texts and presented the hermeneutic interpretation of the celestial dome as follows:

"In both the pagan and Christian worlds, the manifold visions of the dome of heaven, with their symbolism in canopies, figures, and structural forms, with the projections of heaven on ceilings, often coupled with an actual or supposed opening in the sky, all reflect the basic experience of man in visualizing the physical as well as the transcendental celestial realm. It is evidently because of this ever-increasing tradition of heavenly visions on ceilings that coelum [heaven] became a common term for roof or ceiling in late antique speech." (Lehmann, 1945)

One of the most impressive buildings of the antiquity is the Pantheon temple with a hemisphere dome with a diameter of 43 m. It reflects the arched, domed circular plan of the Etruscan tradition. The window opening located right in the top center, called oculus, represents the sun, the center of the universe. This is the new universal order provided by the empire. The whole structure is a representation of the sphere-shaped cosmos (Akdeniz, 2016). The historian Cassius makes the following remark on the Pantheon, which was built during the reign of Emperor Augustus:

"It has this name, perhaps because it received among the images which decorated it the statues of many gods, including Mars and Venus; but my own opinion of the name is that, because of its vaulted roof, it resembles the heavens." (Cassius, 1917)

The word 'pantheon' was translated into Latin from Greek. It consists of the words 'Pan' meaning 'whole' (all) and 'Theios', meaning 'gods'. In the niches of the rotunda (the cylindrical body of the building bearing the dome), there are

statues of the gods of the Roman pantheon[3]. Renaissance drawings show that inside each crate that forms the caged structure of the dome is a gilded bronze star (Richard G. Tansey, 1997). This, as Cassius said, evokes the skies adorned with stars. Describing Rome in the 4th century, Ammianus Marcellinus said, "the Pantheon like a rounded city-district, vaulted over in lofty". Rome represented the temple of the whole world, and the Pantheon represented the center of Rome in a world where Hadrianus had united the Mediterranean and Europe. At the head of the Roman pantheon, the celestial-god Zeus-Jupiter was represented in the space where the oculus is placed at the center of the dome (MacDonald, 1976). Here, the dome with the oculus is the center axis mundi. The height of the dome is equal to its diameter; that is, the structure contains the perfect sphere representing the cosmos.

As seen in the example of the Pantheon, the form of the dome is based on the cult of the sun as a symbol of the canopy. Its origins can be taken back to the concept of the Sun-God in Egypt. On certain feast days, the Egyptian pharaohs roamed under a baldaquin as a celestial symbol. This tradition was passed on to the ciborium in the Christian tradition (Diez, Bizans Sarayında ve Büyük Türk (Salatin) Camiinde Remiz, 1962). The ciborium on tombs, altars and thrones is a kind of sanctuary that can be found in an open or indoor space. In the early examples, it is a form of a tent bulging in the middle representing the canopy. Assyrian kings and Persian emperors also used this baldaquin structure in ceremonies (Özcan, 2004). The ciborium, which can be found in architecture, miniature painting or liturgical objects in the Byzantine art, is included in its cosmic expression, which gives the title of absolute ruler of the universe to the person or thing under which it is located. In the domes of architecture, it is seen that this symbolism continues (Smith, 1971).

The second largest dome that Rome brought to architectural history was the one of the Hagia Sophia's. After the Nika uprising, emperor Justinian built this church, which was unique at the time, to regain his reputation and represent the power of the Empire. This was the third "Hagia Sofia", which had been a pagan temple first, and later a wooden church with the same name which had been burned down. It was designed by Anthemius of Tralles and mathematician, Isidorus of Miletos, and was completed in 537 during the Justinian period. With many spolio materials such as columns from the Temple of Artemis in Ephesus, the church houses polytheist religions and stones from different regions.

The most striking feature of the structure is its huge dome, which is approximately 32 m in diameter, and its fenestrated drum separating it from the lower

[3] Roman Pantheon: All gods of the Roman belief.

structures. Moving downwards, a transition element that is first used in this structure is pendentive. There are angel figures on the surfaces of each of these four concave elements (pendentives), which transfers the load of the dome to the bottom structures. These four angels are the characters on the pendentives, which are ancient cosmogonic figures. The number 4 is very important in the esoteric sense and has symbolic equivalents in temples. In almost all beliefs, it is possible to see the ontological equivalent of 4. First of all, it is a representation of the four elements in creation (air, water, earth, fire) and four directions on earth. The four angels bearing the arch are known as the angels closest to God, and named Cherubim and Serafim in the Torah and the Bible. The angel on the pendentive is Serafim since it has six wings (Diker, 2016). It was mentioned that the churches were arranged according to Christian iconography, winged figures representing the four evangelists were seen in the corners of the dome or on pendentives. Here, the depictions of angels bearing the throne were selected.



Figure 1. The Four Evanlelists mosaic from the Basilica of San Vitale in Ravenna, Italy.



Figure 2. The Serafim mosaic on the pendentive of Hagia Sophia, Istanbul.



Figure 3. The dome of Hagia Sophia, Istanbul.



Figure 4. An inner illustration of Hagia Sophia before the restoration, The Fossati Album, 1852; Ottoman Archives Library no:6980.

In Islamic literature, there is knowledge of the angels of "Karrūbiyūn" (Cherubim) carrying the throne. It is said that the number of these carriers, which are referred to as "Hamalat al-Arsh" in the verse, is eight (Qur'ān, 69:17). After being converted to a mosque, wooden plates with the names of the four Rightly Guided caliphs i.e. "Khulafā al-Rāshidūn", known as the four pillars of Islam, were hung beneath these four pendentives. Also four more plates were hung on the other corners bearing the names of Allah, Mohammed and his grandsons Hasan and Hussein. While in the original dome, in accordance with the Orthodox tradition, the Christ Pantocrator figure was placed as 'The Ruler of the Universe'. After the conquest of Istanbul in 1453, the center was adorned with the 35th verse of the Surah al-Nūr of the Qur'ān: "God is the light of the heavens and the earth." This verse was also found in the dome in front of the altar (Diker, 2016). Although the use of this verse on the inside of domes was a common approach seen in the Ottoman royal mosques, the overlapping meanings with the biblical text in the mosaic of the emperor's gate of the Hagia Sophia is remarkable: "I am the light of the universe" John 8:12 (Necipoğlu G. , 1992). The symbol of light that is essential for the Divine Unity continues in the Hagia Sophia in a different religion (Diker, 2016).



Figure 5. Mosaic of Christ Pantocrator, south dome of the inner narthex, Chora Church, Istanbul.

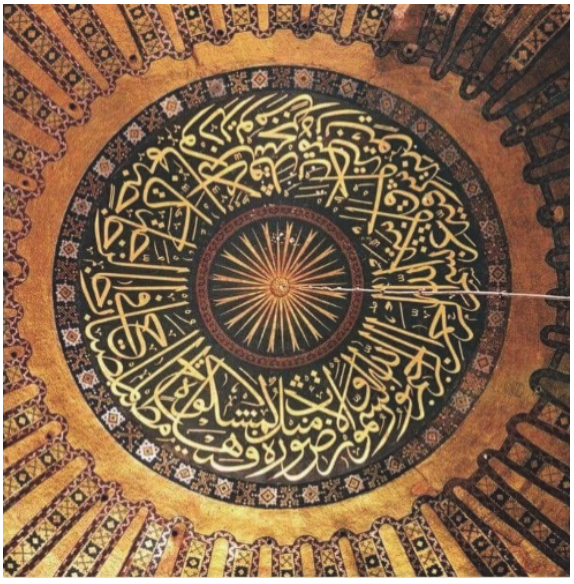

Figure 6. 35th verse of the Surah al-Nūr of the Qur'ān at the dome of Hagia Sophia, Istanbul.

Ernst Diez emphasizes that elements in the history of art should be looked at by the concept of 'endosmosis' or cultural penetration, put forward by cultural historian Karl Lamprecht (Diez, Endomoslar, 2012). In other words, it is necessary to investigate this by taking into account that each design has an origin. As we have seen in the examples above, the tradition of Canopy and axis mundi

continued in Göbeklitepe, in the Yurt tent in the steppes of Central Asia, in Mesopotamian domes, stupas in India, in Etruscan tomb structures, pre-Christian domes and eastern Roman churches, maintaining a specific scheme. The Islamic culture, which emerged in its first architectural structures in the 7th century, would inevitably benefit from the styles of deep-rooted civilizations with architectural and artistic traditions. In regards to its geography, these were mainly Sasanid and Roman traditions.

The first important structure of the dome tradition in the Islamic world is the Dome of Rock. The sacredness of Jerusalem for Muslims is based on a hadith about Jerusalem and the Miraj (the Holy Ascension). Islamic scholars concur that the 'Masjid al-Aqsā' mentioned in the Surah al-Isrā is Bayt al Maqdis in Jerusalem (Qur'ān, 17:1). The Arabic word "aqsā" means "far away" and is named as such because of the distance of the temple to Mecca (Bozkurt, 2004). According to Judaism, the temple was in the heaven even before the world was created. The Lord began creating the world from where its shadow fell; from its projection, and then at that point he created Adam (Bozkurt, 2004). This building in Jerusalem is a center pointing to the point of omphalos and axis mundi. Likewise, the 'sacred rock' on which Abraham attempted to sacrifice his son can be described as omphalos. The belief that the mi'rāj phenomenon, which is the most obvious example of the vertical transition between the realms, took place through this rock is widespread among Muslims. When Caliph Omar conquered the city of Jerusalem in 638, he wanted to know the location of the Temple of Solomon. After examining the Temple Mountain (Mount Moria), he built a simple domed structure in this area (Yiğitoğlu, 2017). In the Umayyad period, a flamboyant domed basilica which would be known as Qubbah al-Sahra was built at the site of the rock, probably as a result of political concerns. This omphalos on Mount Moria, sacred to the Jews under Christian rule, was transferred to the Holy Sepulchre Church in Golgotta, another hill, and was moved to its ancient center by the construction of the Masjid al-Aqsa and Qubbah al-Sahra (Grabar, The Umayyad Dome of the Rock in Jerusalem, 1959).

In Islamic architecture, various examples of the celestial symbolism of the dome can be seen in intricate geometric decorations in the form of stars or muqarnas (stalactite) fillings in the dome. Grabar explains in detail the celestial structure of the two domes in the Alhambra Palace. He says that the domes with muqarnas covering the two spaces of the Courtyard with Lions are the revolving heavens. The light that glides through the window on the drum of dome at different times of the day creates a play of light similar to the one in the celestial spheres in the texture with muqarnas on the dome and creates a feeling of rotation. In these halls, a poem written at the eye level reveals the hermeneutic of the dome: "In

here is a cupola which by its height becomes lost from sight [a reference to the immensity of the sky]; beauty in it appears both concealed and visible [an allusion to traditional Islamic conception of the ways to interpret the visible]. The constellation of Gemini extends a ready hand [to help it] and the full moon of the heavens draws near to whisper secretly to it .... / When they [the parts of the room] are illuminated by the rays of the sun, you would think that they are made of pearls by reason of the quantity of celestial bodies in them." (Grabar, From Dome of Heaven to Pleasure Dome, 1990)

Before moving to the hermeneutics of dome in the Classical Ottoman era (16th century), the hermeneutics of the dome will be evaluated in the Renaissance as a contemporary culture with it. A number of secondary sources that both cultures refer to in their religious literature are common. We can do a hermeneutical reading primarily through ontological and cosmological texts because the cosmic arrangement of creation and the universe also gives the outline of the architectural structure. Since it is the central dome in question, we must first evaluate the sacred buildings.

According to the Neo-Platonist conceptions of the Quattrocento Humanists, man is creative and he is also the creator of himself. The human, consisting of the body (soma), the soul (psykhe) and the spirit (nous), is considered as three layers just like the world. Hermes Trimegistus represents the unity of the three. Man is the link between the sacred and nature, Pico Della Mirandola describes man as the dome of the world (Fernand Schwarz, 2016). Mirandola explains the "Seven Expositions of the Six Days of Creation" in the book Heptaplus, where he fuses the chapter of the Bible with the Kabbalistic elements. The description of the universe over three realms can be found in the antique literature. In this book, he describes how the three-tiered realms were schematized by the Prophet Moses while building the tabernacle. This is a key text to grasp the hermeneutics of the sacred space. The first of the three realms is the sublunary or worldly realm where people and animals live. The second is the celestial world where planets shine and are not open to external influences. Above it is the super-celestial realm, which is under protection. As for their counterpart in tabernacle; the outermost part is the representation of the earthly realm that people and animals can contact. The celestial part with the golden gild and the menorah (seven-arm candlestick) representing the planets and the super-celestial part with the winged Cherubim angels represent these three realms. The three realms are interconnected and what is in one is present in the other. But what happens in the upper realm degenerates as the lower realm passes. Anaxagoras, Pythagoreans and Platonists also explained in this way (Mirandola, 1998).

3. HERMENEUTICS OF DOME IN THE OTTOMAN CULTURE

3.2. Sufi Ontology and Cosmogony in the Dome

The Sufi tradition is similar to the theosophical understanding of mystical teachings based on revelation, (Kashf) and inspiration as the source of knowledge. The Ishrāqiyya school which Suhrawardī pioneered, is also considered as a theosophical approach (Gül, 2017). The ontology and cosmological sequence described by Sufism is in line with the ancient theosophical understandings.

Sufis explained the formation of cosmos according to emanation[4] and manifestation theories. Accordingly, beings occur by gradually descending and moving away from God (Demirci, Mehmet, 1998). The first detailed description of this subject was made by the Andalusian Sufi Muhyiddin Ibn al-Arabi (1165-1240). The stations traversed by the Sufi to reach Allah are called "Hazarāt". Sadreddin Kunawî (1209-1274), who categorizes the accounts of Ibn Arabi, describes the five levels of presence with the title Hazarāt al-Khamsa (the Five Presences). Firstly, he examines the world of existence in three main sections; the invisible, the visible and the human (Chittick, The Five Divine Presences: From al-Qunawi to al-Qaysari, 1982). The five stages are listed as follows:; God himself/Divinity ('Alam al-Lāhūt), the Spiritual World ('Alam al-jabarūt/al-arwāh), the Imaginal World ('Alam al-malakūt /barzakh/mithāl), the Corporeal World ('Alam al-mulk or 'Alam al-shahāda /nāsūt), and the Perfect Human Being ('Al-insān al-kāmil') (Chittick, The Sufi Path of Knowledge; Ibn al-'Arabi's Metaphysics of Imagination, 1989).

Ibn al-Arabî explains the hermeneutics of the Throne in Sufism, which is symbolically represented by the dome. According to him, the five classifications made above are also referred to as the following names: Non-delimited Imagination (al-khayāl al-mutlaq) , the World of Command (amr), the World of Creation (al-khalq), the Corporeal World ('Alam al-shahāda) and the Perfect

[4] The concept of emanation is that all derived or secondary things proceed or flow from the more primary. It is distinguished from the doctrine of creation by its elimination of a definite will in the first cause, from which all things are made to emanate according to natural laws and without conscious volition. It differs from the theory of formation at the hands of a supreme artisan who finds his matter ready to his hand, in teaching that all things, whether actually or only apparently material, flow from the primal principle. In the Qurʾān (Islāmic scripture), terms such as khalq ("creation") and ibdāʿ ("invention") are used in describing the process of creation. Early Muslim theologians dealt with this subject only in simple terms as stated in the Qurʾān, namely, that God had ordered the world to be, and it was. Later Muslim philosophers, such as al-Fārābī (10th century). and Avicenna (11th century) under the influence of Neoplatonism conceived of creation as a gradual process. Al-Ghazālī (a Muslim theologian of the 11th century) refuted the emanation theory on the grounds that it lowers God's role in the creation to mere natural causality.

Human Being ('Al-insān al-kāmil'). The Throne, The Footstool (Kursī), the heaven of Atlas and the Sphere with Fixed Stars exist in the World of Creation. The Throne encompasses all beings that come before and after it. In other words, it is an 'isthmus' (barzakh) between God and the created, the sphere of the spheres. It is the station of God's name of "al-Rahmān" (the All-Beneficent). The Throne has four pillars and they represent the four truths (haqāiq). A number of prophets and angels carry these pillars together; Seraphiel and Adam, Gabriel and Muhammad, Michael and Abraham, and Ridwān and Mālik (Nasr Hâmid Ebû Zeyd, 2018). The structure of four pillars with eight carriers is connected with the eight carriers of the Throne mentioned in the verse.

In order to understand the numerical symbolism in architecture, it is also necessary to know the hierarchy of saints in Sufism. Awtād (The Four) is the Sufi term used to refer to the four great saints believed to be in four directions, who protect the regions around them. The definition of awtād is found in a system called 'Rijāl al-Ghayb', by which Sufis define the saintly hierarchy. According to the Sufi understanding, the Qutb (pole) is at the top of the ruling hierarchy. It is followed by two imams, in this way "The Three" emerge. The imams follow the awtād. Each one of the awtād is in the heart of a prophet and gets help from the spirituality of the four archangels. The 'Abdāl' are seven people: the four awtād, the two imams and the Qutb. According to al-Ghazali, God has such servants that when they lived, they became successors to the prophets who were the pillars of the earth; that is, awtād. Ibn al-Arabi compares the 'Rijāl al-Ghayb' to the angels of Cherubim, who are always engaged in worship in the Divine presence and who do not know anyone but God (Uludağ, 2008). Considering that the awtād was identified with the four corners of the Kaaba and the four angels carrying the Throne called Serafim or Cherubim, it is understood that these four carrier figures in the dome scheme transferred their place to Khulafā al-Rāshidūn (The Four Caliphs); the four pillars of Islam.

Solar symbolism also coincides with the dome. If we explain it through the hermeneutics of Ibn Arabi, the sun is at the center layer of the celestial spheres in the Corporeal World. The Sun is the heart of this Corporeal Realm, the dwelling of the pole of human souls, and the source of the light of all stars. The pole of human souls is the prophet Idris (or Eliyah) (Nasr Hâmid Ebû Zeyd, 2018). According to some sources in the Islamic literature, it is stated that the prophet Idris was Hermes. Considering that the axis mundi points to the polar star in ancient times, the representation of the sun as a pole overlaps with this belief. The center of the dome symbolizes the sun and the polar stage.

3.3. The Dome of Hagia Sophia from the Ottoman Perspective

In order to observe the hermeneutics of the Ottoman dome, it is necessary to understand the hermeneutics of the dome of the Hagia Sophia. Knowing the meanings of this building, which comes from an older and different tradition and turns into an Ottoman work, will help evaluate the Ottoman dome correctly.

Historian Tursun Bey describes the arrival of Sultan Mehmet II the Conqueror at the Hagia Sophia after the conquest. When you look at the ceiling from the floor you see a sky covered with stars and when you look at the building from above a wavy sea is observed. He explains that Sultan Mehmet the Conqueror examined the dome of the Hagia Sophia from the inside. He expresses with amazement and admiration that the mosaic figure in the center of the dome (Christ Pantocrator) had been made by a masterful artist and the eyes in the portrait seemed to follow their observers. He describes that this time Mehmet II had gone out to examine the facade, and that he had risen on the structure, like the rise of the Holy Spirit to the fourth heaven. (Tursun Bey, 1977).

This ascension analogy shows that the concept pointed out by a large dome is the vertical axis of ascension, which is the axis mundi. The concept of the fourth heaven shows that a Sufi perspective is encountered in the history literature. This semantic[5] view of the dome is frequently emphasized from the Ottoman perspective and various legends have been produced on this. Evliya Çelebi recounts one of them. He tells us that the dome collapsed in a severe earthquake around 570, the year in which Prophet Muhammad was born, and that the emperor wanted a permanent solution for restoring the dome. Khidr, called the Green Man by the Christians, told the monks in the guise of a derelict that he had found a cure for the destroyed dome: He said that the dome would not stand in its place until the saliva of the Last Prophet and Zamzam water were mixed with the building mortar, and then he disappeared. Upon this warning, the priests went to Mecca to find his uncle, Abu Talib, and with his permission, asked for the saliva of (the Prophet) Muhammad. Then they brought this together with Meccan soil and Zamzam, and they made a mixture and added this to the dome. To mark this blessed point, Sultan Mehmet II hung a chain with a golden ball with fifty bushels of wheat (Çelebi, 2006). Ottoman historians also quoted different versions of this legend.

In a book on the history of the Hagia Sophia, It is stated that the projection of the Great Mosque (Cami-ül Kübrā) in the Paradise of Firdaws on Earth is the Small Mosque (Cami-üs Suğra), which is the Hagia Sophia (Celalzade, Koca nişancı

[5] Semantic: Reflecting intended structure and meaning, concerned with the relationship between the signs and the objects.

Mustafa Çelebi, 1165 H.). In hadith sources and Sufi works, a similar prototype of the Hagia Sophia is mentioned, just like Beyt al- Ma'mūr is mentioned as a high dome made from red ruby in the Firdaws Paradise, as the prototype of the Kaaba (Erzurumlu İbrahim Hakkı, 2015). These texts shed light on the perception of the Hagia Sophia in the Ottoman world. From the perspective of the Ottomans, the Hagia Sophia was one of the eternal sacred places like the Kaaba and its dome is the symbol of the sun on the fourth level of heaven. According to Ibn al-Arabi, Prophet Idris is in this layer of heaven. The dome of the Hagia Sophia represents the figure who is the qutb[6] (pole) of wisdom and its stage as the sun layer in heavens. The figure of the Christ Pantocrator in the Byzantine dome was replaced by the 35th verse of Surah Nūr: "Allah is the Light of the heavens and the earth." We can also see this point of view in Tezkirah al-Bunyān, which was written by Sa'i Çelebi from the narration of Mimar Sinan. The Hagia Sophia is considered to be a part of Ottoman history rather than being the product of a different civilization and all the semantics of its structure is transformed. (Morkoç, 2006).

3.4. Hermeneutics of Dome in the Ottoman Architecture

Oleg Grabar states that Islamic architecture, unlike Christian architecture, does not have a symbolic iconography that can be interpreted from texts. (Grabar, Symbols and Signs in Islamic Architecture, 1980). However, architectural treatises in Ottoman literary literature can present symbolic and semiotic[7] narratives. Pre-Islamic cosmology is also thought to have shaped the symbols of Islamic architecture. 'The image of the universe', which is an element of Asian culture, can be seen in madrasahs, caravanserais and shrines. (Ögel, 1994). The tomb structures that were included in the Islamic architecture by the Turks were mostly covered with a roof system like a cone or a dome. The origins of this tradition can be taken to the tumuli[8] in the pre-Islamic period. The dome-like top cover is the embodiment of the canopy (Heper, 1996).

The form of the great dome first appeared during the Great Seljuks period. In the plan of the great mosque with four iwans opening to the large courtyard, the dome in front of the mihrab began to show the principle of unity with its large spherical volume. Great Mosque of Isfahan is a good example of this plan. In

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6 Qutb is the perfect human being, al-Insān al-Kāmil (The Universal Man), who leads the saintly hierarchy.

7 Semiotic: Relating to signs or indications; pertaining to the language of signs, or to language generally as indicating thought.

8 Tumuli: plural form of *tumulus*, which refers to a mound of earth, especially one placed over a prehistoric tomb.

Anatolian Seljuks, a new concept of space was developed in the madrasas with a closed courtyard. The central domed plan was formed by covering the open courtyard with a dome. From the 14th century onwards, central dome examples can be seen in single-domed mosques and in the so-called zawiya-mosque plan type, which contain different functions in a single structure. Examining the mosques of Sinan, Godfrey Goodwin states that, with a movement towards the central dome, a model dominated by the unity is applied in the Sinan's mosques and the space makes sense of integrity (Goodwin, 1971). According to Burckhardt, in both eastern and western arts, the rectangular or cube shape of the temple is a representation of the circle turning into a square. The circle representing the celestial movements indicates the active one and the square representing the solid state of the earth indicates the passive. (Burckhardt, 2001). The windows in the ground level, which open to the rose garden of the cemetery or the courtyard with the fountain, remove the sharp distinction between interior and exterior. Burckhardt describes the gradual transition from cubic ground to the domes at the Edirne Selimiye Mosque, stating that this design is a smooth and valuable stone as a plan converted from Hagia Sophia (Burckhardt, 2001).

The model of the sacred structure which took its final form in the Ottoman mosque is also a model of cosmology. Burckhardt describes this symbolism as follows:

While the dome of a sacred building represents the universal Spirit, the octagonal drum that supports it symbolizes the eight angels, "bearers of the Throne", who in their turn correspond to the eight directions of the "rose of the winds". The cubical part of the building then represents the cosmos with the four corner pillars (arkān) as its elements conceived as principles both subtle and corporeal. (Burckhardt, 2001)

Here he mentions the eight angels in Surah al-Haqqah. (Al-Haqqah 69/17). However, Burkhardt's comments; four directions, and four elements; air, water, fire, earth symbolism and the cube form representing the cosmos are the concepts of ancient pagan cosmology. According to the traditionalist approach, 'Primordial Religion' (Religio Perennis), is an affirmation of 'Indefectible Truth' (Philosophia Perennis) (Nasr, 1996). This is the idea that revelation comes from tradition uninterruptedly in all periods.

So, as in the perennialist approach above, can a hermeneutic reading be made for the dome in Ottoman culture? For this purpose, it is necessary to check whether these symbols correspond to the written sources. First, what is written about the Kaaba should be evaluated. Because the architectural shape of the mosque is directly related to the symbolic structure of the Kaaba. The Quran

mentions the Kaaba as the first house: "Indeed, the first House [of worship] established for mankind was that at Makkah -blessed and and a guidance for the worlds." (Ali 'Imran, 3/96). For Mecca, the mother of cities is used, which indicates that it is in the center of the world. (Al-An'am 6/92; Ash-Shuraa 42/7).

We can see the detailed information about the Kaaba in Ahbāru Mecca, written by Muhammad Al- Azrakī in the 9th century (Özaydın, 1988). This should be the book used by Ottoman historians as a source. From a hadith about Miraj, we learn that the Kaaba, on the earth, is a projection, a replica of the Beyt al-Ma'mūr which is on the seventh layer.[9] Although the original form of Kaaba is controversial, the Islamic literature is dominated by the idea that it is in the center of the world and even the cosmos, signing the axis mundi. Azrākī stated that there are seven storeys above the Kaaba and seven storeys below it, and that Beyt al-Ma'mūr is located at the closest one to the Throne among these fifteen layers. It is also mentioned that the Kaaba in Ahbāru Mecca reflects the model of the Beyt al-Ma'mūr which is crowned with a red dome on four chrysolite columns (Akkach, 2005).

The cubic structure of the Ottoman mosque can be compared to the Kaaba and its dome can be compared to the unlimited circular form of heavens and even to the dome of Beyt al-Ma'mūr. These narrations were repeated by Islamic historians and Ottoman Sufi writers and strengthened by some hadith narratives. In fact, four hadiths about Beyt al-Ma'mūr, some of which contradict each other, are recounted in Yazicioglu Muhammad's Muhammadiyah, which is one of the most widely read books among the Turkish-speaking people since the 15th century (Yazıcıoğlu Muhammed, 2011). Description of a red ruby dome associates with the use of red as the light of heaven on the canopies in ancient civilizations (Lehmann, 1945). In addition, the dome described on four columns is a baldaquin form. This type of structure has also been located above the 'million' point, which has been called the '0 'point of the world by the Romans (Müller-Wiener, Wolfgang, 1977). The location of this stone is also close to the Hagia Sophia on the acropolis, which is believed to be on the axis mundi point. This can be regarded as a reflection of the ongoing ancient tradition of crowning the cosmic axis with a dome. Because the imposing dome of Hagia Sophia serves the same purpose. In the Qur'an, although the word Beyt al-Ma'mūr is mentioned, its

[9] Beytu'l-Mamur is situated in the 7th heaven, directly above the Ka'aba on earth. The angels make hajj to this House like we make hajj to Ka'aba. The Ka'aba on earth is a replica of it. It is also called "Al-Durah".
In the famous hadith about Miraj, Beytu'l-Mamur is mentioned:
"Then Beytu'l-Mamur was shown to me. Seventy thousand angels visit there every day. "(Bukhari, Bed'u'l-Halk, 6).

meaning in the hadiths and narrations is not indicated.[10] The Kaaba's relationship with Beyt al-Ma'mūr in the hadiths assimilates the story of the emergence of Bayt al-Maqdis; The Temple of Solomon in the Jewish tradition. It is stated in the Old Testament that Moses built the tent (tabernacle) in accordance with the information given to him on the mountain, this temple was to be a shadow and a copy of the heavenly things (Hebrews 8:5).

In Ottoman culture, we find the description of architecture in literary texts of architectural treatises. The expression of architecture in literary texts in Ottoman culture can be found in architectural treatises. In Risāle-i Mimariyye, written by Ca'fer Efendi on the life and works of Sedefkar Mehmet Aga, architect of The Sultanahmet Mosque, there is a narrative on the Kaaba based on the hadith that mentions Beyt'ul Māmur. The prophets who built the Kaaba; Adam, Seth (Shiith) and Abraham are mentioned as the masters of the profession of architecture (Ca'fer Efendi, 2005). From this text we understand that when the architecture is mentioned in the Ottoman capital, the first structure that comes to mind is the Kaaba, its relationship with Beyt al-Ma'mūr on the vertical axis based on the hadith, and the prophets who built it.

As in other texts of his age, Ca'fer Efendi refers to major sources in the fields of history, interpretation, hadith and literature. Sufi concept of creation that dominates the Ottoman literature is clearly visible in the Risāle (Düzenli, 2009). The 'Lawlāka' hadith qudsī, cited as the cause of creation[11]. This divine hadīth affirms that Prophet Muhammad is the essence of everything that is created; Allah calls His Messenger; "Were it not for you, I would not have created the cosmos." This is the main source in Sufi literature that explains God's ultimate love to His Prophet who is also the reason, the beginning and the final destination of the whole creation. According to the Sufi Doctrine, Prophet Muhammad represents 'Al-insān al-kāmil' (Perfect Human Being/Universal Man). In this work, Ca'fer Efendi includes the lines that depicts the Creator of the universe as a perfect architect (Ca'fer Efendi, 2005).

In Tezkîret-ül Bünyan Sa'i Çelebi gives details of life and Works of Architect Sinan based on the information dictated by Sinan. He first describes the Creator's creation of the universe, and then the symbols of his own design.

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[10] Beyt'ul Māmur is mentioned in The Holy Qur'an as follows:
"By the mount and [by] a Book inscribed in parchment spread open, and [by] the frequented House (Beyt'ul Māmur), and [by] the heaven raised high, and [by] the sea filled [with fire], indeed, the punishment of your Lord will occur." (et-Tür, 52/1-7).

[11] Hadīth qudsī (divine/sacred Hadith); is a sub-category of hadith which are sayings of prophet Muhammad. Muslims regard the Hadith Qudsi as the words of God, repeated by prophet Muhammad and recorded on the condition of a document. "Law laaka law laaka maa khalaqtal aflaak". Ajlûnî, II, 164; Hākim, al-Mustadrek, II, 615

Thanks and praise to that Creator of the foundation of the seven stories (of the heavenly spheres) and incomparable glory to that Builder of the heavenly canopy of nine vaults, who, in this workshop of water and earth, without level or compass, fashioned the private palace of Adam's body, which is the pavillion of the heart and soul, and rendered delightful that mosque of the hearts (of humankind) with the adornment of virtue. (Crane, 2006)

After such an introduction which continues by hierarchically praising Prophet Muhammad, the four Khaliphs, Ahl-al Bayt[12] and the Ottoman Sultan, he begins to portray his buildings with cosmological metaphors. This narrative shows that an architectural structure is an embodiment of concepts such as The Throne, the heavens and the earth in the stages of creation of the universe.

The detailed description of the columns, minarets, domes and coloured glass windows in the narration of the Süleymaniye Mosque are also given in a symbolism. To describe the perfection of the structure, the Kaaba analogy is made;

This well-proportioned mosque became Ka'ba.

Its four columns became (like) the Four Friends. (Crane, 2006)



Figure 7. Inner view of the dome of Süleymaniye Mosque.

[12] Ahl al-Bayt, (Arabic: "People of the House,") designation in Islam for the holy family of the Prophet Muḥammad, particularly his daughter Fāṭimah, her husband ʿAlī (who was also Muḥammad's cousin), and their descendants.



Figure 8. Name of Khalif Uthman on a pillar



Figure 9. The Silhoutte of Süleymaniye Mosque, İstanbul



Figure 10. Silhouette of Selimiye Mosque, Edirne

The gradually rising domes of the mosque are compared to the foams in the sea, the central dome represents the sky, its finial is as the golden gilded sun, the dome surrounded by four minarets are like the Prophet Muhammad and his friends; the four khaliphs (Crane, 2006). As can be seen, the so-called sirens or demons in ancient traditions were portrayed as four biblical writers in the Christian iconography and turned into the four khaliphs in the Ottoman mosque. This narrative shows that, an architectural structure is the embodiment of cosmic elements such as the Throne, the Kursî and the heavens. Here, it is necessary to pay attention to the symbolism of numbers as well as the celestial bodies.

The Selimiye Mosque topic also emphasizes its similarity with Ka'ba and Masjid-i Aqsa, the first two holy places of Islam, and relates to Beyt al-Ma'mūr which is the prototype of all mosques in the sixth heaven. Its dome is likened to a sphere mirror reflecting the earth, the milky way, the nine-fold heavens and even to a wise sheikh (spiritual teacher) (Crane, 2006). Here we see that the concept of Perfect Human Being in Sufism corresponds to the dome. Symbolizing the main dome as the Prophet Muhammad is a result of the same approach.

The central dome and the surrounding half and quarter domes are likened to bubbles in the sea (Harmankaya, 2018). Sometimes there may be a dome analogy associated with the location of the structure. For instance, the Mihrimah Sultan Mosque in Edirnekapı, built by Sinan, is shaped with a vertical movement, emphasizing the rise of the hill, unlike the Imperial Mosque with the same name on the Üsküdar coast. In the charter of the foundation of this mosque, the dome is likened to both a shiny foam in the sea and Mount Sinai where Moses received

the revelation and the divine light decended upon (Necipoğlu G., 2013). The sacred mountain metaphor describes the center that is found in almost all ancient civilizations, portraying the axis mundi or omphalos, and the vertical contact with the lower and upper realms.

The center of the dome, where sun cult has been represented throughout history, in Christianity; The figure of Jesus was settled as the Pantocrator inherited from Zeus. The center of the Ottoman central dome is crowned with a verse from the Qur'an which corresponds to the representation of the dome. Among the verses embroidered in the middle of the dome as calligraphic design; The 35th verse of Surah Nur, the 255th verse of Surah al-Baqara and the 41th verse from Surah al-Fatr can be counted[13]. The common concept of these verses is that Allah is the absolute and the only creator that ensures the existence of the universe. They also illustrate the heavens which correspond to the meaning of the dome.

The finials used at the top of the Ottoman domes also support the meaning pointed out by the dome. The finials are placed on top of buildings with religious functions, such as temples. The crescent-shaped finial was first used in the 12th century. This is a symbol of the celestial dome, which goes back to the Turks' belief of The Sky God (Harmankaya, 2018). As can be seen in these treatises, the finials are the elements that carry the space to the celestial dimension as the symbol of the moon or the sun.

4. CONCLUSION

The aim of this paper was to expose the hermeneutical meaning of the Classical Ottoman dome. In order to attain this goal both synchronic and diachronic texts and samples have been evaluated. Synchronically Humanist culture of the

[13] Allah is the Light of the heavens and the earth. The example of His light is like a niche within which is a lamp, the lamp is within glass, the glass as if it were a pearly [white] star lit from [the oil of] a blessed olive tree, neither of the east nor of the west, whose oil would almost glow even if untouched by fire. Light upon light. Allah guides to His light whom He wills. And Allah presents examples for the people, and Allah is Knowing of all things. (An-Nur 24:35)

Allah there is no deity except Him, the Ever-Living, the Sustainer of [all] existence. Neither drowsiness overtakes Him nor sleep. To Him belongs whatever is in the heavens and whatever is on the earth. Who is it that can intercede with Him except by His permission? He knows what is [presently] before them and what will be after them, and they encompass not a thing of His knowledge except for what He wills. His Kursi extends over the heavens and the earth, and their preservation tires Him not. And He is the Most High, the Most Great. (Al-Baqarah 2:255)

Indeed, Allah holds the heavens and the earth, lest they cease. And if they should cease, no one could hold them [in place] after Him. Indeed, He is Forbearing and Forgiving. (Fatir 35:41)

Renaissance was the comparison. On the other hand, endosmosis (cultural infiltration) of hermeneutics of dome throughout the world history has been traced in a diachronistic approach. In this method, indigenous (ritual) experiences of architecture was included especially as rituals and symbols of belief.

Classical Ottoman architecture (16th century) has its distinctive identity which developed gradually in its early period. Influences like Roman or Persianate cannot easily be detected from its imperial style. Central dome structure of the Ottoman mosque has been a milestone in architectural history. However, when such an architectural element is examined hermeneutically, one has to deal with the interpretations of religious texts. The interpretations are also hermeneutical approaches of that religion.

The Ottoman dome was likened to bright bubbles in the sea, nine-fold heavens, spherical mirror, Throne of Allah, Prophet Muhammad or a spiritual teacher. The four corners that have been supported by four pillars or four minarets, were metaphors of the four Khalifs/Friends of the Prophet. Although all these metaphors seem to be totally Islamic, the comparison made by the other civilizations has revealed that this structure is a perennial tradition that has been transformed and renamed by each culture.

'The Dome of heaven' concept, axis mundi or the cosmic axis, and omphalos have been constant since the archaic age. The dome has always been a gate through the heavens and it consecrated the below. Dome also showed the sacred center of the World in city scale. It blessed the inner space and outer space as the close neighborhood. The demons became the four evangelists, and then the four Khalifs. The center of the dome has converted from Sun-God symbol, Jupiter the Pantocrator to Christ Pantocrator and finally to a Quranic verse emphasizing Allah as the one and only creator of the universe. The only original Islamic message perceived must be these verses in the mosque's symbolic diagram. The rest are derived from Sufi interpretations which are closely related to the hermetical, theosophical and Neo-Platonical line.

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TOP COVERING DEVELOPMENT OF KONYA MOSQUES IN ANATOLIAN SELJUK AND OTTOMAN PERIOD

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ABSTRACT

Konya, which is located in Central Anatolia, is an important settlement area where the first architectural traces are found, many civilizations lived in this region, also had been the capital of the Anatolian Seljuk Empire. Konya mosques have been one of the pioneering and original examples of Seljuk and Ottoman mosque architecture. When the Konya mosques are examined with their architectural features and construction techniques, their development can be seen over the centuries. In particular, the covering system of mosques differs from the 12th century to the 19th century. The cover system that commonly applied in mosques was a dome structure and the bricklaying had been used in the dome and transition element construction in the mosque of Konya in all periods. With this feature, it has shaped the architecture after it. Within the scope of the study, the development of the covering systems of Konya Mosques built between the 12th and 19th centuries was examined and a typology was drawn.

In the early periods of Anatolian Seljuks, there is a simple dome covering the square plan. In this period, the transition from the body walls to the dome was provided by the tromps. In the later periods, the transition to the dome was provided by a planar and prismatic triangle. At the end of the Anatolian Seljuk period, transition solutions from a rectangular plan to a dome are seen. Large mosques started to be built with the Ottoman period. With the increase in the diameter of the main dome, the transition to the dome turned into a pendentive, however during this period the arrangement of the dome tambour appeared on the facade. In the early Ottoman period, while the mosques with a single dome and a central plan were built as in the Seljuk period; mosques in complex form were built as time progressed, with each section covered with differently.

Keywords: Konya, mosques, covering system, dome.

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1. HISTORY OF KONYA

Konya has the remains of the first settled life dated to prehistoric periods. Boncuklu Höyük (Hittite Settlement) dating to B.C. 8000; Çatalhöyük (Phrygian and Kimmer Settlements) dated to B.C. 7000 is located in Konya (Orak, 2016, p. 12-13). Founded by the Assyrian Trade Colonies, the King's Road, which was later used during the Hittite and Lydian periods, used as a military and trade route during the Byzantine period and in the Middle Ages called as Silk Road. Konya was an important center on Silk Road (Baykara, 2002; Konyalı, 2007).

It is thought that the inner City Walls surrounding the area of Konya (Alaeddin) Hill in the historical city center of Konya was built by the Romans and reinforced by the Byzantines (Konyalı, 2007). The city became the capital in the 11th century with the advance of Seljuk Empire in Central Anatolia and taking Konya from Byzantium (Baykara, 2002). The inner City Walls were repaired during the Seljuk period and the palace was built in this area by I. Kılıçarslan (Konyalı, 2007; Redford, 1991, p.54). Today, neither the inner City Walls nor the outer City Walls have survived. There is only the ruins where the II.Kılıcarslan Mansion is located (Karpuz, 2002). When the city grew in the 12th and 13th centuries, the outer City Walls was built. The city was identified with Mevlana in the second half of the 13th century (Baykara, 2002). Until the 14th century, the city was the capital of the Empire and important architectural works were done.

At the beginning of the 14th century, Konya came under the domination of the Karamanoglu Principality and the second half of this century also came under Ottoman's. During the conflicts between the Ottoman Empire and Karaman-ogullari in the 16th century, the population decreased, the Silk Road lost its importance and consequently the architectural activities decreased (Tanyeli, 2001, p. 177).

In the late 15th and early 16th centuries, the lack of significant construction activities in Konya shows that there is no rapid change (Tanyeli, 2001, p. 177). In the 16th century, Sultan Selim built a mosque with his name. In this century an important part of the buildings built in the Mevlana Complex. Besides, it is noteworthy that no caravanserai were built in the city during this period. So, it can be assumed that the city was not active in inland commerce during this period. It is seen that no madrasah was made in the city in the 16th century and only 2 were built in the 17th century. (Tanyeli, 2001, p. 178-181). The city starts to show its modern architectural effect with the 19th century.

2. TOP COVERING SYSTEMS OF SELJUK AND OTTOMAN BUILDINGS IN ANATOLIA

2.1. Top Covering and Transition Elements in Anatolian Seljuk Period Structures

The construction activities in Anatolia were influenced by Roman and Byzantine construction techniques. The structures built during these periods were covered with vaults or domes and no transition elements were used. The corners of the square or rectangular plan are rounded to form curved surfaces (Kolay, 2017, p. 52). The Anatolian architecture of the 11th-14th centuries is the period of formation. The tomb, mosques, madrasah and caravanserais were influenced from the east. However, it can be said that the Middle Ages Anatolian architecture had developed a style that differs from all Islamic countries (Kuban, 2006, p. 83, p. 93).

During the Great Seljuk period, the oldest mosques in Anatolia were built as multi-legged and vaulted (Aslanapa, 2007, p. 2-5). During this period, the transition elements detailed triangles, planar triangles with stalactite and curved triangles were used belong to Iranian architecture. In the Anatolian Seljuk architecture, the transition element consisting of plane triangular elements appeared in the 13th century and for the first time it had been seen in Konya Alaaddin Mosque and Sivas Gök Medrese Masjid (Ögel, 1972, p. 23). It was started to be applied as a Turkish triangle consisting of plane triangles with the 14th century (Kolay, 2017, p. 54).

In the Anatolian Seljuk structures, the dome is generally of a semicircular cross section and starts from a wall or a low pulley (Gabriel, 1931). The domes of this period, which have radiant lined stones and bricks, have a simple braiding system under the influence of local construction technique (Kuban, 1965, p.92). The brick is used as a continuation of the Byzantine tradition in the West (Kuban, 1982, p. 67-68). In Eastern and Southeastern Anatolia, the stones used in the cover and stalactite ornaments were formed. The brick used in the dome structure was decorated with a tile application and brick course which origin is a type of ornament seen in Iran (Kolay, 2017).

2.2. Covering and Transition Elements in Mosque Structures of Ottoman Period

The mosques, which have been built since the first years of the Ottoman period, have a single-domed cubic plan, the most common form of mosque that emerged during the Seljuk period (Arık, 1999, p. 103). In the classical period of the Ottoman Empire, vault coverings were gradually abandoned and the dome

was used as the cover of all sizes (Kuban, 2007, p. 168). After the Ottomans tried the dome in small buildings, it spread to the middle space and iwan sections, and then applied to all the units forming the structure and became an inseparable part of the architectural system (Yetkin, 1955). The central space is gathered under a single dome with Edirne Üç Şerefeli Mosque in the second quarter of the 15th century and Şehzade Mosque in the 16th century (Kuran, 1986, p. 12). Two small domes on both sides of the main dome in the Uc Serefeli Mosque are programmed to be smaller and lower than the middle dome. Thus, a gradual rise occurred in the center and a new architecture emerged in the Ottoman mosques (Aslanapa, 2004). In the monumental mosques built since this century, the number of half-domes was changed and diversity was created and the central dome was emphasized (Kuban, 1958, p. 22-24).

In the early periods of Ottoman architecture, the planar triangle or prismatic triangular belt continued to be used as the transition element to the dome in the harim space (Kuban, 2007, p. 126). As of the Fatih period, its use decreased. This system, which is the application examples of the I. Beyazid period, was completely abandoned in the Classical period (Şimşek, 2010, 159).

The brick dome is a common technique for the entire Islamic world as well as for the Byzantines. However, it is unique to the Ottoman period that used as a single covering large areas and was placed on the walls by means of the tromp and the Turkish triangle (Kuban, 2007, p. 164). When the diameter of the dome grows, the height of the transition belts increases and the space rises, so pendentive was used as the transition element in the larger diameter domes, which were more common in Ottoman architecture (Tükel Yavuz, 2005, p. 136).

3. METHODOLOGY

Top cover systems vary in terms of construction technique and material usage according to periods. The top cover is an important element in the architecture of a mosque that determines the identity of the building. Konya had been the capital of the Anatolian Seljuks for so long, therefore the number of mosques that have survived to the present day is higher than the other cities. For these reasons, mosques in the historical city center were chosen as the subject of study in order to examine the development of covering systems. Throughout history, the settlement area has been Alaaddin Hill and its surroundings. From the 12th century, mosques and masjids belonging to the Seljuk and Ottoman periods were built within the outer City Walls. For this reason, the mosques in the outer City Wall area were chosen as a study area (Figure 1).

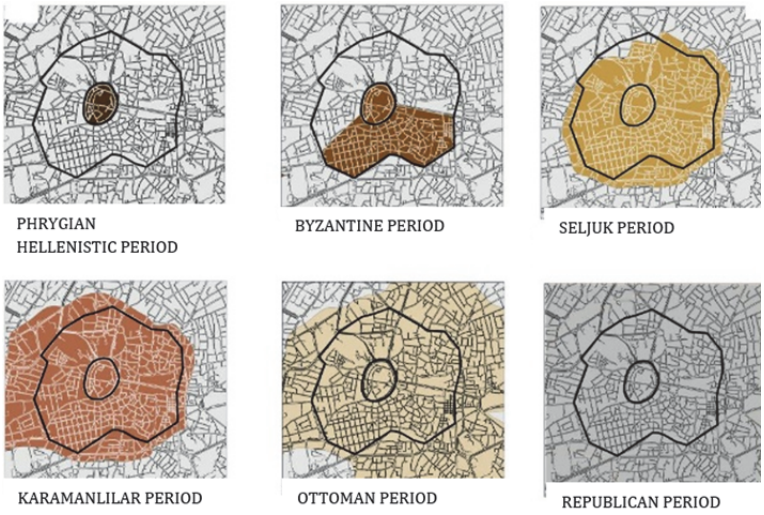


Figure 1. Development of Konya historical city center according to periods

This study includes the evaluation of the development of covering systems of mosques built between the 12th and 19th centuries in the historical center of Konya in terms of construction techniques, material usage and decoration elements. In this context, 14 Seljuk period and 17 Ottoman period mosques were grouped according to their construction dates (Table 1). The determined structures by field work;

- On-site detection: Measurement and photogrammetry studies were performed on the original material size.
- Evaluating existing building survey drawings: Building surveys and restoration works of the examined buildings were reached by utilizing the archives of the Regional Directorate of Foundations.
- Typology: Covering technique, material and dimensions, transition elements and decoration characteristics of mosques which have single domed, multi supported and multi domed cover system have been classified as typological.

4. COVERING SYSTEM IN KONYA MOSQUES

Although the most characteristic structure of the Islamic city is the mosque, the original mosque typology had developed in the capitals of the Anatolian-Turkish states in the Seljuk period (Tekinalp, 2015, p. 45; Kuban, 2006, p. 86). The single-domed masjids built during this period have been prototypes of the main mosque type built throughout the Ottoman (Öney, 1989, p. 8; Kuban, 2006, p. 93).

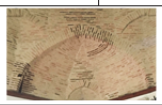
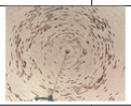
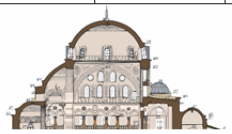
4.1. Top Covering System of Anatolian Seljuk Period Mosques in Konya

4.1.1. Construction System

The first mosque built by the Seljuks in Konya is the Alaeddin Mosque, which is the grand mosque and was completed in 1220 (Karpuz, 2002). Alaaddin Mosque consists of three different parts. It consists of a multi-legged and wooden covered section in the east, a domed place in front of the mihrab and 5 nave sections in the west (Karamağarlı, 1982; Asistay 2006, p. 119). The eastern part of the mosque has flat ceiling with wooden beams on brick arche on the east - west axis arranged parallel to the mihrab over the spolia columns. The eastern part was also covered with with pointed brick arches and wooden beamed slabs over stone pillars and marble pillars. The middle part is surrounded by corridors in front of the mihrab which are square planned and covered with dome and separated by arches on three sides. In this study, the domed structure in the middle was investigated in order to compare with the single - domed mosques built in the 13th century. The dome in front of the mihrab niche of the mosque was supported by massive pillars on the mihrab wall and brick lanchet arches rising on the individual massive pillars separating the side corridors. The planar triangular belt was used as the transition element from the square to the dome. It is programmed according to the corner points of the triangular belt area. According to the main triangle at the corners, the triangular units on the right and left are carried out first by being wide and then narrow. Two symmetrical orthogonal triangles were programmed back to back in the dome tangent sections corresponding to the midpoint of the walls. Bricks were used in the triangles of transition to the dome as in the arches. Above the triangular belt, the dome with 8 meters in diameter starts. The thickness of the dome has 1.5 rows of bricks (35–38 cm). The dome was plastered because the tiles were poured while the pulley was completely covered with tiles as in the transition element (Table 1). The dome cover is not perceived from the outside due to the sections in the east and west and the iwan in front.

Iplikci Mosque is the only mosque built in the city center in the 13th century. İplikçi Mosque was built with multiple legs and transverse naves. The pillars on the main walls and the wall pillars with single face stone braces were connected to each other by brick pointed arches to form three sections parallel to the mihrab. The cover system rising on the arches is a cross vault. Located in the main entrance gate and the mihrab axis, the main section consists of two sections with elliptical domes; the larger and square section in front of the mihrab is covered with a dome. This axis is planned to be higher than the side sections covered with vaults. Main walls and covering system are brick. Curved triangles were used as transition elements to the dome. The elliptical dome axis is higher and the vaulted section on the two sides was covered with a hipped roof.

Table 1: Covering system of the Konya mosques (drawing: re-organized from the archives of Konya General Directorate of Foundations)

CENTURY	THE NAME OF THE MOSQUE	TRANSITION ELEMENT			COVERING SYSTEM		
		Transition Element	Construction Technique and Ornament	Material and size	Covering and Dimension (Diameter/Thickness)	Construction Technique and Ornament	Material and size
12th century	Alaaddin Mosque	Triangle	Horizantal glazed tile	Brick 12-14x3-4 cm	Dome 800/35 cm	Horizantal brickcourse in its original glazed tile to days hand-drawn ornamented	19x4/20x4 cm.
							
13th century	İplikçi Mosque	Corrilinsartriangle	Plastered not decorated	Brick 15-16x3/4 cm.	Cross vault, eliptic dome and dome	Plastered not decorated	Brick 20/21x3/4 cm.
	Şekerfuruş Mosque Erdemşah Mosque Tercüman Mosque Abdülaziz Mosque Hoca Hasan Mosque	Tromp Triple tromp	Plain, horizantal not decorated	Brick 15x4 /20x3-4 cm.	Dome 750-650/35 cm.	Plain, horizantal not decorated	20/21/25 x 4/5 cm.
	Kadı İzzettin Mosque Şems Tebrizi Mosque				Timber construction and hipped roof	Wooden flat ceiling	
	Tahir and Zühre Mosque Bulgur Tekke Mosque Beyhekim Mosque	Prismatic triangular two rows triangular	Plain ornamented with triangular	Brick 12/15 x 3 / 4 cm.	Dome 680-750/35-40 cm.	Vertical and horizantal brickcourse like a star tile tile board in the center	15/19x3/4 cm.
14th century	Tahir Paşa Mosque	Triple tromp	Flats and ornamental on the center with a little tromp	Brick 12/15 x 3 / 4 cm.	Dome 700/35 cm.	Plain, horizantal not decorated	20/30 x 4/5 cm
							
15th century	Kadı Mürsel Mosque Hacı Hasan Mosque	Yerosacular			Timber construction and hipped roof	Wooden flat ceiling	
16th century	Nasuh Bey Mosque	Pendentive	Plain, horizantal not decorated	Brick 15/30x4 cm.	Dome ?/45 cm.	Plain, horizantal not decorated	15/30 x 4/5 cm.
	Piri Mehmet Paşa Mosque	Tromp	Plain, horizantal hand drawn ornamented	Brick	Dome 11,40 m./40 cm.	Plain, horizantal hand drawn ornamented	15/30 x 4/5 cm.
	Sultan Selim Mosque	Mukarnas Tromp Pendentive	Plain, horizantal hand drawn ornamented	Brick	Dome and half dome main dome 14,80 m./40 cm.	Plain, horizantal hand drawn ornamented	~15/25 x 4/5 cm.
17th century	Şerafettin Mosque	Pendentive, tromp, Turkish triangle	Plain, horizantal hand drawn ornamented	Brick	Dome, half dome, vault main dome 111,60 m./70 cm.	Hand drawn ornamented	~35x35 x 4/5 cm.
							
18th century	Hacı Fettah Mosque Nakiboğlu Mosque Ovalıoğlu Mosque Salih Paşa Mosque	Yerosacular			Timber construction and hipped roof	Wooden flat ceiling	
19th century	Kapu Mosque	Timber pendentive	Timber hand drawn ornamented	Timber	Wooden dome and flat ceiling	Baghdadi dome hand-drawn ornamented	
	Çaybaşı Burhan Dede Mosque Sarıyakub Mosque	Flat ceiling			Wooden dome in a flat ceiling	Baghdadi dome not ornamented	
	Aziziye Mosque	Pendentive	Hand drawn and gold leaf ornamented with Rococo style	Brick	Dome 18,30 m./60 cm.	Hand drawn and gold leaf ornamented with Rococo style	
	Saatçi Mosque İhtiyarettin Mescidi Şükran Mescidi Polatlar Hatip Mosque Bağevliya Mescidi	Yerosacular			Timber construction and hipped roof	Wooden flat ceiling	

İplikçi Mosque looks like a castle with monumental dimensions and high main walls. The local masjids are 800 x 800, 650 x 700 cm and generally have a square plan.

The transition element to the dome of Şekerfuruş, Erdemşah, Tercüman Abdülaziz and Hoca Hasan Masjids, which was built at the beginning of the 13th century, is a distinctive tromp (Table 1). An octagonal plan was formed, the dome begins with tromps. Between the tromps, the window openings were arranged in the rising portion with the main wall (Figure 4b). The cover is made of bricks from the center to the skirt of the dome, without decoration and plastering. The dimensions of the bricks used in tromp and dome are 18-25 cm. in length, 4-5 cm in height, and their colors are red and light red. There are small tromps in symmetrical order on both sides of the tromps of the Tercüman and Hoca Hasan Masjids. On the skirt of the dome with these small tromps consists of a dodecanese plan.

Kadı İzzettin Mosque and Şems Tabrizi Masjids, which were built in the middle of the 13th century, were designed with a hipped roof and flat ceilings. Konya Sahip Ata Mosque, which was built in 1258, is the oldest wooden pole mosque of the Anatolian Seljuks, but the original structure has not survived since it underwent a fire (Aslanapa, 2007, p. 69). Kadı İzzettin Mosque has been repaired and has survived, the rectangular plan and the flat wooden ceiling carried by the wooden pillars are covered with a hipped roof. Şems Tebrizi Mosque has a rectangular plan and includes a tomb. The harim part of the mosque is divided into two parts with a wide pointed arch made of cut stone, starting from the lower level of the main walls parallel to the mihrab. The main walls and the wooden beams placed on the belt were covered with a hipped roof. The interior were covered with wooden slat ceiling. These vernacular structures divide the development of the mosque plan in two centuries.

The mosque, which was built in the second half of the century, has a different construction technique and ornament than the first century. The Bulgur Tekke Masjid was built as a part of a Islamic lodge and has a different architecture with its monumental mihrab and thick columns on the last congregation wall, but it is difficult to comment on the original form (Altun, 1971, p. 50-51; Konyalı, 2007, p. 118-119). The mescid part of the structure is covered with a brick dome with a diameter of approximately 700 m in the form of a semicircle. The adjacent part of the mosque belongs to the lodge and has a barrel vault. The transition element of the masjid was applied as a plane triangle instead of the tromps in the first half of the century. As in the Alaaddin Mosque, the triangular belt must be programmed from the corner of the space. At the corners of the wall, the first triangular array is placed with the pointed end below the base of the dome, and its symmetrical equilateral triangles are carried out on both sides and take a prismatic form. The

middle parts of the wall where the dome is tangential to the body walls are not continued straight, but the belt plane in the transition element is moved outward as a triangle and completely circulates the skirt of the dome. The dome construction technique also differs during this period. The brick wall of the dome was programmed as if a small star motif was opened in the center towards the skirt, but the upper parts of the dome were repaired and plastered. In order to apply this brickwork, the bricks in the star form are vertical and the bricks between the motif are parallel to the dome skirt. At the center of the dome is a circular tile panel with floral motifs. The dimensions of the brick used in the dome and transition element mesh are 12-15 x 3-4 cm. In Tahir and Zuhre Mosque, the transition element to the dome is the Turkish triangle consisting of plane triangles. This triangular belt is arranged like as Bulgur Tekke Mosque (Table 1). The dome cover is similar. There is a circular panel with tile ornament in the middle of the star motif starting from the center towards the skirt (Figure 2).



Figure 2: The dome braiding at Tahir and Zuhre Mosque and the tile panel at the center of the dome

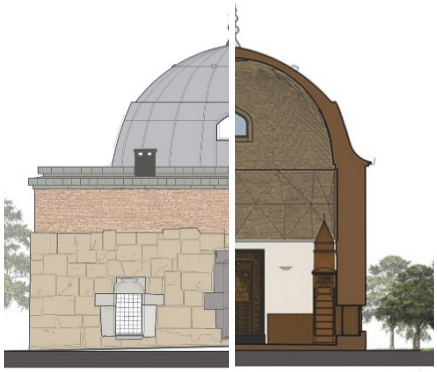
Although Beyhekim Mosque is similar to Bulgur Tekke and Tahir and Zühre Masjid with its cover material and ornament, it is a different example where the transition from rectangular plan to dome cover is applied. In the masjid section whose plan scheme is not straight rectangular and the mihrab wall is angled, the transition element to the dome triangular belt is of different dimensions in each corner. However, it has been solved flawlessly with the interior organization and this difference in structure is not understood. Since it is necessary to regulate the vertical distance of the transition element according to the horizontal distance that the transition element will pass in order to move from 6.80x9.20 m length to the dome with a diameter of 6.80 m, two rows of prismatic triangles are applied

as transition element to facilitate the transition to the dome. Although a high pulley is formed in the interior, the façade wall continues on the outer façade and the pulley is not noticed. However, the walling continues as bricks from the beginning of the pulley. The triangular elements are arranged so that the backline of the prismatic triangles is at the corner points. The dome was built with bricks of 10-12 cm in length, forming the star motif towards the skirt of the dome, as in mosques built in the same period. In this structure, it is seen that a window opening was opened within the dome cover for the first time. In the middle of the dome there is a tile monogram, as in Tahir and Zuhre Mosque. Ic Kara Arslan Masjid, which was built in this period, is an interesting example with its double-storeyed trompet passages and mihrab, and Hacı Ferruh Masjid with its monumental entrance (Kuban, 2006, p. 83, p. 93).

Tahir Pasha Mosque, which has survived in the city center from the 14th century, has a covering similar to the single-domed masjids seen at the beginning of the 13th century. The brick dome is parallel and lined up to the skirt of the dome starting from the center. It passes from an uneven rectangular cover to the dome as in Beyhekim Mosque. Large brick braided tromps were used as transition elements. The inner lattice of the tromps is half-domed but arranged in three parts. The corners of these fragments formed another tromp just above the body wall. There are small tromps on both sides of the main tromp.

Kadı Mursel and Hacı Hasan Mosque, one of the mosques built in the city in the fifteenth century, have been repaired and built with a vernacular feature and a wooden breaking roof. The cover of the Kadı Mürsel Mosque is a hipped roof that rises above the wooden beams resting on the walls of the body, and the interior has a wooden slat ceiling. Hacı Hasan Mosque was built with wooden support. The structure is divided into three areas with flat arched scarves resting on wooden posts and is covered with a wooden breaking roof.

The single-domed mosques and masjids dating to the Anatolian Seljuk period in Konya are not perceived in the facade. While the interior is covered with tromp and triangular belts, the main outer wall on the facade continues up to the dome skirt. Thus, the building facade is emphasized as higher. In some buildings, the windows located between the tromps are perceived as a mahfil Starting from the level where the dome skirt starts, the cornice line is formed on the façade and the dome cover starts. floor window depending on the high wall appearance of the facade (Figure 3).



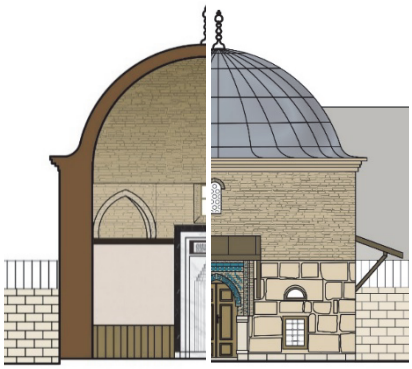


Figure 3a: Beyhekim Mosque **Figure 3b: Şekerfuruş Mosque view and cross section (re-organized from the archives of Konya General Directorate of Foundations)**

4.1.2. Material

Covering and transition elements of the structures constructed in Konya during the Seljuk period were made with bricks. The dimensions of the brick used in the covers and transition elements of the buildings in the 13th century are 18x4 cm, 21x5 cm, 20x4 cm. In the second half of the 13th century, a single-domed masjid was decorated with a brick-covering technique. The bricks are built perpendicular to the center and the bricks between the motif are built horizontally to form a star motif that follows one another from the center of the dome and opens towards the skirt of the dome (Figure 5). It is seen that 10x4, 12x4 cm bricks are used to create the ornament. In addition, similar size bricks were used in the transition elements of the Turkish triangle in this period to give the triangle form. The bricks are red and light red, and the joint gaps vary between 3-4 cm. In the mosques built with vernacular features, wooden material was used as a cover material in the bearing pillars, ceiling covering and roof structure in the interior. Today, it is seen that the covers of all the structures examined are covered with lead.

4.1.3. Ornament

The Alaaddin Mosque, built in the 12th century, has wooden transverse sections on the east and west. The triangular belt in the transition to the cover of the domed section in front of the mihrab in the middle, each triangle is covered with tiles of different composition. On the edge of the triangles there is a border with a rumi motif in a black band, and in the border there is a decoration program with different star compositions created with geometric forms. In its original state, the tile-covered dome tiles have been cast and are now plastered. The only

mosque built in the city center in the 13th century is Iplikci Mosque, the covering system is completely plastered and does not contain any decoration. At the beginning of the century, the cover system was left plain and plastered in the mosque structures. In the the second half of the century, brick was used both as a structural material and as a decoration material in the domed mosques. The opening from the center of the dome towards the skirt and the bricks are perpendicular to each other and decorated with star motifs. In the center of the dome, however, tile-covered circular panels were applied. The dome of Tahir and Zuhre Mosque is surrounded by tile-decorated kufic scripts consisting of broken lines forming 5-pointed stars in blue tones. In Beyhekim Mosque, there is a geometric decoration with kufic inscriptions in the dark interlocking rumi decoration (Figure 4). Bulgur Tekke Mosque has a floral motif in blue and navy blue colors.



Figure 4: The dome of the Beyhekim Mosque

4.2. Top Covering System of Ottoman Period Mosques in Konya

The first important monument built in the Ottoman period is the Piri Mehmet Pasha Mosque. In the classical period, Selimiye and Şerafettin Mosques were built in the city, and in the 18th century, lean mosques, lodges and madrasahs were built in vernacular architecture; however, it was lost (Tanyeli, 2001, p.178, 181). While the relations with the East were strong in Anatolian Turkish architecture, construction techniques of Eastern origin were used. these effects are also seen in the covering system. Pendentives were used as a transition element to the dome in the Ottoman period. Thus, we can say that pendentive originates from Anatolia (Kuban, 1982, p. 69)

4.2.1. Construction Practice

Nasuh Bey Mosque, whose construction date is not known exactly, is thought to have been built in the late 15th century (Konyalı, 2007, p. 171-172). The mosque has the characteristics of an early Ottoman mosque architecture. The mosque consists of a single-domed harim area, and a three-parted mosque with a portico, each covered by a dome. The dome of the harim room was built with brick in order and from the center towards the dome skirt, the diameter of the dome is 11 m. Since the size of the building is larger than that of the Seljuk period, pendentives were used as the transition element to the dome. The pendentive looks like a sail vault since it starts from the bottom alignments of the wall corners and rises towards the dome skirt. Brick arches with a height of 1.5 rows rise on the walls from the two long sides of the pendants. Thus, the heavy appearance of the dome is lightened. The dome skirt windows that emerged with the Beyhekim Mosque in the Anatolian Seljuk period are seen in Nasuh Bey Mosque in circle form and as eight. In addition, there is a row of brick cornices carried outside on the dome skirt like the mosques in the Anatolian Seljuk period. It is the dome tambour that suggests that the building belongs to the Ottoman period and is not seen in the mosques of the Anatolian Seljuk period. In the interior, the brick cornice on the dome skirt and the facade cornice are on the same level and the pulley wall begins. While the tambour ends with a cut stone braid and a stone cornice on the dome windows, the dome cover is perceived as a flat dome on the exterior.

Lack of important construction activities in Konya in the late 15th and early 16th centuries indicates that there is no rapid change. Piri Mehmet Pasha is a single-domed lean building built in 1523-24 (Tanyeli, 2001, p. 177-178). It is similar to the Nasuh Bey Mosque, consists of three small domes covered porticoes and a single dome harim area. While the transition element to the portico domes is pendentive, transition to the dome is provided with sectional tromps in the harim. The brick dome and transition elements are completely plastered and include three-piece cornices with a hand-drawn decoration. The cut stone main outer walls on the facade, like in the Nasuh Bey Mosque, ended in the transition to the dome with a cornice and the octagonal pulley wall was raised behind the facade as cut stone braided.

Selimiye Mosque, built in this century, is the most important Classical Period building of the city. Each section of the seven-piece portico is covered with a dome and is supported by pointed arches. the transition element is pendentive. The plan scheme of the main space consists of two central sections with central domes and three sections. The building was enlarged with a half-domed area in front of the mihrab. Each section on the side naves is covered with a dome. The

covering elements of the main dome with a diameter of 14 m and the domes on the side walls are pendentive. The half-dome in front of the mihrab was provided with stalactite at the corners of the wall and a hemispherical trump above it. The dome cover is plastered, but the dome should be brick braided. The window sequence begins just above the dome skirt. The staging feature in the facade and cover in the classical period is not perceived in the facade and interior of the Sultan Selim Mosque. The domes covering the porticoes and side naves are almost half of the main dome level; Behind the portico domes, the façade wall rises flat and hard. The inner main walls rise towards the main dome in the interior, and are supported by arch scarves on the mihrab and entrance wall. The dome cornice of the building, which is designed in a large size, remains weak (35 cm in height). The transition element to the main dome is pendentive and there are 16 windows with a semicircular arch on the dome skirt. A tambour was not formed on the exterior façade, the windows were supported with light protruding pendentives, and the lead was covered with the dome. The façade rises straight up to the dome skirt as in the Seljuk period buildings. The height of the building is emphasized, but it is perceived that the covering system is gradual on the mihrab façade.

The Şerafettin Mosque, built in the 17th century, has a different plan scheme compared to the Selimiye Mosque, and the covering system is also different. It is noteworthy that with the covering system, the building is elevated. The covering of the mahfil floor and the side naves planned parallel to the main entrance door of the building are at the same level. Unlike the Sultan Selim Mosque, it is covered with cross vaults. In the mihrab niche covered with a half dome at the same level as these areas, a plane triangular belt was applied as a transition element to the cover. The narrow shade in front of the mihrab is covered with a pointed dome from the mihrab cover, and the dome is covered with trumpets. The dome cover of the main nave begins from the top of this half dome. The transition element of the main dome with a diameter of 11 m is pendentive. The whole covering system is plastered and decorated with hand-drawn. The window space is left between the narrow section in front of the mihrab and the trump transition to the dome. An intermediate pulley was formed by crowning it with a cornice on the exterior. Between the narrow section in front of the mihrab and the trump transition to the dome, a window space is left. An intermediate pulley was formed by crowning it with a cornice on the exterior. There is a large dome cornice adorned with concave and convex profiles on the skirt of the dome, and a window array is located over the cornice. The window line is seen as a curved pulley supported by struts at the lead-covered corners of the facade. Cover system is perceived with the main dome on the exterior. The feature in

which the height of the building was emphasized in pyramidal form by stepping with the covering system in the classical period can only be seen on the mihrab. A decorative dome is placed in the corners of the harim section so that the side and front facade do not look heavy like in the Sultan Selim Mosque (Table 1).

In the 18th century, Hacı Fettah, Nakipoğlu, Ovalıoğlu and Salihpaşa Mosques are unpretentious structures in the vernacular architectural tradition. Since the number of old mosques in the city is sufficient, newly built mosques are limited (Tanyeli, 2001, p. 181). These structures are small-sized structures with flat roof and hipped roof (Table 1). Kapu Mosque and Aziziye Mosque are two of the most important structures built in the city in the 19th century. Both buildings were rebuilt in this century, instead of those destroyed by the big Konya fire. Kapu Mosque consists of five naves and twenty-five sections, similar to the mosque burned, in vernacular type, wooden multi-pillar, parallel to the altar. There are nine large sections in the center and narrow sections on the sides. Large areas in the center are covered with elliptical form, with a baghdadi dome, and the dome is passed with pendentives on wooden columns. Since it has an intense hand-drawn program, the cover is perceived as a masonry system. Narrow parts on the four sides of the harim are decorated with flat wooden ceilings. Since the dome covers are flat and located in the middle part of the mosque, they are not perceived from the front. The Çaybaşı Burhan Dede Mosque, which was built in this period, has two domes and the Yellow Yakup Mosque with a single baghdadi dome and is covered with a hipped roof. In these structures, the transition element to the dome is not applied, the dome rises through the wooden ceiling and the covering system is plastered. Saatci, İhtiyarettin, Polatlar Hatip Mosque and Sukran and Bagevliya Masjids built at the end of the 19th century are covered with a wooden structure with a hipped roof and flat roof. Aziziye Mosque is the most remarkable example built in this century. While maintaining the classical mosque typology with its central domed square plan, it is decorated with Baroque, Rococo and Empiric styles (Figure 5). The portico of the building consists of elliptic domes and five sections covered with cross vaults. In the main space, the corners of the building were covered with half domes and they created pointed arched scarves in the parts facing the main space. The arches that sit on the wall pillars form an octagonal plan on the dome skirt. The dome with a diameter of 18 m is accessed by pendentives between the arches. There is an 80 cm wide cornice at the dome skirt and the dome rises behind the cornice. While there is a window array on the cornice, this part is highlighted on the facade with an octagonal tambour wall. There are weight towers of the same weave type at the corners of the pulley, which is made of cut stone. The eaves of cornice over the dome windows also circulate around the towers. From the

cornice there is the main dome cover and the curved and pointed cover of the weight towers in the Baroque style.

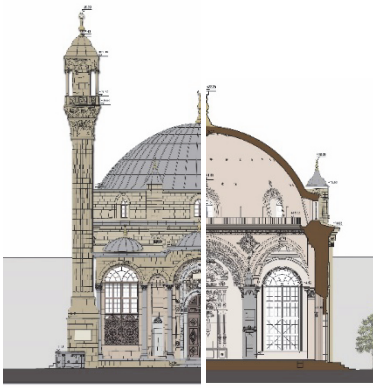


Figure 5: Aziziye Mosque view and cross section (re-organized from the archives of Konya General Directorate of Foundations)

4.2.2. Material

The covering material of the domed structures with masonry system built in the classical period is brick and they are generally 25-30 cm x 3-4 cm, 15x30 x 3-4 cm in size. The dome weave was made with about 1.5-2 rows of bricks. While the tambour walls started on the exterior with the dome skirt from the 15th century, the tambour walls were formed on the exterior of the dome skirt level in the 16th century. The tambours are the same as the facade material and are usually built with cut stone. The covering material of the mosques, which were built in the 18th and 19th centuries, with hipped roofs and flat ceilings, is wooden. The cover of Aziziye Mosque, built in the 19th century, is a brick dome. There is a cut stone braided tambour on the exterior from the dome skirt.

4.2.3. Ornament

In the mosques belonging to the Ottoman period, the covers are plastered and decorated with hand-drawn. In decoration, vegetal motif, sulus script, rumi motifs and geometric patterns were used. In the Aziziye Mosque, the Rococo style attracts attention with gold leaf, gilding and rich hand-drawn decorations. The dome cornice decorated with folds "C" and "S" on the dome skirt adds elegance to the structure as well as strengthening the structure as a structure. Mosques covered with wood have a slatted ceiling and plastered. The wooden baghdadi domes and flat ceilings of the Kapu Mosque are decorated with hand-drawn decorations.

5. CONCLUSION

Konya, which had been placed many civilizations in history, became the capital of the Anatolian Seljuk's in the 12th century. During this period and the Ottoman period, the city developed within the outer fortress line. As in Islamic cities, the mosque is the most characteristic building type in Konya. In mosques, the covering system is important that it has both a structural element and a symbolic meaning. The mosque construction had been continued with timber and curb roof since the ulucamii of the city.

The majority of the single-domed masjids built between the 13th and 14th centuries were located in Konya and are important for the Anatolian Seljuk architecture. Since this period, the covering material of the mosques with masonry domes was brick, which is widely used in the West. In the first mosque buildings, a type-specific to Anatolia had appeared by blending Eastern construction techniques. The domes of the mosques built during the Anatolian Seljuk period were without plaster. The mosques, which were built in the early periods, had simple, non-decorated domes and the transition elements to the dome were the tromps seen in Eastern architecture. In the transition to the dome with the second half of the 13th century, triangles began to be used as different types of Turkish triangle and prismatic triangles. While the dome was a structural element that covered a square plan in the 12th century, the bricks used in the construction technique on the dome were arranged at different angles to ornament the dome and on the center of the dome Eastern glazed tiles used in circular panels in the 13th century. At the end of the Anatolian Seljuk period, the dome and transition elements were developed and with the formation of new transition belts, the dome could also covered the rectangular planned spaces. During the period of Karamanoğulları, the construction of the building was low; Tahir Pasha Mosque is the only mosque belonging to this time in the outer fortress line that has survived to this day. It was covered with a dome with a simple and tromped transition element seen in the early periods of Anatolian Seljuks.

The first mosques of the Ottoman period were built with a single dome like the masjids of the Anatolian Seljuk period but at a larger size. The dome window seen in the last period of the Anatolian Seljuk was widely used in this period and the cut stone tambour wall appeared on the exterior, had been supported with buttresses recently. With the increase of the dome diameter, the transition to the dome element became a pendant, unique to Anatolia. In Sultan Selim and Şerafettin Mosques dated to the Classical Ottoman period, half domes used in the covering system with the main dome were new. On the transition to the dome, the pendants were used with tromp, Turkish triangle, muqarnas from local architectural tradition. During the Ottoman period, the dome was completely

plastered and ornamented with hand-drawn. It is seen that the facade wall was continued up to the dome skirt during the Anatolian Seljuk period and the building was elevated. In the Ottoman period, this feature was sustained partly on the front and side facades of the mosques, the mihrab facade rises with dome covers. In Anatolia, mosque cover systems with different features had been developed in each period by combining the construction techniques and the use of materials originating from the East and the West with local traditions.

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AN INVESTIGATION INTO SPATIAL DOME STRUCTURES OF MİMAR SİNAN PROJECTS

Ayça ARSLAN*

ABSTRACT

This study aims to reveal spatial analysis of Architect Sinan's mosque projects by focusing on the content of flexibility and superiority of 'a single dome space' by atectonic dome architecture that Sinan used to pass great openings, in terms of basic design of the space creation art of mosques, complexes, madrasas and caravanserais. In the article, the dome space structures used by Sinan are examined and the layout of the atectonic domed cover system is emphasized. In the paper, system of dome-space cover techniques to pass wide spaces without remaining any walls at under structure have been analysed, thus, both upper structure as space covering and under structure as main prayer space and auxiliary sub-spaces that attached to that main space have been investigated together. The great architect Sinan's projects on Ottoman mosques by using domes, made him famous as dome-maker, expressed in the study by variations of four-six-eight baldachin dome structure. Sinan who is known as great dome-maker, used dome variations for space-arranging art on his master pieces such as; Mihrimah Sultan Mosque, Sinan Pasha mosque, Selimiye Mosque, which had been created by baldachin domed structures and the extension of the structure was realized by the addition of a secondary single dome with regards of the spatiality of dome structure. According to the sources, the mosque was enlarged with a second domed volume in the 17th century and becomes its present state. Sinan has analyzed and used domes space structures as additive modular volumetric structures. Therefore, in this article, especially Sinan's architectural style, which gives a new identity to the large domes structure in the history of World architecture, how Sinan uses domed structured as a space creator are examined. The mosques created by Sinan's domes space structures have created a tradition within Ottoman architecture, but the universal symbolism of this tradition is the large domed structures. Just as the classical columns in the history of European Architecture create a symbolic status, so is the degree of domes and domed baldachin in Ottoman architecture. As a result, the aim of this

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article is to reveal the architecture of domed space structures by examining Sinan's superior open, flexible, large and reproducible space layouts with plans and sections through projects such as mosques.

Keywords: Dome-space, Space Growth, Flexible Interiors, Architect Sinan's works, Mosques

1. INTRODUCTION

1.1. Aims

The main aim of the study is to focus on 'domed-space-unit structures' that had been constructed by architect Sinan for Ottoman architecture as upper structures of a mosque that create the basic spatial structure of the building. Only at the Ottoman Turkish period the architectonic spatial potentialities of the domed-square units so persistently explored and its inner logic with secondary dome structure so excellently designed by Sinan in the Ottoman period. In addition, the domed-square unit became the denominator of Ottoman Turkish buildings. Especially the projects of great architect Sinan's on mosque architecture and his aim to enlarge, widen and expand the inner space and main central prayer area by using domes and its variations such as half-dome, arch vaults and pendentives explore the spatial structural diversity that Sinan developed to pass big spaces without any under carrier system. Thus, in the study the methods of widening spatial structures such as; four-six-eight baldachin dome systems have been investigated.

1.2. Literature

The study relies on a variety of bodies of literature on space, dome-space-units, spatial and structural integration of dome constructions, especially with the growth and widening ability of domes. This widening ability of dome-space-unit structures create one flexible open spaces dynamic spatially without walls. Thus in the study a comprehensive literature survey have been achieved through academicians writings, books, articles and internet sources, especially because of the originality of the topic 'dome-space-unit' with spatial and structural analyses. Thereby, in the study investigation of literature survey depends on works of respectively; 1) Meiss V. 2013 with Elements of Architecture, where Meiss explores open plan, dynamic, space definitions and density relation of space as a modular and unit system, 2) Kuban D. (2016), Ottoman Architecture book where Kuban explores Ottoman mosques and Sinan's great projects, 3) Kuran A. (2013), The Mosque in Early Ottoman Architecture, which includes historical survey to religious buildings and mosque architecture from Seljuks to Ottoman, 4) Moussavi F., 2009, The Function of Form book where architectural elements have

been explored by 3d drawings and explores the structural analyses of domes as the most common tessellation and widening space element freely, flexibly.

1.3. Methodology

The methodology consists of three parts which 1st part is a literature survey on space, dome-space-unit and architect Sinan's projects, 2nd part introduces; Early Ottoman, Seljuk and Ottoman period (Architect Sinan's) mosque projects with indicating important planning and dome-usage techniques, 3rd part consists of cases' analyses with key indicators as shown at the table above which firstly classified as four-six-eight baldachin dome systems.

The main aim of the analyses is to show how Sinan achieved the growth of space by an upper structure in a transparent way which equal to open plan. Methodology of case analyses firstly grouped into two parts through Sinan's dome carrier systems, a) four pillar/baldachin system, b) six pillar/baldachin, c) eight pillar/baldachin system, then each case has been investigated by indicators as; 1) general information, 2) baldachin type, 3) extension type, 4) unit type , 5) upper-under structure

Table 1. Structure of the paper

STRUCTURE OF THE PAPER		
1.LITERATURE SURVEY	2.SAMPLE CASES	3.CASE STUDY: ANALYSES OF THE MOSQUES
1.MEISS (2013); Elements of Architecture 2.KUBAN D. (2016); Ottoman Architecture; Ottoman Mosques and Architect Sinan's Great Projects 3.KURAN A. (2013); The Mosque in early Ottoman Architecture 4.MOUSSAVI F. (2009); The Function of Form	*Old Fatih Mosque *Sokullu Mehmet Pasha Mosque *Selimiye Mosque *Sultan Ahmed Mosque *Mosque of Alaeddin Bey *Mosque of Hacı Özbek *Mosque of Sultan Bayezid *Yeşil Cami in İznik (Green Mosque); *Mosque of Hüdavendigar. Bursa Ulu Cami plan& section	1) General information 2) Baldachin type 3) Extension type 4) Dome-space pattern 5) Unit type 6)Structure 7)Spatiality

Table 2. Methodology of the cases' analyses

<table>
<tr><td colspan="2">Four baldachin</td><td colspan="2">Six baldachin</td><td colspan="2">Eight baldachin</td></tr>
<tr><td colspan="6">1.General information information of the mosque
-construction year /place
-dome size and height (diameter and height)
-exterior planning atrium existence</td></tr>
<tr><td>2.Baldachin/ Pillar carrier type</td><td>3. Extension type
horizontal
-vertical</td><td>4. Dome-space pattern</td><td>5. Unit type
-single unit mosque
-eyvan mosque (multifunctional)
-multi unit mosque</td><td>6.Structure
-Upper structure/dome unit
-Under structure/main prayer area
-Auxiliary sub-spaces</td><td>7.
Spatiality</td></tr>
</table>

2. INVESTIGATION INTO DOMED SPACES AND GROWTH PATTERNS

This part constitutes the first part of methodology as literature review and consists of five parts respectively which the first part of the literature starts with an introduction to 'space-spatiality-open plan' concepts to shed a light for the second step which consists of dome-unit spaces as a device for wide open spaces without wall carriers. At the 3rd part dome structures have been investigated from Farshad Moussavi's approach through tessellation method, 4th part is an introduction to early ottoman and Seljuk mosques and the development of dome-unit spaces, lastly the 5th part presents Architect Sinan's mosque projects by analysing famous baldachin technique.

2.1. Introduction to 'space-spatiality-open space' contents

Generally, architectural space must have boundaries to determine and indicate its form, and there is some sort of ways to define spaces from explicit to implicit character by using rijit ~~to~~ and transparent walls/planes/elements that will carry the spatial quality of spaces from low to high and also from traditional to contemporary styles. In fact, to define a space; it is not necessary to use four walls, a space can be highly liveable and spatial without enclosed walls. A space can be defined by a ceiling or upper structure on it. Thus, it is not always the lower structure that creates sub-spaces in one big space, also upper structure has

quite well ability to define sub-space under it. As upper structures domes with varying sizes is quite unique example for the space definition ability of upper structure without any walls (vertical separators) under it. By using different dome sizes, it is possible to define many independent sub spaces under each dome without any rigid walls. As indicated by Meiss V. P. (2013); ''Spaces does not only have depth; it is also more or less dense. When greater density is the goal, we can modulate distances by intermediary 'stages of depth' brought closer together. This is generally the case when we work with shallow space, but we can also create density in deep space: The Cordoba Mosque with its 'forest' columns are a deep space of extraordinary density'' (Meiss,2013, pp:136). (Figure 1)

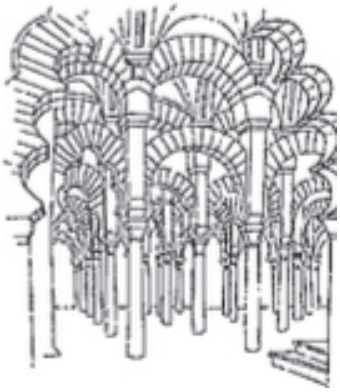


Figure 1. Interior of the Cordoba Mosque (source: Meiss, 2013)

The quality of any space increases by the way it integrates with its environment, in addition, its' relations with other spaces, its visibility and perception degree from outside also effects spatiality. Thus, to accommodate a good spatial quality; space enclosure must be low and distinctive space borders must be used instead of rijit walls such as; domes as upper structures/ceilings, level changes in the floors, point-like elements like columns to create sub-space. As Meiss emphasizes that; ''one of the fundamental oppositions making it possible to distinguish types of architectural space is that they can either be closed/introverted and concentrated upon themselves, or open/extroverted and centrifugal' (Meiss, 2013) The opening of space is obtained by reduction in its' definition (for example, elimination of a corner) and by presence of elements belonging to both interior and exterior (for example, extension of a wall to the exterior) (Meiss, 2013) (Fig 2)

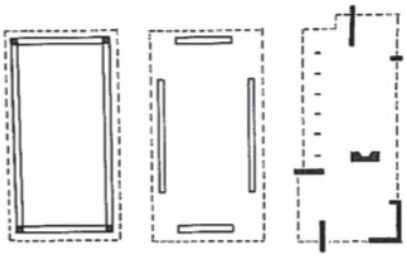


Figure 2. These instructional diagrams by Allen Brooks SHOW frank Lloyd Wright's contribution to a new spatial conception: starting with the elimination of corners (source: Meiss, 2013)

On the other hand, sub-spaces can be added to each other within one open big space, this can be achieved by two different ways juxtaposition and interpenetration. As seen from the picture, two space can be syntax side by side or they can integrate each other and use the same borders. Juxtaposition is generally referring to pre-modern terms which includes low spatial quality. On the other hand, space quality rises by the integration in one big space. This integration happens by elimination of walls and putting implicitly defined spaces side by side horizontally and/or vertically. (Figure 3)

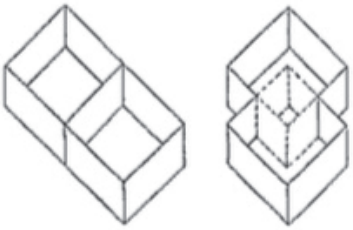


Figure 3. Juxtaposition and Integration (source: Meiss, 2013)

2.2. Determination of 'Domes' as Spatial Elements

According to Altın M. (2019); definition of a **Dome**, at Turkish dictionary (TDK) is; 'a roof that covers a structure which is half sphere shape' (Altın,2019, pp:16-17). In addition, from architectural point of view domes are defined as; ''a shell that covers spaces, a sphere piece building element that is revealed when a vault is turned around its' vertical axis'' (Altın M., 2019 pp:16-17) On the other hand, at encyclopaedic architectural dictionary, Hasol (1993) defines domes as; 'sphere skullcap, half sphere or the building cover, which is shaped like a cupola, or cover formed by the rotation of the bow around the perpendicular descending from the top of the arc' (Hasol, 1993, pp:277).

Throughout architectural history, domes are the most used and common architectural elements generally preferred by architects and engineers to cover wide spaces because it doesn't require any vertical carriers. Domes are especially used at religious buildings and they indicate some meanings such as; at Eastern Orthodox churches dome structure means 'heaven' as very famous Pantheon. On the other hand, at mosques domes are used to indicate spaces for gathering and prayer areas. Thus, at mosque architecture domes define one uniform space which architect Sinan's mosques are good samples. (Altın M. pp.16-17)

From, geometrical point of view, a dome defines the structural construction of a sphere form. The sphere is a double curvature rotating surface and is curved (Türkçü, 2003, pp.97). Domes are generally used as top covers for circular or square or polygonal planned spaces by cutting the upper part with a certain plane instead of the entire sphere (Altın M. pp.16-17). In addition, the transition from the circular dome above to the square and polygon plan below is also provided by using structural elements we call transition elements such as; pendant (spherical triangle), slotted bing and trumpets (vault bing). These transition elements are carrier elements and are three-dimensional elements. (Hasol, 1993, pp.277)

2.3. Growth Patterns of Domes: Horizontally & Vertically

According to Farshad Moussavi (1993), dome is one of the architectural element of form & function concept. Domes are generally composed of; 'surfaces' or 'surfaces and ribs' that distribute loads in plane or along the ribs. Surface domes have greatest efficiency when resisting evenly distributed loads and they distribute loads along a continuous surface. (Moussavi,1993) According to Moussavi (1993);

''Domes tessellate along horizontal and vertical axes of growth to produce horizontal and vertical structural forms; a) *Horizontal tessellation (growth)* can occur along the horizontal axis. All horizontal tessellations form shed-like structures that may vary in section or ground plan according to variations in the domes as they grow along the horizontal axis, b) *Vertical tessellation (growth)*, when a dome is able to respond to the three-dimensional bending moment which is characteristics of a vertical structure. The vertical tessellation of domes can result in structural forms that vary in plan and profile along the vertical axis of growth'' (Moussavi F., 2012) . (Figure 4.a-b)

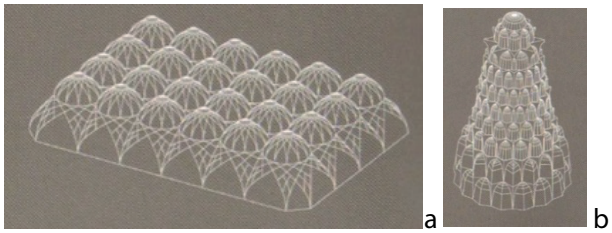

a b

Figure 4. a) horizontal tessellation, b) vertical tessellation

**Surface dome;* ''The base unit of a surface dome consists of an arch rotated around its vertical axis to form a smooth surface. Surface domes are circular in plan, and additional arches and pendentives are required to integrate them with a square or polygonal plan'' (Moussavi F., 2009, sf:238). Surface domes can be made of masonry or reinforced, thin-shell concrete. As a result, in addition to enclosure and non-oriented-ness, a surface dome includes axiality, cruciformity, multi-scaling. Below, important mosques of Architect Sinan's have been introduced to demonstrate horizontal tessellation and growth techniques (Figure 5-6-7-8)

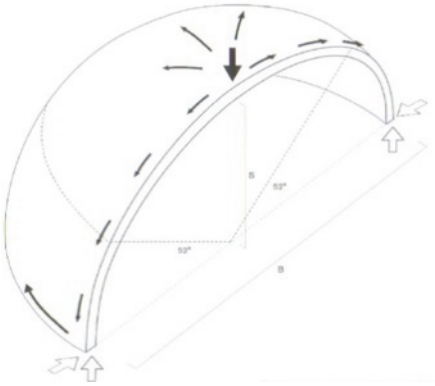


Figure 5. Base unit - surface dome

*** Old Fatih Mosque: ''**The tessellation of dome and half-dome creates a space. Old Fatih mosque is formed by the horizontal tessellation of a surface dome base unit, repeated, scaled and interconnected by arches and pendentives'' (Moussavi, 2009).

The dome configuration of the mosque consists of one whole dome and a half dome connected to whole with arches and pendentives. Thus dome-unit is: '**1 whole dome + 1*0.5 dome' system**. (Figure 6)

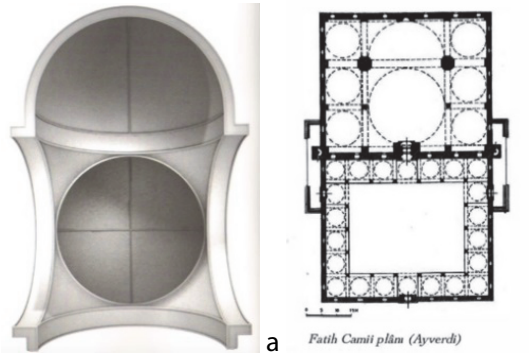


Figure 6. Old Fatih Mosque –Sinan the Elder- İstanbul Turkey -1471

*** Sokullu Mehmet Pasha Mosque: ''**Tessellation of the base unit, involving four half-domes (base units) and a full dome of a larger scale, creates a domed enclosure that defines a complex form. Domes of a smaller scale roof the complex of rooms surrounding the courtyard Sokullu Mehmet Pasha is formed by the horizontal tessellation of a surface dome base unit, repeated, scaled and interconnected by arches and 6 pendentives. The base unit is scaled down as it repeats. The transition from the circular plan of the main dome to the square plan of the perimeter is achieved by four smaller half-domes located at the corners of the square plan.'' (Moussavi, 2009). (Figure 7)

The dome configuration of the mosque consists of one bigger whole dome and four smaller half domes connected to whole with arches and pendentives. Thus dome-unit is: '**1 whole dome + 4*0.5 small dome' system**.

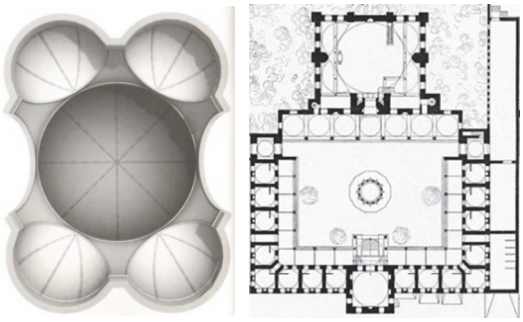


Figure 7. Sokullu Mehmet Pasha Mosque – Sinan – İstanbul Turkey-1571

* **Selimiye Mosque:** ''Tessellation of the base unit, involving eight half-domes (base units) and a full dome of a larger scale, creates a domed enclosure that defines a complex plan shape which is almost square despite being formed of domes. Selimiye Mosque is formed by the horizontal tessellation of a surface

dome base unit, repeated, scaled, and interconnected by arches and pendentives. As the base unit repeats and is scaled down , it divides into five half-domes which are situated at the perimeter of the main dome to serve as a transition from the circular plan of the dome to the square plan of the perimeter. The main dome rests on a eight coloumned arches and pendentives, which give away to the five half-domes along the perimeter. Both the main dome and the half-domes are given narrow openings along their bases in order to introduce natural light into the interior''(Moussavi, 2009). (Figure 8)

The dome configuration of the mosque consists of one bigger whole dome and eight smaller half domes connected to whole with arches and pendentives. Thus dome-unit is: '**1 whole dome + 8*0.5 small dome' system**.

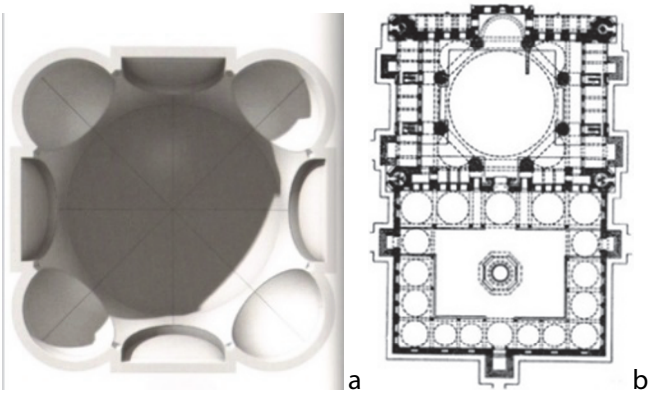
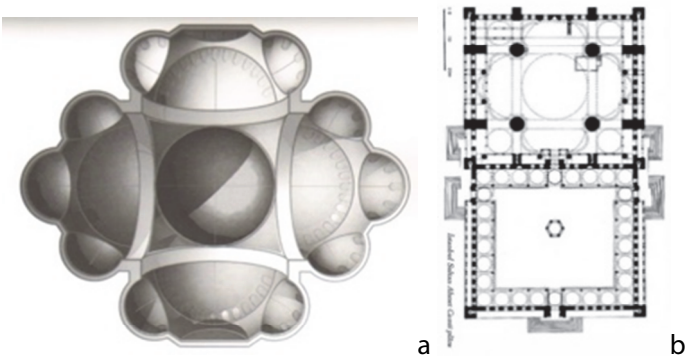


Figure 8. Selimiye Mosque

*** Sultan Ahmed Mosque;** at this huge mosque (113mt. length/69.9mt.width) the growth and enlargement of prayer area had been achieved by a complex dome system that is developed by Architect Sinan. The repetition, combination, organization of domes with different sizes and proportions as a basic dome unit, refletcs basic design principles in a good way and cretaes the design of Sultan Ahmet Mosque.

''Horizontally usage_of a surface dome with four large and ten small half-domes creates an enclosure with an asymmetrical cross-shaped plan. The main dome rests on a set of four columned arches and pendentives that give way to the four half-domes and the smaller half-domes, which consists of one third of their surface'' (Farshid Moussavi, 2009). (Fig 9)



a b

Figure 9. a. Sultan Ahmed mosque upper structure, b. plan, c. secondary dome pattern

The dome configuration of the mosque consists of one bigger whole dome and four smaller half domes and ten more smaller half domes connected to whole with arches and pendentives. Thus dome-unit is: '**1 whole dome + 4*0.5 small dome + 10*0.5 more smaller half dome' system**.

3. HISTORICAL INVESTIGATION INTO DOME SPATIAL STRUCTURES

3.1. Early Ottoman Mosque Architecture

According to Kuran A. (2013); ''In Islam buildings for prayer are called mosques. The English Word 'mosque' derived from Arabic word masgid (spelled mescid in Turkish) which means a 'place for prostarting oneself in worship'. A second word used for a religious meeting place of the Muslims is jami (cami in Turkish), meaning a place of assembly for the congregation. In Turkish usage the mescid refers to a small and cami to a large, place of worship. those built by royalty, which generally have two or more minarets- the erection of more than one minaret being a royal pregative-are known as the Selatin cami (sultan's mosque)'' (Kuran A., 2013).

Anatolian Seljuk mosques despite certain common features such as portals, pillared interiors, or domes in front of their mihrabs are generally classified in two majör groups according to the orientation of their rectangular masses. The Ottoman mosques, on the other hand, are more standardized and definable in their basic forms. In terms of exterior form and organization of inner space, the Ottoman Turkish mosques built during the fourteenth and fifteenth centuries can be classified into three majör groups;

1) *the single-unit mosque (with complex massing and articulated interior)*
2) *the 'eyvan' mosque (axial and cross axial)*

3) the multi-unit mosque (with similar units and dissimilar units)

The typical **single-unit mosque** consists of a square, or near square, prayer room, a two or three-bay porch and a minaret. The prayer room is generally surmounted by a dome and the porch by vaults, domes or a combination of two. The **multi-unit mosque** has a large interior space which is divided into compartments by means of columns or piers in order to provide shorter spans. Seljuk mosques of this type usually have flat roofs; but for reasons of emphasis, one or more compartments may be covered by domes. The Ottoman multi-unit mosques, on the other hand, are more standardized, for in them all the compartments are dome-square units. Undoubtedly the most interesting type of early Ottoman mosque is the eyvan mosque. There is a kinship between the eyvan mosque and Seljuk medrese with its central dome. Both types of buildings have two of four focal points that occur at the end of only the longitudinal axis or both the longitudinal and transverse axes around a domed interior court. (Kuran A., 2013).

3.1.1. The Single-Unit Mosque (Mosque of Alladdin bey in Bursa and Mosque of Hacı Özbek in İznik)

The domed-square structure, with the addition of a porch and a minaret, established the basis mass of the typical single-unit mosque. The most important examples of typical single-unit mosques built during the first part of the fourteenth century are those of Alaeddin Bey in Bursa, Hacı Özbek in İznik, and Orhan Gazi in Gebze. The interior of the mosque of Alaeddin Bey comprises a square room measuring 8.20 m. by 8.20 m. surmounted by a hemispherical dome that rests on a sixteen-sided belt of large triangular planes. (Figure.10)

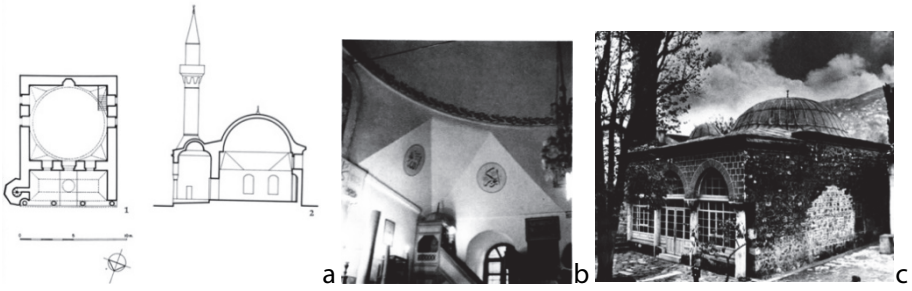


Figure 10. Mosque of Alaeddin Bey in Bursa, a) plan & section, b) interior, c) exterior

*** Single Unit Mosque with Complex Massing**

The highlight of the single-unit mosque with complex massing in early Ottoman architecture is the Mosque of Sultan Beyazıd II, which occupies the focal point of a large complex of buildings in Edirne. Designed and built for Bayezid II by the

architect Hayrettin between the years 1484 and 1488, the mosque comprises a fountain court, and two minarets. The simplicity of expression observed on the exterior continues inside the prayer hall, which is simple-square room 20.25 m. per side. The huge dome rests on four pendentives and completely envelops the interior space. In terms of organization of space, the domed prayer hall does not have any relationship with the hospices. the hospices tall buildings; they stand about a third as high as the prayer hall, allowing the latter to dominate the scene and to retain its identity as a single-unit structure. (Fig 11)

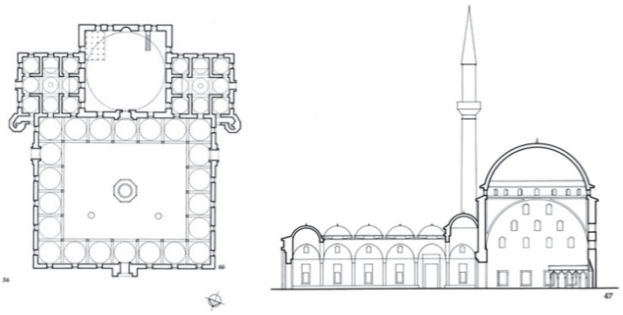


Figure 11. Mosque of Sultan Bayezid ,Edirne, a.plan, b.section

***Single Unit Mosque with Articulated Interior**

In single-unit mosques with articulated interiors the development takes an opposite path. The external form remains more or less the same, but the interior of the basic-domed square unit is enriched by auxiliary spaces. Yeşil Cami in İznik (Green Mosque); was constructed by the architect Hacı bin Musa between the years 1378-1392. The porch of the mosque has the unusual three-bay arrangement with bipartite open ends. All three bays are surmounted by flat-topped cross–vaults. The prayer hall is basically a typical domed-square space. In this mosque, however one finds a second three-bay space located between the prayer hall and the porch. The main dome measures 11.00 m. in diameter and unlike the two smaller domes, which are pointed, is hemispherical. (Fig 12)

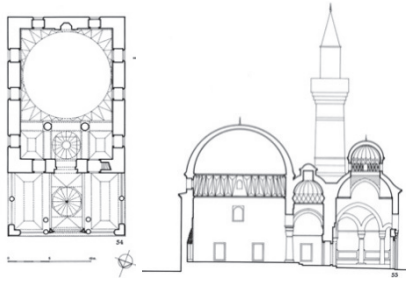


Figure 12. Mosque of Hacı Özbek a) plan, b) section

3.1.2. The Eyvan Mosque

Eyvan mosque is the most original and interesting type of early Ottoman Turkish mosque, which has been called to date by many names such as 'Bursa Type', the 'Reverse T type' or the 'Multi-functional' mosque. The side rooms were used as hostels for the traveling dervishes and he called these edifices 'Convent mosques' and corner rooms had a different function, such as; guestroom, classroom, court of law, kitchen, etc. Like the single-unit mosque, the eyvan mosques were erected in two groups: the axial eyvan mosque, the cross axial eyvan mosque. Mosque of Hüdavendigar at Çekirge in Bursa as a cross-axial eyvan mosque, is a two story building comprising a mosque-convent on the ground floor with a medrese on the upper level. Its construction was ordered by Murad I in 1365 and completed in 1385. The ground floor is composed of a five-bay porch , a vestibule which gives access to the interior on the south and to staircases on either side, a main interior space of four eyvan around a central hall, and six rooms, three each on the east and the West (Fig 13)

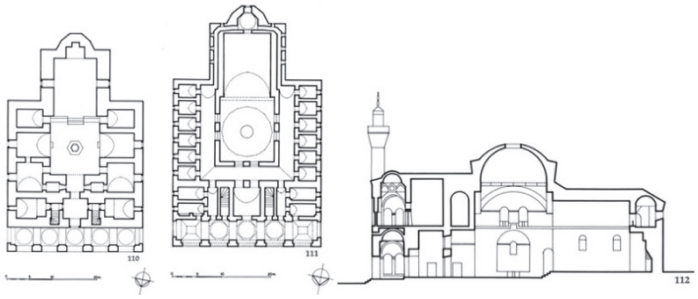


Figure 13. Mosque of Hüdavendigar, plans and section

On the upper level, there is a five-bay gallery directly above the porch, a large room between the two staircases, eight Medrese cells on each side accessible by a corridor that follows the perimeter of the central hall, and a small room above the mihrab on the south. The latter is covered by a dome. The large room, the cells, and the corridors are barrel-vaulted. The three centre bays of the gallery are surmounted by domes, the outer ones by flat-topped cross-vaults. In the centre of the main hall there is a fountain inside a pool. Owing to the two-story structure, the dome-11.00m. in diameter- rises to a height of 23.00 m. It rests on a simple sixteen-sided belt on pendentives.

3.1.3. Multi-Unit Mosques

As indicated previously both the single unit and the eyvan mosques are basically one-unit mosques. In the multi-eyvan mosque the various prayer units are fragmented and scattered instead of being integral parts of a unified whole as

they are in the multi-unit mosques. The Ulu Cami in Bursa as a multi-unit mosque with similar units; was begun in the fall of 1369 during the reign of Bayezid I, and according to the inscription above the door of its minber it was completed in 1399. The Ulu Cami of Bursa is a large rectangular building whose exterior dimensions are 68 m by 56 m. Twelve square piers divide the interior into twenty equal units, each of which is surmounted by a dome. Nineteen of these domes are full shells, but the twentieth dome, the second from the main portal in the centre row, is open on top and was originally unglazed. The domes of the Ulu Cami rest on pendentives and are girdled on the exterior by octagonal drums. All the domes have the same diameter but are not the same height. (Fig 14)

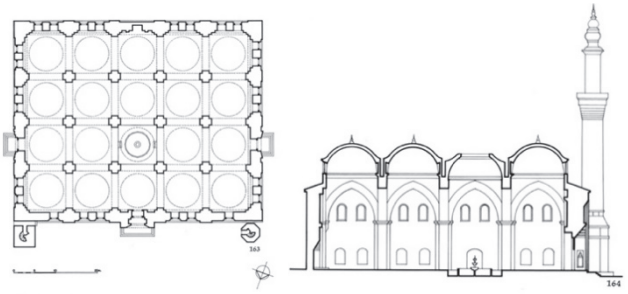


Figure 14. Bursa Ulu cami plan and section

3.2. Architect Sinan's Dome-Space Innovations and Mosque projects

This part mainly focuses on determination of innovations in Sinan's art and domed space usage. The innovative contributions of Sinan's art to the 16th century Ottoman architecture by using dome element as aesthetical and spatial structure to create big open and main space of the mosques and the technics that he developed.

As indicated by Özgüleş M. (2008) ; ''*İf we look into architectural history , we may see innovative contributors, but in Ottoman architecture, there is undoubtedly one name of consensus ; Sinan. His genius art and engineering resulted in architecture and he was responsible for the construction of approximately 400 buildings while he was the chief architect of the Ottoman empire for a half century 1538-1588. The aesthetic excellence of his works together with the variations and endless attempts for new forms made the architecture of his age-magnum-opus-of the empire and his works crystallized the building tradition of the Ottoman''* (Özgüleş M.2008)

From 11th centuries the most important element of eastern Islamic art to the development of mosque architecture was the dome. This evolution can be seen in Ottoman architecture respectively at Bursa and Edirne mosques with the reverse t-model found in Bursa Green Mosque, or big central dome example

erected at Edirne Üç Şerefeli Cami. These examples and many other indicates the efforts of Sinan to create a structure that transform a space into an uninterrupted one big opening differently form Renaissance works. (Özgüleş, 2008)

Sinan's dome usage was representing the continuity and interdependence of space from rigid walls and dynamism through lateral small sub-spaces. When we concentrate on structure of mosques it can be seen that Sinan achieved a double boundary system as the result of his work on form and plan. His big contribution was to create knit structures by dome element, in Sinan's mosques the secondary structural and spatial parts are not just added to the core baldachin but were magnifying the main dome.

At this point Özgüleş M.(2008) indicates that; *''İn fact, Sinan skilfully places a real baldachin at the centre, and the auxiliary structural elements, arches and buttresses surround it to form a secondary boundary, but when doing this, he pays a quite important attention to make these elements the only carriers of the mass; therefore he enables the transparency of the walls as a result, he not only enlarges the space in an uninterrupted manner, but also increases the illumination of his buildings as the walls given up their weight carrying role and have the opportunity to contain extra windows''* (Özgüleş,2008)

As seen through schematic mosque drawings Sinan achieved the space widening by adding semi domed on each side of the main dome at Şehzade mosque, which he reached the ideal scheme at Edirne Üç Şerefeli than followed by Fatih and Beyazıt. (Fig 15)

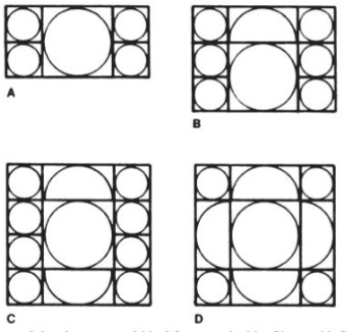


Figure 15. Conceptual development and ideal form reached by Sinan with Şehzade plan; a) Edirne Üç Şerefeli, b) Fatih, c) Beyazıt, d) Şehzade (source: Doğan Kuban , 'The Style of Sinan's Domed Structures' in muqarnas, Vol 4, Leiden: E.J.,Brill,1987,p.839

Through conceptual drawings it can be clearly seen that each time Sinan developed a different dome structural system for each different mosque plan. For example, at Beyazıd, he put 4 smaller domed bays at each side of the central

dome and add large semi-dome bays in harmony with the main axis was a distinctive structural solution for Beyazıd Mosque. This ensure the widening of the main central space laterally on two axes. On the other hand, Selimiye mosque is masterpiece of Sinan in order to achieve of unification and widening of the main space.

Özgüşel (2008) resembles this baldachin growth scheme as; the outer boundaries circle around the interior one just like water circles caused by drop, the opposition of these drops contribute to spatial quality and result as an innovative space/structure unification by widening of the interior space.

Thus to finalize, it will not be wrong to name Sinan as a **'dome maker'** as also emphasised by Özgüleş, he innovatively used domes with diversity as the **'master of domes'**, and he had covered hundreds of buildings of every scale with domes and perfected this technology by experiencing different schemes which Özgüleş later indicated that; '*as Grabar also points out, what Sinan had really done was to take the ideas of the dome-baldachin and of the dome membrane to their most extreme point of growth*" Özgüleş (2008). In addition, Kuban also indicates that; 'the lesson to be learned from the Selimiye is that an architectural element with distant symbolism can become generator of a design without being formally emphasized. This is what makes Sinan's style the purest domical style in the history of architecture'' (Kuban D.1987).

In addition, Erarslan A. (2018) emphasizes that ; ''*it was the structure (support) features used in the domes that determined the space and thus plan establishment of Sinan's mosques, in utilizing multi-support systems, such as four, six and eight pillars/baldachin in his dome structures, the Great architect Sinan set up the space-plan domes structures formulated within the framework of these systems*''(Erarslan A.2018, vol 5, pp.31-48).

The plan and space developed around a **baldachin system** and it is possible to create different spatial typologies in this system that allows a rich space organization. Sinan uses multiple support systems such as **four, six, and eight (baldaken)** in the dome structure, and builds the plan around this system in the domed structures created with this support system. (Fig 16)

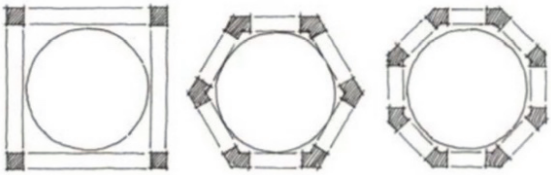


Figure 16. The baldachin variations of Sinan four,six and eight. (Tuluk 2006)

In addition, Bilgin H. (2005) indicates that Sinan in his early ages developed an excellent structural system with the synthesis of ***'main dome + arch vault + pendant + half domes + semi-half domes'*** and developed four-six-eight pillar support systems. Sinan created a very complex upper shell at his mosque projects by using different variations of domes-half domes-pendant and vaults through his aim of enlarging the space, both horizontally and vertically. (Fig.17)

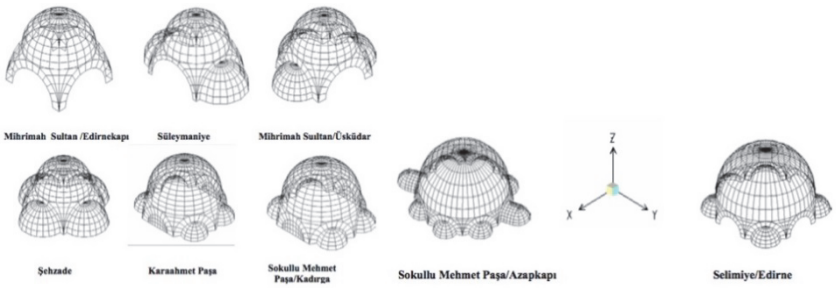


Figure 17. Finite element models of domed roof systems (Bilgin H.206)

At Sinan's mosques dome is the centre of gravity of the structure. He used four/six/eight totally three type carrier system. Sinan used dome with different techniques to construct mosque, education building, bath, bazaar. The effects of loads on dome structures and their current interior forces can be calculated by shell theory numerically. Thus, this part was for to introduce Sinan as genius architect of his era by investigating his works mainly his mosque constructions that he developed an excellent dome structure system to pass as big space as he can.

PART 4. DISCOVERING EXPANSIONS & WIDENINGS OF THE DOME-SPACES IN MOSQUE INTERIORS

This part of the study consists of analyses of Sinan's mosque projects under their spatial—widening and growth patterns. The analyses aim to reveal space expansions and widening from a central domed space by the help of four basic architectonic elements; 'dome-half dome-pendantif-arch vault'. The main indicator of the spatial analyses is based on 'space growth' by repetitive variations of dome elements as basic design principle; in order to reveal the quality of open spaces that are planned by upper structure by the help of dome element without inner walls.

The main aim of the analyses is to show how Sinan achieved the growth of space from an upper structure in a flexible way which is equal to open plan. Case projects have been firstly grouped into three parts through Sinan's dome carrier

systems, a) four pillar/baldachin system, b) six pillar/baldachin, c) eight pillar/baldachin system, then each case has been investigated through their; 1) general information, 2) baldachin type, 3) extension type, 4) unit type, 5) upper-under structure (Table 3)

Thus, the dome pattern of growth and expansion of space is the main theme of the study. In the paper, system of dome-space cover techniques to pass wide spaces without remaining any walls at under structure have been analysed, thus, both upper structure as space covering and under structure as main prayer space and auxiliary sub-spaces that attached to that main space have been investigated together.

Table 3. Case Analyses Methodology

<table>
<tr><td colspan="2">Four baldachin</td><td colspan="2">Six baldachin</td><td colspan="2">Eight baldachin</td></tr>
<tr><td colspan="6">1.General information information of the mosque
-construction year /place
-dome size and height (diameter and height)
-exterior planning atrium existence</td></tr>
<tr><td>2.Baldachin/ Pillar carrier type</td><td>3. Extension type
-Horizontal
-Vertical</td><td>4. Dome-space pattern</td><td>5. Unit type
-single unit mosque
-eyvan mosque (multifunctional)
-multi unit mosque</td><td>6. Structure
-Upper structure/dome unit
-Under structure/main prayer area
-Auxiliary sub-spaces</td><td>7. Spatiality</td></tr>
</table>

4.1. The Samples of Four Pillars/Baldachin System of Sinan Mosques- 4 Baldachin (ana kubbesi dört destek üzerine oturan cami örnekleri)

This first part consists of Sinan's four baldachin type mosque dome technique. (Fig.18)

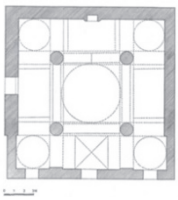
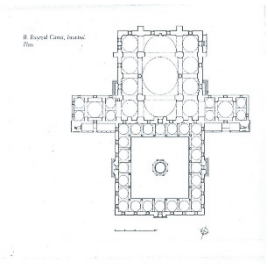
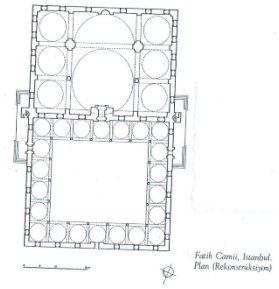
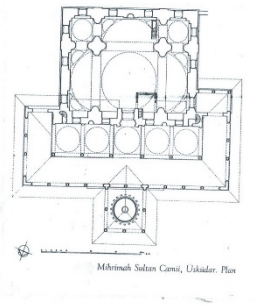


Figure 18. Hazar Degaron Mosque , Diameter: 6.5m., early sample for four baldachin system

Table 4. Four baldachin dome-space-unit system mosques

1.st FOUR BALDACHIN SYSTEM	**2 nd FOUR BALDACHIN SYSTEM**	**3rd FOUR BALDACHIN SYSTEM**
		
II Bayezid Mosque, İstanbul,Plan,1501,Architect Hayrettin and Kemaleddin	Fatih Mosque ,İstanbul plan,1453-1771, Atik Sinan and Architect Tahir	Mihrimah Sultan Mosque, Üsküdar, 1548, Architect Sinan,

***CASE NO 01_1**: II. Bayezit Mosque İstanbul-1501 / 1506

1. General Information: The mosque had been constructed by Sultan II. Bayezid in İstanbul at Bayezid district. It is a structure among the early works of the Ottoman classical architecture. A main dome with a diameter of **16.78m, 31 m. high** sitting on four legs, is supported by two half domes in the north and south. There are twenty windows in the main dome and seven windows in the half domes. The mosque has a square community courtyard surrounded by 24 domed porticoes.

2. Baldachin /Pillar Carrier Type: 4-baldachin/pillar system with a central axis.

3. Extension/Growth Type: Vertical tessellation with strong one basic dome unit in the centre and one-way horizontal growth on north south direction with two half domes.

4. Dome-space pattern: 1 whole dome + 2*0.5 domes system

5. Unit Type: Single unit mosque with one wide dome in the centre of interior as a prayer area.

6. Structure harmony: Mosque accommodates 'a single-unit dome+2*05 domes' patterns as upper structure and a rectangular space plan as under structure. Thus, the mosque has a unity and harmony between upper and under structures. There are 6 small dome-unit auxiliary spaces at both sides of the main dome. It has cross-axial symmetry.

7.Spatiality: at the end, its found that the mosque accommodates a unique spatial design forms by diversity of dome structures; '**1 big+2 half+6 small dome+4 pillars'** spatiality.(Table 4)

***CASE NO 01_2**: Fatih Mosque İstanbul-1766/1771

1.General Information: the mosque had been constructed at 1766 at İstanbul and reconstructed at 1771 due to earthquake. From the first construction of the mosque, only three walls of the fountain, the crown gate, the mihrab, the minarets up to the first balcony, and some of the surrounding wall remained. The outer hoops of the domes have eight corners and sit on the arches. In the first construction of the Fatih Mosque, walls and a dome were placed on two legs to expand the mosque area, and a half dome was added in front of it. Thus, the dome with a diameter of **26 m** has remained the largest dome for a century. In the present case, the central dome sits on four elephant oils, and four half domes surround it. The second degree half and full domes around the half domes cover the galleries.

2.Baldachin /Pillar Carrier Type: 4 baldachin/pillar system a huge dome-unit with 26 m. diameter with a central axis.

3.Extension/Growth Type: Mosque is designed with four baldachin system the central/prayer space is enlarged with just one direction with half dome and side wings are rectangular spaces consists of three domes that are connected to the main space with arch-vaults.

4. Dome-space pattern: 1 whole dome + 1*0.5 dome system

5.Unit Type: Single-unit mosque with one main dome in the centre of interior as a prayer area.

6.Structure: Mosque accommodates; 'a single-unit dome+1*05 dome' pattern as upper structure and a rectangular space plan as under structure. Thus, the mosque has a unity and harmony between upper and under structures. There are 6 small dome-unit auxiliary spaces at both sides of the main dome. It has axial symmetry.

7.Spatiality: Mosque accommodates a unique spatial design by; '**1 big+2 half+6 small dome+4 pillars'** spatiality. (Table 4)

***CASE NO 01_3**: Mihrimah Sultan Mosque, İstanbul Üsküdar 1562-1565

1.General Information: Mihrimah Mosque or Iskele Mosque, is the mosque built by Mimar Sinan, the daughter of Suleiman the Magnificent Suleiman Hürrem Sultan, in the square of Istanbul's Üsküdar district. It is one of Sinan's early works. Its dome is supported by half domes on three sides, but there is no half dome on the front facade. It is also one of the early works of Mimar Sinan. Its dome is supported by half domes on three sides, but there is no half dome on the front façade. The dome of the mosque is **10 m.** in diameter and 37 m. high.

2.Baldachin /Pillar Carrier Type: Mosque is constructed with four pillar/baldachin system, as carrier, which is supported and enlarged from three directions with half-domes.

3.Extension/Growth Type: reflects both horizontal and vertical tessellation/growth with a central dome with 11m diameter which is 37 m. high articulated with 3 half domes at both sides right and left. The mosque consists of rectangular plan type.

4.Dome-space pattern: 1 whole dome+ 3*0.5 domes+4 small domes system

5.Unit Type: single-unit with 1 whole dome and eyvan mosque with madrasah, school, tomb and bathhouse functional spaces.

6.Structure: Mosque accommodates; 'a single-unit dome+3*05 domes' pattern as upper structure and a square space plan as under structure. Thus, the mosque has a unity and harmony between upper and under structures. There are 2 small dome-units as auxiliary spaces at back side of the main dome. It has axial symmetry.

7.Spatiality: Mosque accommodates a unique spatial design by; '**1 whole dome+3*0.5 domes+2 small domes+4 pillars'** spatiality. (Table 4)

4.2. The Samples of Six Pillars/Baldachin System of Sinan Mosques- 6 Baldachin (ana kubbesi dört destek üzerine oturan cami örnekleri)

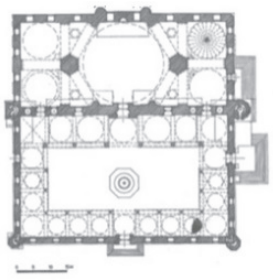
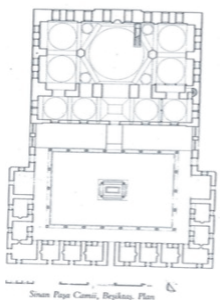
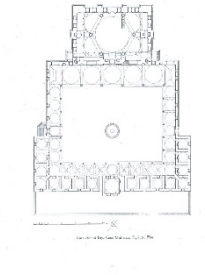
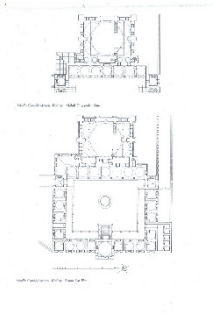


Figure 19. Edirne Üç Şerefeli Mosque, Diameter 24.10m. Six Baldachin System

Table 5. Six baldachin dome-space-unit system mosques

1st SIX BALDACHIN SYSTEM	2nd SIX BALDACHIN SYSTEM	3rd SIX BALDACHIN SYSTEM
		
Sinan Paşa Mosque, Beşiktaş,1555,Architect Sinan	İstanbul Topkapı Kara Ahmet Paşa Mosque,1557-58, Architect Sinan	İstanbul Kadırga Sokullu/İsmihan Hatun Mosque,1571-72,Architect Sinan

***CASE NO 02_1**: Sinan Paşa Mosque, İstanbul Üsküdar 1550-1553

1.General Information: Sinan Pasha Mosque is an Ottoman mosque built by Mimar Sinan located in Beşiktaş district of Istanbul. It was built between 1550 and 1553 by Sinan Pasha, the Captain of the Ottoman Navy. This mosque, which is the work of Mimar Sinan, is placed on a rectangular plan. The central dome is based on columns with six corners with arches and there are two domes on each side. It has been repaired on various dates since its establishment.

2.Baldachin /Pillar Carrier Type: Six-baldachin system with a central dome of **12.6 m**. diameter. There are triangle covers between pillars and square side pitches (small Spaces) It is a six baldachin rectangular plan-type mosque.

3.Extension/Growth Type: Indicates a horizontal grow type with a rectangular plan. (horizontally tessellation). The central dome sits on south structural wall. All pillars are connected to each other by belts. Similarly, at both east and west sides two spaces with smaller domes exist.

4.Dome-space pattern: 1 whole dome+4*0.5 domes

5.Unit Type: Eyvan mosque (multi-functional) Sinan Paşa Mosque is the first sample that both mosque and school shares the common court.

6.Structure: Mosque accommodates; 'a single-unit dome+4 small domes' pattern as upper structure and a rectangular space plan as under structure. Thus,

the mosque has a unity and harmony between upper and under structures. It has horizontal axial symmetry.

7.Spatiality: Mosque accommodates a unique spatial design by; '**1 whole dome+4*small domes+6 pillars'** spatiality. (Table 5)

***CASE NO 02_2**: İstanbul Topkapı Mosque, İstanbul , 1558

1. General Information: Ahmed Pasha Mosque is a mosque in Fatma Sultan neighbourhood in Topkapi district of Istanbul. Its' architect is Mimar Sinan. Its' construction date is 1558. The architectural plan of the mosque is a rectangle. Like the classical Ottoman mosques, it is covered with a central dome. The central dome is carried by six main arches and 23.5 m. with a 43 m high and 64*72 m. prayer area dimensions.. https://tr-tr.facebook.com/TASISTANBUL/posts/338597122944161/)

2. Baldachin /Pillar Carrier Type: Prayer area dome is carried by six pillars/baldachin system. There exist belts between the pillars.

3. Extension/Growth Type: Three is vertical growth of central space with four half domes on all sides, thus four semi-half domes support the central dome. This two side semi half domes widens/expands central space rectangular and of course in a transparent way as a device of Sinan. General plan scheme indicates; vertical tessellation.

4. Dome-space pattern: 1 whole dome+4*0.5 domes

5. Unit Type: Eyvan mosque (multifunctional) and reflects the common court between school and mosque.

6. Structure: Mosque accommodates; 'a single-unit dome+4*0.5 domes' pattern as upper structure and a square plan as under structure. ıt has cross axial symmetry.

7. Spatiality: Reflects a unique spatial design with; '1whole dome+4*0.5 domes+6 pillars'(Table 5)

***CASE NO 02_3**: İstanbul Kadırga Sokullu /İsmihan Hatun Mosque 1571

1.General Information: Mehmed Pasha Sokolovic Ottoman mosque located in the Kadirga neighbourhood of the 16th century in the Fatih district of Istanbul, Turkey. The grand vizier Sokollu Mehmed Pasha and his wife İsmihan Sultan made this partnership. It was designed by the imperial architect Mimar Sinan and was completed in 1571/2. The mosque draws attention with its architecturally

challenging location on a steep slope. This problem was solved with two-storey courtyard mosque type. The sub-story was divided into shops, whose rents were intended to support the mosque's maintenance. The upper floor, with an open column courtyard, had a small window to store a bed that creates a living accommodation, a fireplace and spaces between the columns on three sides, each with closed walls to create small rooms, each with niche. The courtyard is the mosque itself, which is designed as a rectangular hexagon on top of a small semi-domed dome on the fourth side corners of the courtyard. The dome is **13 m.** in diameter and **22.8 m.** high.

2.Baldachin /Pillar Carrier Type: The central dome is carried by six pillars/baldachin system, which two pillars on north and two pillars on south walls, and one pillar on east wall and one pillar occupy on the west wall.

3.Extension/Growth Type: Central/main dome is supported by four half domes that signs vertical tessellation. In addition, the mosque has 2 story spatiality. As a result, we face with the most widen /expanded central space with six baldachin system type

4.Dome Space Patters: '1whole dome+4*0.5 domes' space pattern.

5. Unit Type: Eyvan mosque (multifunctional) with 2 storey plan and accommodates; prayer area, living spaces, shops.

6. Structure: Mosque accommodates; 'a single-unit dome+4*0.5 domes' pattern as upper structure and a square plan as under structure. It has cross axial symmetry.

7. Spatiality: Reflects a unique spatial design with ; '1whole dome+4*0.5 domes+6 pillars'. (Table 5)

4.3. Samples of Eight Pillars/Baldachin System of Sinan Mosques - 8 Baldachin (ana kubbesi dört destek üzerine oturan cami örnekleri)

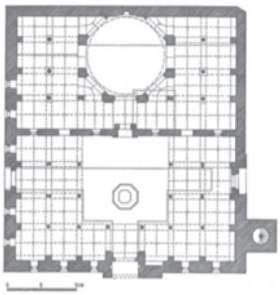
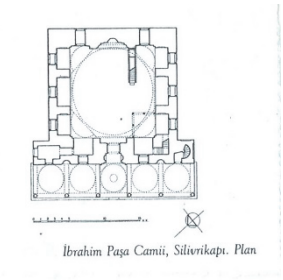
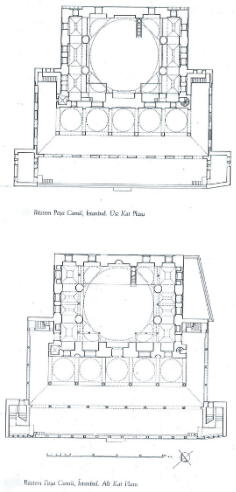
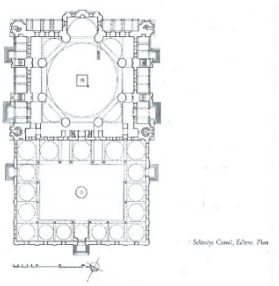


Figure 20. Manisa Ulu Cami, Eight Baldachin System

Table 6. Eight baldachin dome-space-unit system mosques

1.ST EIGHT BALDACHIN SYSTEM	**2.ND EIGHT BALDACHIN SYSTEM**	**3.RD EIGHT BALDACHIN SYSTEM**
		
İstanbul Silivrikapı,Hadım İbrahimpaşa Mosque,1551,Architect Sinan	İstanbul, Eminönü, Rüstem Paşa Mosque,1560-62,Architect Sinan	Edirne, Selimiye Mosque,1538-1588, Architect Sinan

***CASE NO 03_1**: İstanbul Silivrikapı Hadım İbrahim Paşa Mosque

1.General Information: It was built by Hadım İbrahim Pasha in 1551 by Mimar Sinan. The minaret is adjacent. This place was actually built as a complex and the mosque has remained to the present day. In 2007, the mosque was repaired and maintained. It has 12.4 m. dome in diameter with 21.80 m. high.

2.Baldachin /Pillar Carrier Type: Eight baldachin type; the tromped dome which covers prayer area does not directly sit on the wall, it sits on eight wall pillars that exist two at each wall.

3.Extension/Growth Type: By this way, expansion of interior happens. This plan is the first type for eight pillar/baldachin systems, at Edirne Selimiye Mosque this type will reach its development process.

4.Dome space pattern: 1 whole dome of 8 pillars+ 4*0.5 domes

5.Unit Type: It is an eyvan mosque (multifunctional) with a complex, madrasa and a bath.

6. Structure: Mosque accommodates; 'a single-unit dome+4*0.5 domes' pattern as upper structure and a whole square plan as under structure. It has cross axial symmetry.

7. Spatiality: Reflects a unique spatial design with; '1whole dome+4*0.5 domes+8 pillars'. (Table 6)

***CASE NO 03_2**: İstanbul Eminönü, Rüstem Paşa Mosque

1.General Information: It was built by Mimar Sinan for Damat Rüstem Pasha, the Grand Vizier of Suleiman the Magnificent and also the husband of his daughter Mihrimah Sultan (1561). The mosque (Konyalı) in 1562 is said to have finished the mosque. The mosque can be reached by stairs on both sides.

2.Baldachin /Pillar Carrier Type: The central dome sits on eight pillars/baldachin. Four of the pillars are filament-type colon, other four pillars are like wall column on north and south walls.

3.Extension/Growth Type: due to high density city area it was built as 'fevkani' which means that the mosque rises on vaults.

4.Dome-space pattern: 1 whole dome of 8 pillars+ 4*0.5 domes

5.Unit Type: Its an eyvan mosque; there exists shops and cellar**.** One has to use staircases to reach the mosque and prayer area which is rectangular in shape and transverse.

6. Structure: Mosque accommodates; 'a single-unit dome+4*0.5 domes' pattern as upper structure and a whole square plan as under structure. It has cross axial symmetry.

7. Spatiality: Reflects a unique spatial design with; '1whole dome+4*0.5 domes+8 pillars'. (Table 6)

***CASE NO 03_3**: Edirne Selimiye Mosque

1.General Information: It is not known exactly why the Sultan chose Edirne as the city where the mosque was built. Selimiye Mosque is covered with a single dome, 43.25 meters high, 31.3 meters in diameter. The dome is placed on a pulley based on 8 columns. The pulley is connected to the flaps with arches 6 meters wide. Mimar Sinan provides the space to be easily understood at once with the width and spaciousness he gives to the interior he covers.

2.Baldachin /Pillar Carrier Type: Mosque has a central dome prayer area with eight baldachin system, portico courtyard and four minarets. The total square meter of the mosque is 2475 m2, the prayer area is 45*36m.=1629 m2 , and the

court is 855m2. Equally 6000 people can occupy in the mosque, reflects Sinan's space integration and unification, as his master peace.

3.Extension/Growth Type: The pillars are two in each direction, at South its adjoined with mihrab wall, others are in front of the walls. Arched vaults have been fix between pillars. The main dome is supported by five half domes with semi-half domes at he corners. Mihrab part is flow outside 6mt., there is a majesty mahfel at upper floor north-east corner. At the centre there is müezzin mahfel with a fountain under. At the mosque, stone, tile, iron works and plaster ornamentations can be found in a balance.

4.Dome space pattern: 1 whole dome of 8 pillars+ 4*0.5 domes

5.Unit Type: An eyvan mosque with a mosque + two education structure+ darülkurra + bazaar. It is in the UNESCO list and join the World cultural heritage at 2011.

6. Structure: Mosque accommodates; 'a single-unit dome+4*0.5 domes' pattern as upper structure and a whole square plan as under structure. It has cross axial symmetry.

7. Spatiality: Reflects a unique spatial design with; '1whole dome+4*0.5 domes+8 pillars'. (Table 6)

Main Findings of the analyses:

Through cases' analyses results its mainy found that ;

*Each mosque has a unique dome-space and spatiality

*Dome structure as an upper structure cover is a super flexible and harmonious element that can unify with its under structure as space plan.

*By using diversity of a domes; big, small, half, whole…many different plan types can be produced, both square and rectangular forms can be passed and the most importantly both horizontal and vertical growth can be achieved without any rigid walls.

*Dome space patterns have been revealed through the discourse of Kuran, as emphasized by Kuran (2013); ''The two groups as the single-unit and the multi-unit mosques have been called to date the **'one-domed'** and **'many-domes'** mosques. The term 'unit' to 'domed' because, although the hemispherical dome is the main feature of the Ottoman mosque, and indeed of all types of Ottoman buildings, it merely refers to the upper structure. The term 'unit' however describes the basic structural and spatial system of architecture, which in this case is square space defined by walls or four piers at the corners and covered by a dome'' (Kuran A., 2013).

Thus, at the end of the analyses, **'dome system = space pattern'** have been revealed as indicated by table 7 above;

Table 7. Dome-space patterns of the cases'

Four Pillars/Baldachin System	Six Pillars/Baldachin System	Eight Pillars/Baldachin System
*CASE NO 01_1: II. Bayezit Mosque İstanbul-1501 / 1506 -Dome-space pattern: 1 whole dome + 2*0.5 domes system *CASE NO 01_2: Fatih Mosque İstanbul-1766/1771 -Dome-space pattern: 1 whole dome + 1*0.5 dome system *CASE NO 01_3: Mihrimah Sultan Mosque, İstanbul Üsküdar 1562-1565 -Dome-space pattern: 1 whole dome+ 3*0.5 domes+4 small domes system	*CASE NO 02_1: Sinan Paşa Mosque, İstanbul Üsküdar 1550-1553 -Dome-space pattern: 1 whole dome+4*0.5 domes *CASE NO 02_2: İstanbul Topkapı Mosque, İstanbul , 1558 -Dome-space pattern: 1 whole dome+4*0.5 domes *CASE NO 02_3: *İstanbul Kadırga Sokullu /İsmihan Hatun Mosque* 1571 -Dome Space Patters: '1whole dome+4*0.5 domes' space pattern.	*CASE NO 03_1: İstanbul Silivrikapı Hadım İbrahim Paşa Mosque -Dome space pattern: 1 whole dome of 8 pillars+ 4*0.5 domes *CASE NO 03_2: İstanbul Eminönü, Rüstem Paşa Mosque -Dome-space pattern: 1 whole dome of 8 pillars+ 4*0.5 domes *CASE NO 03_3: Edirne Selimiye Mosque/ -Dome space pattern: 1 whole dome of 8 pillars+ 4*0.5 domes

4. CONCLUSIONS AND & FINDINGS

Sinan had worked aesthetically on dome spaces aiming to exaggerate the main prayer area by using different shapes and proportions of the dome element. Here, the biggest contribution of Sinan was to make space growth vertically by the help of domes, half domes, triangles on a square plan. Thus it can be truly said that the artful contribution of Sinan was on the widening and unification of the main space, so as the motivation of mosque construction the unified space becomes the first requirement. '**Baldachin dome structure**' is an innovation that was developed by Sinan as upper structure respectively matches on the plan with square, hexagonal and octagonal schemes, which indicates the geometrical excellence had been achieved while widening the main central space as a result of space/structure integration.

Thus, Sinan first constructed mosques with single domes and square plans than after building several mosques with square and hexagonal plans he builds his masterpiece in Edirne with an octagonal scheme. He experienced baldachin structure in smaller scales finally in Selimiye, he finalized with a diameter almost equal to Hagia Sophia. Özgüleş (2008). Thus, at each Sinan Sultan mosques,

respectively; Şehzade, Süleymaniye and Selimiye, the baldachin structure is placed closer to the outer boundary which in Selimiye the auxiliary spaces have been completely integrated. In addition, Sinan designed these baldachin structures in a transparent manner thus the auxiliary spaces integrated easily and space growth could be achieved. In addition, by the baldachin/pillar system device of Sinan and dome structures , its revealed by the study that dome element is unique by the way it creates patterns and diverse spatial solutions for diverse plan forms&types.

To sum up, in terms of space architecture, it's aimed that this study will shade a light for further studies on flexible open spaces and transparent spatial structures for future systems to emphasize widening, extending and timely growing of spaces in a flexible way without any construction requirements and rigid walls/carriers on floor plan that can create diverse space plan patterns within a flexible architecture.

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DESIGN TYPOLOGIES OF MOSQUES AND MADRASAS BELONGING TO SELJUK AND OTTOMAN CIVILIZATIONS IN KONYA

Serhat ANIKTAR*, Şahika ÖZDEMİR**, Ahmet KURNAZ*

ABSTRACT

Konya, which has been an important city since the prehistoric period, has reached its present identity by overlapping different layers of civilization. Within the context of the architectural traces of these layers of civilization, it is aimed to document how the Seljuk capital city of Konya developed, the present coexistence of the traces of different civilizations, the typological analysis of the architectural identity of the city, from the upper scale to the structure and detail scale. The identity gained by the city in the historical process changes with the ongoing construction works. The problem of protecting the cultural heritage, which reflects our tradition, is faced with the arrangements made depending on today's needs. In order to protect this heritage and to create a guide in the design of new buildings belonging to our civilization, in a whole work, the mosques and madrasahs of the Seljuk and Ottoman civilizations determined in Konya were analyzed together with their current surroundings, documented with photographs, design, building element, construction technique and material typologies were removed, damage conditions were determined and energy models were prepared. In this study, only the analysis of design typologies is included. Typology is not just a classification and statistical process, but a process of analyzing the physical functions and layouts of buildings, reducing them to be included in a typological series and aiming for formal outcome. For this reason, typological analysis studies are important. In this study, the plans and sections of mosques and madrasahs belonging to the Seljuk and Ottoman civilizations determined in Konya were analyzed by processing the existing surrounding tissue. A compilation was made in the light of the information in the literature and specific buildings. It has been argued that the Seljuk and Ottoman buildings, which are located in the outer castle of Konya and known to have an effect on the formation of the

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city center, will create an awareness in order to protect them into the future with this work.

Keywords: Konya Mosques, Konya Madrasas, Seljuk Architecture, Ottoman Architecture, Design Typologies

1. INTRODUCTION

Konya has been one of the most important centers of Turkish-Islamic culture and art in Anatolia as a city that has preserved its importance as the capital of the Anatolian Seljuk State and its position on the caravan roads of the Silk Road in Anatolia [1].

The conquest of Konya by the victory of the Turks in Malazgirt and then becoming the capital is one of the turning points of Turkish history. The city assumed the duty of being the capital city from the foundation of the Anatolian Seljuk State until its disappearance, and as a result, the transportation roads became the intersection point. During this period, especially due to the importance given to trade, important roads were created and many inns and caravanserais were built on these roads [2]. Konya, an important city since the prehistoric period, has reached its current identity with the overlap of different cultural layers.

The monumental buildings built in Konya, especially in the Seljuk and Ottoman periods, are cultural heritage. It is important to make comparative typological analyzes of these buildings which constitute the architectural identity of the city and to document them from the upper scale to the scale of structure and detail. For this purpose, the outer castle, which is not available at the moment, was accepted as the border and Seljuk and Ottoman structures within the center of the city which gained importance in the Seljuk layer were determined. Typological analysis studies were carried out from the upper scale to the detail scale of the identified structures with their immediate surroundings. Comparing these structures with typological analyzes is also important for the protection of cultural heritage.

2. BACKGROUND OF CONTEXTUAL FRAMEWORK

2.1. Seljuk and Ottoman Masjid, Mosque and Madrasah Architecture

Hundreds of monuments such as palaces, mosques, masjids, inns, baths, stenosis healing, madrasah, tombs, dome, fountain, fountain, caravanserai and castle were built in Anatolia during the period of Seljuk period. The rarest examples of Seljuk works are found in Konya, the capital of the period [3].

In the early period of Anatolian Seljuk architecture, it is impossible to speak of a perfect perfection in terms of the dimensions of the buildings, space and facade

arrangements. Minarets are in the shape of a tower placed in a corner. In the 13th century, the composition properties of the madrasas, tombs and caravanserais were revealed by proportion [4].

Seljuk architecture has a "inward-oriented" central plan structure depending on the traditional establishment of Asian architecture in terms of space layout. The iwan and the necessary spaces are listed around the inner courtyard [4]. The existence of some features were determined in terms of proportions and in the proportions of the Seljuk constructions.

Anatolian Seljuk architecture; It has unique features in terms of construction types, material, design and decoration. These features; It can be defined as a successful synthesis created in Anatolia as a result of the effects of pre-Islamic Turkish art and Great Seljuk art [4].

In the 12th century, in the north of eastern Anatolia, the Danişments built madrasas with central domes. During the Anatolian Seljuk period, both types of madrasas were used and developed. In fact, there is not much difference between the madrasas with indoor and outdoor courtyards. Since the central space with a closed courtyard is covered with a dome, it has a square or rectangular shape close to a square. The courtyard of the open courtyard type is generally rectangular in length with respect to the entrance axis. It is possible to classify the Seljuk Madrasas under two main headings; madrasas with closed courtyards and madrasas with open courtyards [5].

While Karatay and Thin Minaret Madrasah belong to the madrasas group with closed courtyards, Sircali Madrasa belongs to the madrasas group with open courtyards.

Karpuz, in his book entitled Anatolian Seljuk Architecture, which he wrote in 2001, listed some of the architectural features of the madrasas as follows;

- The plan was established in a central courtyard-iwan layout. Other volumes are located around them.
- The facade with the crown door faces the city area, the main street and has been carefully constructed.
- The crown door usually opens to the entrance iwan opposite the main iwan.
- The courtyard, sometimes with portico, has a flower bed, pool, fountain or well.
- Main iwan is used as classroom or masjid.
- The departments such as student rooms, masjid and winter classrooms are arranged around the courtyard. The toilet is located in a corner of the madrasah or outside [6].

The Anatolian Seljuks opened a new horizon in the field of architecture in 13th century Anatolia with their building types, cut stone monumental architectures and ornaments enriching the space effect. The single-domed masjids built in this period remained among the Seljuk monumental constructions because they were smaller and simpler. However, these constructions have a special importance in order to understand the Seljuk architecture and decoration since it includes an improvement within themselves with different designs [7]. These limited number of constructions also represent a different stage of urban organization. The desire of the great civil servants and the rich to have a magnificent mosque emerges in these masjids. It can be said that a merchant class that strengthened at that time was a building fashion emphasizing the status of society [3]. It is seen that the masjids were built by the rich people of the neighborhood and therefore the same people named the neighborhood where they lived. Therefore, there are examples where the masjid and neighborhood names are the same [1].

Single-domed masjids, built between the neighborhood of small dimensions 4.70 m. to 8.25 m. between the square or square plan, ranging from the dome covered constructions. Ozakin (1998) examined these masjids in three groups according to their plan structures;

- Single room,
- Two spaces (entrance part semi-open masjids, entrance part closed masjids, known as the entrance part of the original form of masjids, entrance section tomb masjids)
- Three-place masjids

Karpuz (2001) examined the masjids in three different groups according to the plan schemes.

- A cubic harim covered with a dome (Konya Sakahane mosque),
- Those with a front space in front of the domed harim (Konya Tas, Sircali, Basarabey masjids). There is a portico or minaret in the front space.
- Those with tomb or lodge rooms in front of or next to the domed harim (Masjids of Konya Tahir and Zuhre, Beyhekim) [8].

Most of the single-place masjids, consisting of a dome-covered cubic harim, were built in the first half of the 13th century, and only two buildings were built in the second half of the 13th century. These are Abdulmumin and Abdulaziz masjids.

In the two-roomed harim and medhal, a second front room was added to the main room. Single-domed structure based on the 13th century; Although it

formally forms a whole within itself, it is a limited worship structure since the dimensions of the dome have not yet reached the quality of covering a wide space. For this reason, a second space which is used as an entrance section is added to the front of the domed main space [7]. In the masjids, which have a front space in front of the domed harim, this section can consist of a closed or semi-open space. These spaces, which are designed as closed or semi-open, are the first examples of the last community place. The only example is the Masjid of Cemel Ali Dede. The entrance of the tomb to the west of the harim section is independent of the harim section and is in the north direction.

Those designed as three spaces were examined under three groups. Harim, tomb and medhal consisting of harim, medhal and minarets, the harim, medhal and the second section of the mosque consists of a mosque [8].

The important Seljuk constructions in the outer fortress are Alaeddin Mosque, Iplikci Mosque and Mevlana Tomb. In Alaeddin Mosque, which was built with cut stone, bricks and reused materials, the stonemasonry of the period can be seen in the sentence door on the eastern front and in the inscriptions on the facades.

The classical period of Ottoman architecture is defined by the constructions of Architect Sinan and it is accepted that the period reached the highest level of its formal potential with it. The main feature of Ottoman architectural style is the fact of central universal space. In the architecture of Islamic mosques, there is no tradition other than small masjids that develop in parallel. There is no other style in the late regional styles of Islamic history that goes so far away from the medieval clichés. When the main purpose of the architect was this indivisible central domed space, all the architectural elements were used to reveal the design that would realize this integrity. Architect Sinan's design talent is manifested by a different response to this vision of integrated space in each of his works [3]. Ottoman architecture has a homogeneous character in mosques and other buildings. After the 15th century, stone was mostly used as a single building material. Modest wipings, flat, arched windows on the lower floors, top cover, always dome, crowned garnets with minimal recesses and not more than a few rows, have created a massive, simple architectural style that takes its power from the integrity of the architectural composition. The utility of this utilitarian architecture, which puts the form anxiety when it requires function, consists of simple geometric shapes such as cube, prism, sphere and cylinder. After the 15th century, he abandoned the use of decoration techniques of medieval Turkish architecture such as stone carving, tile mosaic, outside the buildings. Another type of building that is among the Classical Ottoman period buildings in Konya is the tombs. In the Ottomans, tombs are simple structures with square or polygonal planes and domes. Sometimes an entrance ledge or portico is added to the tomb [3].

The classical Ottoman period buildings in the outer fortress are Serafettin Mosque, Selimiye Mosque and the Semahane, Masjid, Dervish cells, Sinan Pasha, Hasan Pasha, Fatma Hatun and Hurrem Pasha tombs of the Mevlana Complex. According to Bas (2006), Serafettin and Selimiye Mosques are the important representatives of the classical Ottoman domed mosques outside of Istanbul. While the central dome was enlarged with a half-dome in the south direction, both of the mosques were carried out in the Serafettin Mosque, unlike the Selimiye Mosque, where the niche of the altar was located [9].

It is known that the plan schemes and settlement characteristics of the Seljuk and Ottoman constructions differ. The analysis of different types is called typological analysis. Among the "type" definitions, class or group with similar characteristics is suitable for use in the field of architecture. Functional structure types such as housing, hospital, bank buildings; Turkish houses, temples belonging to various cultures, Arabic Architecture, French Khan different types of architectural constructions such as different types; types based on the construction system or material, such as steel or wood constructions, high constructions, masonry constructions; or Sinan constructions, the works of Le Courbusier.

Constructions are examined, classified and defined by this approach and their "types are determined. In the light of this definition, the use of the term type in the texts of architectural theorists is limited to certain examples in certain historical periods. Since Vitruvius, however, the concept of typology has been expressed by architectural theorists as the first architectural model idea derived from architecture. Vitruvius worked within the framework of the doctrine of imitation of nature and says that the starting point, main essence, form or model of architecture is presented by nature. Following the publication of Serlio's books in the Renaissance, illustrated architectural studies have expressed the concepts of type and typology in architecture through images rather than words [10].

However, the theoretical perspective of typology of architecture discipline is not a way of generating knowledge based on the evaluation of common characteristics from purely physical, formal classifications, schemas of spatial order, groupings based on an abstract geometric criterion, or concrete realities such as context, use, material and structure. Rather, typology is an understanding of concrete reality through abstract reasoning through experience, and is a subsequent act. The typology here consists of approaches that can be called as a type of upper typology, which allows to evaluate its fictions with artistic interpretation [11].

3. METHODOLOGY

Typology is not only a classification and a statistical process, but also the analysis of the physical functions and patterns of buildings, the reduction of them into a

typological series, and a process carried out towards the goal of formal outcome. In this context, the Seljuk and Ottoman mosques and masjids in Konya center, outer fortress were identified and typologically analyzed. While determining the structures, it was paid attention that they caused the formation of important axes in the center and that they were Seljuk masjid constructions which were located in the neighborhoods but not known (Figure 1).

The structures identified are listed below alphabetically:

- Abdulaziz Masjid
- Alaeddin Mosque
- Aziziye Mosque
- Beyhekim Masjid
- Bulgur Tekke Masjid
- Erdemsah Masjid
- Hagia Hasan Masjid
- Hodja Hasan Masjid
- Iplikci Mosque
- Kadi Izzettin Masjid
- Kapu Mosque
- Piri Mehmet Pasha Mosque
- Sahip Ata Mosque
- Selimiye Mosque
- Sircali Madrasah
- Sekerfurus Masjid
- Shams Tabrizi Mosque
- Serafettin Mosque
- Tahir and Zuhre Masjid
- Tercuman Masjid



Figure 1. Constructions identified in Konya outer castle

Plans, sections and views of the structures were drawn from the Konya Provincial Directorate of Foundations. In order to analyze the relationship between building-garden, building-street and garden-street, the buildings were viewed from above with drone and their current status was determined. The plans of the constructions were processed on the file containing the existing layouts of Konya and the suitability of the existing situation as a result of the imaging studies was checked. Again, in the light of photographs and measurements taken around the building, the existing surroundings of the sections were processed and the drawings were revised. Proportional typological analyzes and close environment analyzes were performed on the revised plans and sections.

4. FINDINGS OF THE STUDY

When the mosque constructions were examined, it was seen that 4 of them were single spaces. Although these masjids are discrete constructions, there is a garden with or without green spaces in their immediate surroundings. Most of the gardens are sheltered (Figure 2).

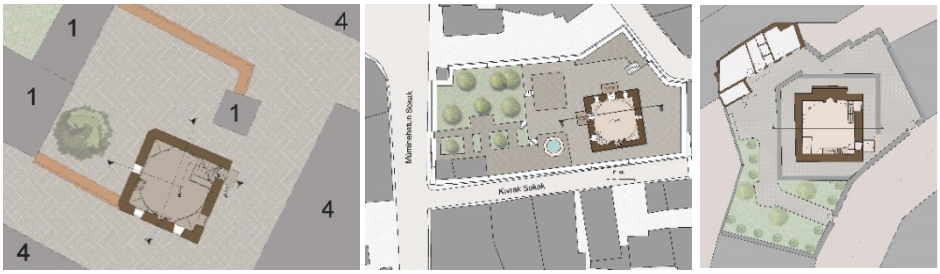

Figure 2. Masjid of Tercuman, Masjid of Sekerfurus, Masjid of Abdulaziz Plans

It is seen that 3 of the Seljuk mosque structures have two spaces. Although these masjids are discrete constructions, there is a garden with or without green spaces in their immediate surroundings. Most of the gardens are not sheltered (Figure 3).



Figure 3. Hagia Hasan Masjid, Hodja Hasan Masjid, Kadi Izzettin Masjid Plans

It was found that 4 of the Seljuk mosque constructions had three spaces. Half of these masjids are discrete structures, while half are adjacent structures. There is a garden with or without a green area in the immediate surroundings of the buildings with discrete order. These gardens are open to the public. (Figure 4).

There is no overwhelming scale in the vicinity of the Serafettin and Selimiye Mosques, one of the classical Ottoman period buildings. These structures are in front of them, which define the spaces and main axes defined as squares. (Figure 5).

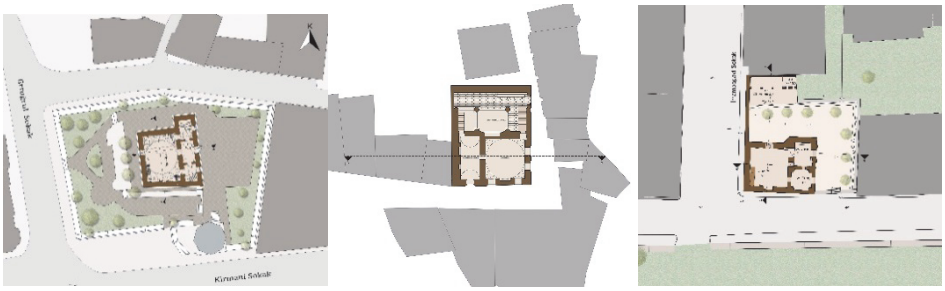

Figure 4. Beyhekim Masjid, Bulgur Tekke Masjid, Tahir and Zuhre Masjid Plans

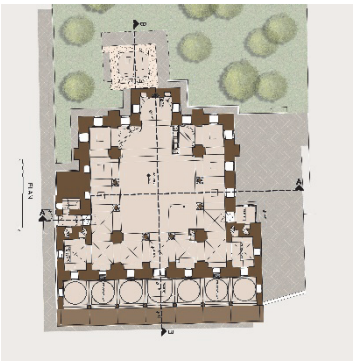

Figure 5. Serafettin Mosque Plan

Aziziye, one of the mosques of the late Ottoman period, has great splendor in terms of location, scale, texture, space and facade decorations. Like other Ottoman mosques, it is in a position defining the space in front of it (Figure 6).

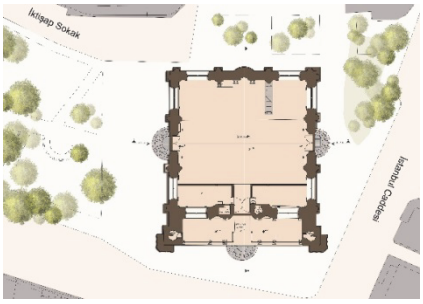

Figure 6. Aziziye Mosque Plan

When the mosque constructions are examined, it is seen that single-place masjids are covered with domes. 4 of the other masjids are covered with a broken roof while one is covered with a flat roof (Figure 7).



Figure 7. Hagia Hasan and Kadi Izzettin Masjids Cross Sections

During the transition from the Seljuks to the Ottomans, there was an increase in the facade cladding and decorations. When we look at the window ratios, the window ratios are 1/2 in 4 of the Seljuk mosques and masjids. Only Sahip Ata Mosque window rates are 1/1.5. The window rates in other Seljuk mosques are close to the square. In the Ottoman mosques, the window ratio is 1/2. Only Aziziye Mosque is the last period of the Ottoman structure because the window rates are growing 1/2.5.

5. CONCLUSION

In this study, the plans and sections of mosques and madrasahs belonging to the Seljuk and Ottoman civilizations determined in Konya were analyzed by processing the existing surrounding tissue. Design typologies have been determined in the light of the information in the literature and specific buildings.

When the plan schemes are examined, it is seen that 4 of the Seljuk constructions have square plans and 3 of them have rectangular plan schemes. Although the plan scheme of Alaeddin Mosque has a more organic plan scheme, it can be said to have been influenced by its topography. Although the Ottoman buildings have a central square plan scheme, they are much larger than the Seljuk mosque and masjid rates.

When the site plans were examined, it was observed that 6 of the constructions analyzed had a direct relationship with the street. It can be said that the scale of the buildings that have direct relations with the street is smaller than the other buildings. 3 buildings have their own garden with limited green area. The heights of the Seljuk mosques are directly proportional to their size. There are high-rise buildings in the immediate vicinity of the mosque. These constructions prevent sunbathing of the masjids.

Most of the Seljuk constructions are present, below the land or road elevation. It can be said that due to the increasing layers of roads and streets over time, the constructions remain below the road level. Most of the Seljuk buildings have a private area surrounded by walls, while there are also those who have direct contact with the street. Most of the Ottoman buildings are independent of their immediate surroundings.

When the cross-sections of the Seljuk and Ottoman structures were analyzed, it was seen that 8 Seljuks were flat-covered and 8 Seljuks were domed. All of the Ottoman buildings have a domed top cover. Only 2 Seljuk mosques have minarets. There are minarets in all the Ottoman mosques. It can be said that the Seljuk mosques were mostly single span. The size of the Seljuk mosques with windows close to the square is larger than other masjids.

As a result, the typological analysis of the identified structures supports the literature especially on Seljuk structures in Konya. Typical analyzes can be conducted comparatively in other cities where Seljuk constructions are located.

In addition, when the current situation of the identified structures is analyzed, changes should be made in the planning of the close environment of these constructions, which have the characteristics of cultural heritage, considering the presence of the Seljuk neighborhood masjids outside the outer castle. Most of the buildings are left open to visitors only for security reasons. The near-structuring should be rearranged in a way that these masjids will come to the forefront in scale and their security should be ensured throughout the day.

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PRODUCTION OF SPACE THROUGH ACTION AND BODY IN FIRST YEAR ARCHITECTURAL EDUCATION

Elif TATAR*, Sevgin Aysu ORYAŞIN*

ABSTRACT

The recent sociological and technological developments have considerably changed the way we deal with "space" as an architectural concept. It is not considered merely a physical state anymore since it has evolved into a concept also related to abstract properties obtained through life experiences. Similarly, designed space is a limit set for actions and users (body), and it should be considered together with other components. This notional transformation affects our perception of space, our production methods and inevitably the design of architectural education. At this point, the program to be followed in the first year of architecture departments, as an introduction to profession, is important since it might provide the very first environment where they learn how to make causal reasoning, how to question, how to be creative and how to look at life from a different perspective. The inclusion of new interpretations and productions of "space" and approaches accompanied with action and body interaction into first year programs of architecture departments enables students to make their unique and original interpretations about current architecture knowledge.

In this study, the approaches questioning the relationship between space and experience through body and action will be discussed in relation to the related studies within the scope of the first-year design studios at Eskisehir Technical University, Department of Architecture in 2018-2019 academic year. The scope of these practices include content through which one can produce interactive and experimental spaces that are in harmony with actions, question the role of body and allow flexible applications within the framework of an experienced space idea. How practices are constructed, learning processes and learning outcomes will be presented. In the light of the data obtained, ideas and approaches regarding the production of space will be questioned in the context of Bernard Tschumi's thoughts on the relationship between action, body and space.

Keywords: Production of space, action and body, first year architectural education

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1. INTRODUCTION

Body-space relationship has always been questioned as an important issue since ancient times. In earlier times, body-space interaction was often evaluated based on body sizes and numerical values; however, abstract characteristics obtained through experience have also been topics of discussions thanks to the developments as of the 20th century. Today, there is a holistic approach to "body" which deals with its both abstract and concrete qualities. "Movement" and "action" are important in body-space interaction. Both concepts play significant roles in shaping a space physically and through experiences.

Tschumi's approaches stand out in body-action-movement and space interaction because of the following reasons: he has conducted studies by examining all the artistic content specifically focusing on this issue; he suggests that body movements and actions produce new spatial dynamics through associations with "in-betweens"; he deals with these concepts by taking their potential to create innovative architectural and spatial contents into consideration; and he attaches importance to concept and experience approaches in architectural design process.

Tschumi's innovative approaches towards space production through body-action-movement might be considered an effective perspective in finding original and creative solutions by improving different thinking and interpreting skills in architectural education and practices. It might effectively increase motivation if the program allows experimental practices in first year architectural education, during which students become familiar with architectural terminology and acquire critical and relational thinking skills and the basic knowledge of architectural education are discussed.

In this study, four works completed by students attending Department of Architecture in Architecture and Design Faculty at Eskişehir Technical University in 2018-2019 as a part of first year design studio course contents were examined by using comparative analysis method within the context of Tschumi's innovative approaches in space production. The data obtained from this analysis were interpreted within the context of their original contents, processes followed and the learning outcomes. The study also revealed the potential to design innovative approaches in space production in first year architectural education.

2. ACTION-BODY-SPACE RELATIONSHIP IN ARCHITECTURE

Body has been a focused issue in architectural practices since Vitrivius, who suggested that body scales and ratios should be used in design processes in order to achieve "the ideal" in spaces (Vitrivius, 2005). Inspired by Vitrivius,

Leonardo da Vinci drew his famous "the ideal body" after a number of golden ratio sketches through which he discovered the ratios of body. Body was involved in Renaissance architecture as a way to obtain ideal sizes and use them in design concepts. Cartesian thought, which perceives body only as a physical and static object, also supports this approach. Finally, Le Corbusier elucidates "body" in ideal sizes in his well-known Modulor figure.

Above mentioned approaches explain body-space relationship in reference to ideal sizes and numerical values. However, as of 20th century, body has started to play an active role in art and the spaces designed based on ideal bodies as triggered by Modernism movement often have looked like each other. As a result, body-space relationship has been questioned claiming that this relationship should not have merely a physical dimension. According to Ponty (2005), evaluating only the physical presence of body and trying to give it a meaning through this evaluation do not provide us with accurate knowledge. Body is a living organism that should be understood in relation with all the things around it (Merleau-Ponty, 2005). In other words, a space should be evaluated with its both abstract and concrete components. Zevi (2015) highlighted that architecture is not only about structure and measurements. He suggested that a three-dimensional perception would not be enough to understand a particular space. Thus, time and movement are important concepts to consider in architectural processes as well.

Movement is more than a concept that only describes abstract relationships among objects. They are imperceptible phenomena that should be considered together with objects (Bergson, 2007). There are theoreticians who assert that space and movement complement each other. Spaces are formed through movements of our body, which may not always be perceptible. Movement, on the hand, is a perceptible feature of a space. Thus, movement and space have "visible-hidden" or "piece-whole" relationship due to their nature (Laban, 1966, cited by Alaçam – Çağdaş, 2016). Also, a series of movements initiate an action.

The relationship between action and space has always been a debatable issue in architectural practices. Christopher Alexander claims that a definition of space that lacks the actual life in it will not be realistic enough. He suggests that fragments of actions are very important while describing a particular space (Alexander, 1977). Similarly, Erzen (2015) states that relationship between actions and spaces form the basis of architectural practices. In addition, Tschumi (2017) suggests that "in between spaces" create opportunities for actions, and relationship between actions and "in between space" have the potential to form new experimental spaces. As the above mentioned opinions suggest, action, movement and body have been important concepts in today's architectural

practices. Thus, enriched by different disciplines, these practices now have an active role that is associated with body and shaped by actions and movements. At this point, Tschumi's approach has considerable importance.

2.1. Tschumi's Approach

Inspired by the ideas of Deleuze, Foucalt and Derrida, Bernard Tschumi tried to find a connection between architecture and literature by supporting them with his own ideas about narration. It is possible to create new and enjoyable narrations by bending grammar rules and using power of words or looking at these rules from different perspectives. Can the use of this method in the field of architecture allow new architectural narrations and perspectives? Would it be possible to create new spaces when the relationship between space and functions and content in buildings differs? He says that establishing different relational unities and disparities between space and what we do with our body – i.e our actions- will allow creation of new spaces according to architectural theory and practices. Tschumi points out that, conflicts, contrasts, reciprocities or indifferences, which are components of space, might be used as methods to create new contents. Accordingly, he coined new terms such as cross programming, transitive programming or dis -programming referring to the gap between actual content of a space and what it should contain by explaining the situation through program.

Tschumi, in his article titled Architectural Paradox (1975), stated that he tried to combine concept and experience approaches (Tschumi, 2017). Architecture is no longer defined as a field which produces fixed components of environment and later watches what will happen next, and its changing nature and dynamism of the relationship individuals establish with their environments has become more prominent. In 1950s, Victor Turner suggested the term "performative turn" stating that the actions of body are "performed", so they should be approached with new perspectives rather than clichés. This concept highlights that actions may not always occur as we dream about them and they might develop impromptu.

When "performative turn" was suggested, the issues such as body, the relationship established with body and the relationship body establishes with its nearby environment were largely being discussed in the field of art. As of 20th century, it has become a determining factor in the center of production instead of having a passive role both in art and architecture. Bauhaus, which was the innovative and interdisciplinary school of the period, carried out studies and activities that emphasize the active role of body both in performing arts and other fields. Some distinguished artists such as Trisha Brown and Bruce Nauman (Figure 1) dealt

with the relationship between body and space from different perspectives. The above mentioned developments in art also affected architecture, and this issue has become a significant topic of speculation in architectural contexts for a long time.





Figure 1: Trisha Brown, "Man walking Down the Side of a Building (Url-1) and Bruce McLean Pose Work for Plinths (Url-2)

The active role of space in narrations due to the presence of body and action together has been reflected in different ways by artists having different opinions. Some artists believed that space restricts body and movements and reflected this approach in their works accordingly (Url-3). However, others adapted space to their performances, perceiving them as a whole. They took space not a limitation, rather a piece of performance that might transform depending on actions and movements and might be shaped and deformed according to the features of body. All these performative narrations are valuable since they allow body to actively reestablish its relation with space and create new areas to question in architecture. Tschumi followed these developments and conducted studies to evaluate discussions on space-body-action-movement issues within the framework architectural practices.

According to Tschumi, architecture has close connections with daily life, movement and action. Dynamism of the relationship between movement and action might lead to new spatial relationships. Body-space relationship does not only involve movement of body in a space. Some possible and potential movements of our body might also create architectural spaces. However, this situation might not signify structures in which scenario completely matches actions and movements. Failure to match fully might also create different spatial approaches (Tschumi, 2017, s. 148). In addition, it is highlighted that the meaning of space and its content might change with movements and event elements. Güner (2012) points out that "event" is not very different from the definition of an action and it refers to sudden consequences emerging due to movements of

body. Tshumi (2017) used program and event interchangeably at the beginning but later differentiated between them by suddenly focusing reasons of a particular event. With his design, Parc de la Vilette coined the concept "event architecture", whose conceptual background he associated with J. Derrida and J.L Austin's "performance" concept and through which he builds movements and actions merging in different layers.

If we describe a space only through its physical elements, we may not describe it with its all dimensions. The potential of actions and movements to create a spatial limit might be affected by relationship type. In addition, there is a continuous conflict between conceptual one (meaning) and perceived one (experience) and it is not necessary for this conflict to result in an agreement but strengthening this tension might be a method to build up new relationships (Tschumi, 2017). Suggesting new methods and applying them to build spatial relationships in today's changing and improving architecture environment allow the development of new perspectives by creating new topics to discuss.

This study emphasizes that space does not consist of only physical elements and spatial experience is also important. Body is our most important tool in perceiving all these abstract spatial elements mentioned above. Our body is not a static entity; it is rather a dynamic one which should be thought and perceived in relation with its movements. Our actions, their coming together and relationships also affect how we produce a particular space, which allows us to develop new approaches in design. Developing in parallel with architecture environment, architectural education involves practices focusing on different space production methods. First year design studio courses are ideal educational environments for these practices since students' minds are still fresh and they are ready to develop their personal design approaches. In this respect, it is essential to evaluate students' works in first year design studio courses through Tschumi's approaches on body-movement-action-space relationship.

3. AN EXPERIENCE-BASED APPROACH TO PRODUCTION OF SPACE THROUGH ACTION AND BODY

Architecture is a continuously improving structural art which aims to meet time-based needs (Öymen Gür, 2017). This continuous improvement implies that architecture is a multidimensional discipline which is influenced by different dynamics and therefore continuously updates its knowledge. Original, critical and relational thinking skills as well as environmental awareness are essential in this process. These basic skills are acquired and improved in architectural education, especially in architectural design studios. When original and dynamic information sharing between each student and project supervisor or instructor is

combined with a creative production atmosphere involving all students, an effective design environment is created and it turns into a valuable experience allowing prospective architects to acquire design skills through individual and / or group work practices (Öktem Erkartal, & Durmuş, 2017). Architecture students experience this process for the first time in their first year education.

Architecture students meet multidimensional, vague and relation-based world of architecture in their first year education. "First year studio courses in architectural education is a dynamic environment in which multidimensionality of architecture is discovered by observing, experiencing, transferring, drawing, reading, researching, doing and asking questions (Sönmez, Şenel, and Ertaş, 2017). This environment supports a design process which researches, questions and is fed by different information resources and creates new opportunities to get to know with relation-based world of architecture. This relational world is a multi-layer structure involving different connections with each other

Multilayer structure of architecture might lead to original interpretations of design knowledge which involves different relationships. At this point, creativity becomes essential to achieve original design. Considering creativity as the essence of design, Salama defines "creativity in architecture" as a stimulus for the architect based on knowledge and as the knowledge applied to talent. He also deals with creativity as the determining mode of complex cognitive activities which result in the realization and conceptualization of new, original and unusual products (Salama, 2015). Based on the interpretations of Salama, creativity in architecture and architectural education is considered the main component affecting design process due to its direct relationship with design information. Transforming conceptualized abstract information into an abstract, original and creative product is also essential in architectural design process.

Another important issue to consider in first year architecture design studios in terms of design knowledge is motivation, which might be described as the triggering force of these studios. This central position affects other issues such as themes, content and methods to be used in these studios and become an indispensable requirement to ensure quality and sustainability of architectural education. Different approaches might be developed to create and sustain motivation (Sönmez, Şenel, and Ertaş, 2017). How knowledge and skills are conveyed and the relationship between instructor and student in terms of learning process also largely affect the success of design process.

Architectural terminology plays an important role in promoting an effective relationship between instructor and student so that they talk in familiar terms. First year studios are the first environments where they meet and initiate this relationship. Basic terms to define, build up and interpret this network of

relationships have a fundamental role here. "Space" is one of the most important concepts in architecture and one of the targets to achieve. Spaces produced by students by interpreting design knowledge they acquire can be considered a holistic interpretation of knowledge skills they acquire as well as different perspectives.

This study, which dealt with the effect of spatial experience and cognitive style on solutions to space-based design problems, was conducted with 20 first year architecture students by using protocol analysis method. The findings showed that students' cognitive style and past spatial experiences affect design process. At this point, it is suggested that the negative effects of these past spatial experiences should be minimized and there should be attempts to increase their awareness about their cognitive styles before they become design fixations (Erkan Yazıcı, 2013). Allowing architecture students to have rich spatial experiences and encouraging them to improve their visual memory by increasing their awareness are important in architectural education. Such a practice will eliminate their cliché past experiences and help them develop an experience-based perspective in design process.

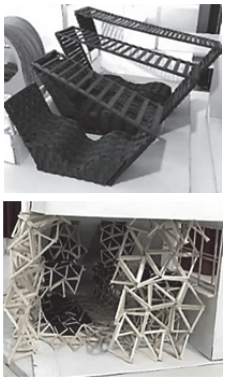
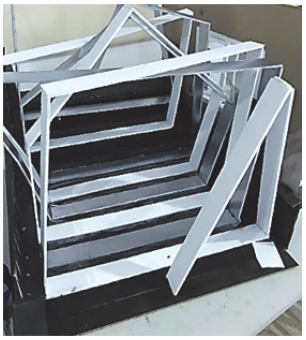
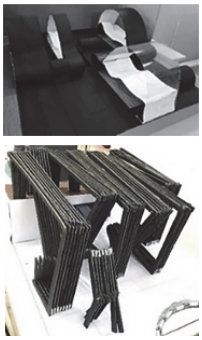
The first year studios offered at Eskişehir Technical University Department of Architecture consist of "Basic Design Studio" and "Introduction to Architectural Design Studio". Despite some differences in their contents, these studios focus on increasing students' awareness in terms of peripheral perception and spatial experience, improving their creative thinking skills and helping them to be competent in architectural terminology. In order to equip students with these basic skills, instructors adopt a design process which involves conceptualization through research, experience and abstraction. Learning occurs through discovering design knowledge together with instructors, through multi-dimensional thinking and analyzing many examples instead of directly transferring knowledge to students. The design knowledge obtained are interpreted and conceptualized through "hands-on learning" principles. This method is important in these studios so that students can learn faster, use representation tools more effectively and be familiar with different materials. Despite their common pedagogical approach, they might differ in terms of course contents, processes to follow and expectations.

In Basic Design Studio, creativity exercises and practices supporting hand-eye-brain coordination are carried out in parallel with other practices throughout academic year. It is highlighted that our world consists of networks of relationships and everything around us evolves into an order involving different inputs and relations. Order and relational dimension in design are discussed through different examples and design problems in terms of design principles

and elements. In addition to abstract order relations, concrete order relationships which involve body-action-space concepts when students achieve a certain level of knowledge level. In "Introduction to Architectural Design Studio", abstraction approach, which is effective in creative thinking process, is applied throughout academic year as a method supporting conceptual perspective to design process as well as concept development. Architectural planning-programming, design and use as well as physical environment characteristics affecting design are among the issues dealt with within the content of the studio. Basically, concepts related to architectural space production are discussed and an approach focusing on human-body-action-experience is adopted by giving importance to scale-ratio, human dimensions, user needs and human-environment relationships. Although the content, restrictions and expected solutions for design problems differ in both studios, there are experience-focused practices by which space is reproduced through actions and body. This study focuses on Form-Hub work and Body-structure work in Basic Design Studio and Shell project and Urban Niche project in Introduction to Architectural Design Studio.

In Form-Hub work applied as part of Basic Design Studio, the students were asked to design a 15 m^3 –volume which was expected to have a central importance in the Department of Architecture by using Basic Design principles and components. The word "Hub" was taken as "the center of an action". The limitations of the design were as follows: taking into consideration human body and its actions in a design which is expected to allow at least two of the actions related to meeting point, information exchange, displaying, having a rest, sleeping, socialization; and thinking about different formation options according to different users at different times of the day. In addition, it was recommended that one of the actions allowed by the design should be dominant and the design should be named based on this domination such as "info-hub, techno-hub, sleep-hub" etc. It was also highlighted that body-space relationship should be questioned and the locations of the design in the department building should be chosen according to the dominant action. The application was conducted as a group work at 1/5 scale. The outcomes of Form Hub works are displayed in Table 1 below.

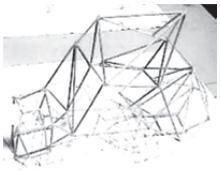
Table 1: Form Hub Working Outputs

FORM HUB WORK		
		
Theoretical Analysis	**Process Analysis**	**Learning Analysis**
*Space production through actions in "hub" design as the center of certain actions and basic design principles and components, * How one-week observation of momentary cases and actions in the department of architecture affects the decision about the dominant action and place for the designs, * Questioning form options according to different users and different times of the day by considering human actions and body sizes	*The preliminary work involving spatial behavior analysis and conceptual research, * Evaluating functional analysis in conceptual research * The design process in which abstract and concrete thinking progress simultaneously, * The development of sketch and model works through various materials and representation methods	* Ability to interpret Basic Design principles and components in space production, * Ability to question body-action relationship and to produce flexible, original and easily transformable spaces due to its potential to allow dominant and different actions

Body-Structure work was carried out as a requirement of Basic Design Studio in the spring term of 2018-2019 academic year. In this work, the students were first asked to record an impromptu video in which they can easily see their own body movements. They were also told to take the following criteria into consideration while recording this video: it must last 5 to 10 seconds; it must be recorded in the buildings of Architecture Department; the camera must be fixed and do horizontal recording; the camera angle must be wide enough to include all movements;

and the movements to be displayed must include dynamic actions allowing body joints to move such as running, jumping, stretching and hitting etc.. Later, the students made a sketch of the process through the abstraction of movements by resuming the recordings 20 times. Based on these abstractions, the students were expected to produce a transition space that transforms through body and actions. The use of 35X50 size drawing paper horizontally was recommended for this 1/10 scale work. The students discovered the advantages of wire and wooden materials in this work. This particular space's structural relations which were transformed and formed through actions were also important in this work. The outcomes of Body-Structure works are displayed in Table 2 below.

Table 2: Body Structure Working Outputs

BODY STUCTURE WORK		
 		 
Theoretical Analysis	**Process Analysis**	**Learning Analysis**
* Space production which transforms and whose limits are determined according to momentarily occurring actions in a predetermined design area. * *Understanding relational dimension of successive actions and how they are reflected on space *Production of space by taking human body sizes and movements into consideration	* Experience-oriented momentary design concept that does not involve conceptual research and analysis * A design process that questions structural content and abstract relationships of tangible movements that occur through body and actions *Development of sketch and model works through predetermined materials and different methods of representations	* Understanding the potential of space to transform and be shaped according to human body and actions * Understanding abstract order in experience-based concrete design products, relational dimension and their reflections on space

Shell exercise, which was the final exam project of Introduction to Architectural Design studio for 2018-2019 fall term, was a comprehensible work completed in several phases. In the first phase, the students were asked to choose one of the vegetables/fruit they were given as options (pomegranate, citrus fruit, walnut, purple cabbage, pineapple, kiwi and corn) and later to cut them in half and draw cross-sections and images displaying their internal structure. In the second phase, cross-sections were reproduced through abstractions. As for the phase 3, the structural information obtained from the abstraction of length and height sections was used together with other structural relationships, components and layers in the making of the model, and later, a structure core was obtained. At this point, students had the opportunity to see and perceive two-dimensioned abstract cross-sections in three-dimensioned formats. In the later phase, the developed structure core model was transformed into a shell by thinking about different movements of having rest, sitting and sleeping and by taking the principles of body-space interaction into consideration. As a result, initial space design proposals were given based on the determined actions. In the last phase, the produced shell was used as a resting area for one-person during the festival organized on the campus, which reflects its body-space-environment relationship. At this point, it was important that students questioned temporariness-permanency concepts and evaluated physical environment conditions and inside-outside relations. The outcomes of Shell Design works are displayed in Table 3 below.

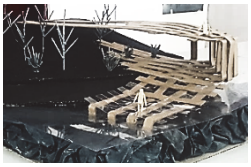
Table 3: Shell Design Working Outputs

SHELL DESIGN WORK		
		
Theoretical Analysis	**Process Analysis**	**Learning Analysis**
* Space production by interpreting structural relations based on conceptual knowledge obtained through abstraction and by transforming them according to actions * Clarity of layered structure of structural relations based on conceptual knowledge, its temporariness-permanency and transformability potential * Spatial transformation related to context and scenario by taking human body size and movements into consideration.	* Design concept based on personal interpretation of conceptual analysis, * Obtaining abstract design knowledge from concrete-organic object knowledge and using this knowledge while producing a concrete design object *Improving sketch and model works by using different materials and representation methods	* Understanding space production potential of abstract design knowledge produced as the outcome of conceptual analysis by transforming it according to different parameters such as body, action, context etc. * Understanding structural relationships in concrete space production through abstract design knowledge obtained as the outcome of conceptual analysis

In Urban Niche project carried out as a part of Introduction to Architectural Design Studio in the spring term of 2018-2019 academic year, the students were expected to examine inner dynamics of predetermined areas associated with Eskişehir Porsuk River and to design an Urban Niche that strengthens existing spatial elements, allows new ones as well as new types of perception and coalesces with existing dynamics. The students, who worked in groups of four, chose one of three areas associated with Porsuk River. First of all, they analyzed all the data obtained on different days and hours by making use of sketches, documents, photographs and similar tools. This analysis, called "Urban Diary", was submitted by the students in a notebook involving these sketches, documents, photographs etc. In the next phase, an analysis sheet was formed together with the data obtained from "Urban Diary". This sheet includes sketches, collages and

photographs. Later, based on the information obtained from Urban Dairy and Urban Niche work, a collage work was prepared reflecting the location choice and design decisions for Urban Niche designs. This collage study shaped design ideas and model design ideas generated through abstraction. In this phase, experience-based knowledge about design area is especially important because the decisions of actions to take place in the context and other design decisions during Urban Niche design process were based on this experience-based knowledge. The outcomes of Urban Niche works are displayed in Table 4 below.

Table 3: Urban Niche Working Outputs

URBAN NICHE WORK		
 	 	
Theoretical Analysis	**Process Analysis**	**Learning Analysis**
* Production of space through conceptualization of knowledge acquired through experience and how it is shaped according to actions in relation with context * Reflection of experience-based knowledge and model knowledge produced through abstraction on space. *Space concept based on human body sizes and movements	* Space concept based on personal interpretation of model knowledge produced through abstraction and experience-based knowledge * Design process using its own potential to allow flexible and different experiences * Improving sketch and model works by using different materials and representation methods	*Understanding space production process in which abstract experiment-based knowledge transforms into abstract design knowledge through contextual relationships, * Understanding transformation of structural relationships through transition between actions.

4. METHODOLOGY

In this study, four works (Form-Hub, Body-Structure, Shell Design and Urban Niche) completed by students attending Department of Architecture in

Architecture and Design Faculty at Eskişehir Technical University in 2018-2019 as part of first year Basic Design and Introduction to Architectural Design studio course contents were examined by using comparative analysis method within the context of Tschumi's innovative approaches in space production.

In the first phase, the studies conducted by Bernard Tschumi, who suggested innovative approaches in space production, were examined and the literature was reviewed to determine evaluation criteria. Later, the content of first year architecture education, its originality and the contents of architectural design studio courses at Eskişehir Technical University were examined. The sample works were chosen for that study according to body-action-movement concepts and whether space production is present or not. They were analyzed in terms of their contents, the processes followed and the learning outcomes.

In comparative analysis phase, evaluation criteria were determined by using the data obtained through literature review. Tschumi emphasized that space should be evaluated as a whole with its abstract and concrete elements and action, body and movement are important because of their role in creating space content and experiences. Therefore, "contribution of body and movement" was determined as the first criterion and "the potential to transform through action" as the second one. In addition, Bernard Tschumi focuses on events' being instant, which will bring about a new approach in architectural practices. Accordingly, "defining content with fragments (instant occurring spaces)" was determined as the third criterion. Finally, Tschumi stated that the relationship between what is conceptual and what is experimental might be used as a method, which brought the fourth criterion: conceptual content (transformation through experience).

In conclusion, these criteria were used to examine all four study-specific works, which were designed through experimental approaches in first year design studios. The findings obtained from comparative analysis were interpreted in terms of first year architectural education content and their original contents, the processes followed and the learning outcomes of the works.

5. EVALUATION

The works completed by the first year students attending Department of Architecture at Eskişehir Technical University in 2018-2019 academic year as part of design studio courses content were evaluated according to the criteria based on the innovative approaches suggested by Tschumi to produce space by taking body-action-movement concepts into consideration. The comparative analysis applied in this evaluation process is displayed in Table 5 below. The criteria determined for this comparative analysis are as follows: contribution of body and

movement to space production; its potential to transform through actions; defining a specific content through fragments (instantly occurring spaces, coincidences) and transformation of conceptual content through experience.

Table 5: Evaluating the works of first year students attending Department of Architecture at Eskişehir Technical University through Tschumi's approaches

		CONTRIBUTION OF BODY AND MOVEMENT TO SPACE PRODUCTION	ITS POTENTIAL TO TRANSFORM THROUGH ACTIONS	DEFINING A SPECIFIC CONTENT THROUGH FRAGMENTS	TRANSFORMATIO N OF CONCEPTUAL CONTENT THROUGH EXPERIENCE
BASIC DESIGN	FORM HUB WORK	*Potentials of body sizes and movement *Reinterpretation of space through movement as directive which allows other options of use	* Determining a dominant action and developing the design in parallel with this design * Being shaped according to different actions		*Forming a concept in the initial phase of a design and an experience space design in parallel with this concept
	BODY STRUCTURE WORK	*Potentials of body sizes and movement * Experiencing a space through body; combination of experience and movement to form the borders of the space	*Space that is shaped according to body movements and its potential to be deformed based on actions	*Representation of a instant situation, Structure production through a fragment and its transformation into a space	
INTRODUCTION TO ARCHITECTURAL DESİGN	SHELL DESIGN WORK	*Potentials of body sizes and movement *Body movements that shape the shell and structural movement	*Ability to create a program content which is likely to allow different actions		* A concept produced through organic object in the initial phase of the design and shell space production that develops in parallel with this concept
	URBAN NICHE WORK	*Potentials of body sizes and movement *Movement as directive force in public areas	*Public Spaces that might be transformed according to dif ferent actions		

The first criterion – that is, contribution of body and movement to space production – was observed in the contents of all the works examined in the study. In all the works as the content of both courses (Introduction to Architectural Design and Basic Design), the potentials of body sizes and our body movements are important inputs in space production. However, movement is discussed from different perspectives in each work. In Body-Structure work, the movements of the students become elements that determine the outside boarders of space. In Shell work, movements become an element that plays a role in shaping a structure; i.e a space. As for Urban Nische work, they play a role in directing – guiding people and in the creation of "closed"- "semi-open" and "open" spaces in public areas. Finally, in Form-Hub work, space is reinterpreted through movements which allow different potential uses as a directive factor.

The second criterion is "the potential to transform through actions", and it plays an important role in the content of all four works examined in the study. Each work with different design inputs and outcomes has the potential to transform through actions during design process. The possibility of mounting and demounting is valid only for shell work. At this point, temporariness-permanency emphasis in the analysis of shell study is significant. The works in Basic Design course have the potential to transform according to different and flexible actions because of its relation to action. Therefore, more original works have been created because they do not have complex architectural structure. Especially in Body-Structure work, students created works that might be deformed according to movements of body. In Form-Hub work, spaces transform according to different users and different times of the day. As for the spaces produced as part of Introduction to Architectural Design course, how the relationships of spaces are questioned – that is how architectural program content is formed are important issues to consider. The most important evaluation criterion for the design proposals in shell work was the potential of space to be transformed according to actions, which allowed the production of flexible space that might be associated with each other. Finally, Urban Nische work aims to discuss how spatial relationships should be planned by bringing it to urban level. In other words, it aims to reveal designs that have the potential to produce multi-functional public areas that will transform according to potential actions.

Although the first two criteria related to body-movement and action are observed in all the works, the third criterion, which is "defining content through fragments", is observed only in Body-Structure work. This criterion was determined based on the idea that sudden situations rising from "instant" actions of body, which can be associated with Tschumi's (2017) "event" concept, can create new spaces. The works produced structurally create new designs by

abstracting instant events. Since students created this work by using their body and video recording, their motivation increased. Forming abstractions of their bodies and movements allowed them to define different "in betweens". Thus, it might be concluded that it increased their creativity and enabled them to understand action-space relationships by experiencing through their bodies.

Finally, the criterion "transformation of conceptual content into experience" was observed in all the works completed in both courses. In Form-Hub work, which was a part of Basic Design Course content, the students were asked to produce a conceptual content in their design. This conceptual content was created not only in terms of form or meaning but also in terms of functions. The students were also asked to decide on at least two functions and make a conceptual interpretation based on these functions as well as basic design elements. As Tschumi (2017) stated in his article titled Architectural Paradox, the relationship between our perceptions, our experiences and what is conceptual has the potential to produce new spaces. As for Form-Hub work, the relationship between what is conceptual and what is perceptual resulted in semi-open space design. Shell work, which was made as part of Introduction to Architectural Design course, focused on a concept produced through an organic object during initial phase of the design and on a shell space design developed in parallel with this concept. Interpretation of structural relationships established on conceptual knowledge obtained through abstraction and their transformation according to actions were considered important in this process. Due to the lack of experience-based knowledge in shell design work, there is not a relationship between what is conceptual and what is perceptual as in the Form-Hub work.

6. CONCLUSION

Today, both experience-based knowledge and physical knowledge and using them together in design concepts are important due to innovative approaches to "space". These developments have brought about different dynamics to space production process. Body, action and movement especially play important role in obtaining experience-based knowledge and identifying abstract qualities of a particular space. Tschumi's innovative approaches regarding space production, which emphasize and question these concepts for their potentials to produce different spatial relationships, spatial dynamics and spatial contents, are the essence of the evaluation made within the scope of this study.

The comparative analysis done according to the criteria determined based on Tschumi's approaches showed that all the works emphasizing the "contribution of body and movement to space" reflected such contributions in various ways such as being a prompt, being structural and being instant. As Tschumi suggested,

body is an important concept which experiences and shapes a space in addition to its quantitative qualities. The works examined also revealed that our body movements might experience, shape and prompt space production and contribute to development of new approaches, which implies that body and movement are one of the fundamental concepts that influence spatial experience and boarders of spaces. "The potential to transform according to actions" is another criterion observed in all the works examined in this study. Although this potential might differ according to the contents of the works and design processes, it is an important criterion that enables students to question and understand the relationship established with people and body. In addition, this potential brings a sort of unity between structural relationships and spatial concept and user relationships. Tschumi's approach which highlights a close relationship between our actions and spaces we experience also supports this situation. The criterion "defining content through fragments-instantly occurring spaces-coincidences" was observed only in Body-Structure work, which does not reflect a complex architectural solution. In this work, the reflection of instant formations on space is supported by Tschumi's "event architecture" concept. Two works in which "transformation through conceptual experience" criterion was observed reflect Tschumi's idea, which suggests that formed concepts conflict with or are in parallel with experiences– i.e the realization of these concepts. Finally, it was observed that students tried to develop an approach in parallel with experience in the works encouraging the formation of conceptual content (Form-Hub and Shell Design works).

The criteria determined based on Tschumi's approaches can be used in developing new methods of space production in today's architectural environment. These concepts, which play an active role in actual architecture theory and practice, are valuable because they are covered in first year studios, which are the first learning environments where students meet "design" as a concept, and help students keep up with the current developments in architectural education. Thus, Design Studio courses offered at Eskişehir Technical University Department of Architecture in 2018-2019 academic year mainly aimed to help students understand body-action-movement-space relationship.

Tschumi's innovative approaches towards space production through body-action-movement might be considered an effective perspective in finding original and creative solutions by improving different thinking and interpreting skills in first year architectural education and practices. It might effectively increase motivation if the program allows experimental practices in first year architectural education, during which students become familiar with architectural terminology and acquire critical and relational thinking skills and where the basic knowledge

of architectural education is discussed. This situation is also supported by the fact that experimental practices are welcomed in first year design studios due to their flexible programs. Evaluating experience-based approaches in terms of different relationships, technologies and contents during a design process and applying them in first year architectural education will help students to develop a different perceptions and original point of views.

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SESSION 8A

Theme: Architectural/Urban Design, Art and Aesthetics

15 October 2020 Thursday, 10.45 – 12.15

Chairperson: Prof. Dr. Havva ALKAN BALA

Elif TATAR, Sevgi Aysu ORYAŞIN

Production of Space through Action and Body in First Year Architectural Education

Murat ÖZDAMAR

"Practice" in Interior Design/Architecture Education

Emre ALTÜRK, Emrah ALTINOK

Assessing Incremental Refurbishment as an Alternative to Demolish & Build-Anew: Lessons from an Architectural Design Studio Experience

"PRACTICE" IN INTERIOR DESIGN/ARCHITECTURE EDUCATION

Murat ÖZDAMAR*

ABSTRACT

With the start of "interior architecture", the educational formation, had an active role as much as the profession itself. Today, two approaches are the basis of the approaches of today's educational programs. The first one; the "Beaux-Arts", and recognized as the pioneer of academic design education; and the other one is the "Bauhaus".

In this study, the effect of Bauhaus education format and the differences occurred by the time within the Interior Architecture education in our country is demonstrated. Especially with the section of the course load, depending on their examinations with the conclusions reached by the numerical values obtained with interior design suggestions, which are made for the required fields in education.

"The Design Training Models" of the Interior Design training, emphasized and, investigated depending on the similarities and differences between educational models and the emerging results, points those need to be emphasized.

The educational programs of the schools in Turkey and Bauhaus education program have been put forward, and the evaluations have been made within the differences between them depending on the course groups and weights. The assessments are done with 57 universities in Turkey; the results are reached through the process/time information, which was allocated for the courses by the universities.

The sections for the training program has been investigated according to the comparisons by the course weights. By combining the hours of the curriculum of the departments. The numerical values are obtained and the results are evaluated.

Keywords: Interior Architecture/Design Education, Bauhaus, Practice in Education

1. INTRODUCTION

"Ability to Create"; it is one of the greatest passions that mankind has created in himself. Mankind has been living this passion for centuries. This powerful

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tendency is one of the important features that distinguish us humans from other species. The sense and desire of leaving a trace in the environment in which one exists; and exists even in times when the aim is to meet only the basic needs. The reason for this desire; whether it is to satisfy a feeling, or to convey information or leave a work to those whom will following them. However, what is important at this point is; the ability of human beings to reach solutions through reason, not emotions or feelings when solving problems

Today, human being's sense of "existence" and "to exist", which can be defined in such a simple sense, manifests itself in different fields and finds its reflections. The idea of creating a better or more comfortable world is the most; the environment and spaces in which they live, with the organizations and arrangements made. Approaches that can be defined as "style" created within their own usage areas and within the framework of the possibilities exist within the living spaces and manifest themselves as a way of expressing preferences and individual tastes. However, "style" which can be defined as a personal trait, expanded its definition in the process, improved its scope and approaches, and dealt within the framework of design values. With its aesthetic and technical solutions, "interior design/architecture" clarified the boundaries of science and profession.

The profession of interior design/architecture has a structure and definition that is much more than simply "what seems more accurate or more effective". Interior architecture profession and understanding is; it provides people to have a perspective within the framework of the integrity created in the spaces, depending on their intended use. The interior design approach strengthens the spatial structure and experience by proposing holistic solutions to the problems or wishes experienced in the interior spaces. Accordingly, the profession of interior design/architecture provides solutions to the needs of the user within the framework of the design values and personal preferences those are handled in accordance with the design values

Today, two approaches by two schools come to the forefront by the development and evolution of the interior design/architecture professional education, they form out the basis of the approaches of today's educational programs and they are really effective with the education process.

At this point, it is possible to say that, these schools are really effective in terms of interior design/architecture education established and maintained today. The first of these schools is; The École des Beaux-Arts (Malnar, Frank, 1992; Pile, 2009), that is developed in France and recognized as the pioneer of academic design education; and the other is "Bauhaus, which is originated in Germany.

2. PURPOSE - AIM

In the profession of interior design/architecture, “human” and “space” are handled together and the interior design/architecture is the procedure where these two elements come together, continues its development along with various theories and practices within the framework of the interior design/architecture profession (Kaptan, 2003). Interior Design/Architecture is a living and working profession using technical and scientific knowledge in order to provide the most suitable design by meeting the functional needs and requirements while fulfilling the expectations and desires of the user or requestor to have an aesthetic identity (Gökhan, Atasoy, 2005).

Accordingly, interior design/architecture; takes into account the physiological and psychological needs of users for the spatial volumes. Of course, in order to realize these phenomena, it is necessary to have the necessary information. This can be achieved by training in the field of interior design/architecture. Today, in the Republic of Turkey, on January 1, 1882 "Mekteb-i Sanayi-i Nefise-i Şahane", starting with the current name of "Interior Design" training, as by 2019, fifty-seven (57) continues with the university departments.

By the way of understanding the aim with this study is; at the forefront of interior architecture/interior architecture and environmental design educational programs, which is held to determine whether the value for education is the determination of the weight of the classes according to their topics and methods.

As a result of the findings; it is aimed to reach the results where the weaknesses and strengths can be revealed. By the results of the findings obtained from the examination of educational processes, “interior architecture / interior architecture and environmental design will reveal trends towards education approaches. In addition to the “theoretical” information applied during the training process, the values and requirements of the “practical” information and achievements carried out in the professional life will be discussed and evaluated.

With the work/study, the design educational model of Bauhaus is discussed with the Interior Design/Architecture education that we have in Turkey today. The Bauhaus was founded in Germany, and it has an important role especially with the education on the beginning program of the design education by “Basic Design”. The discussion is about the ongoing Interior Design/Architecture Education model that we have in Turkey by depending on the similarities and differences between the educational models. The emerging results, shows the important points which needs to be focused on by depending on the similarities and differences between educational models and the emerging results, points that need to be emphasized.

3. SCOPE

Interior design/architecture education is an information process that is interpreted by a series of drawings and expressions as a result of the interaction established with the trainer in parallel with the researches and suggestions developed for the solution of the problems posed by the student. The design studio, which has an important place in design education, provides an inclusive approach in design education, supported by other complementary courses taken in interior design / interior architecture and environmental design programs. The aim of the design education which is supported and completed in many ways; occupational competence. At this point, the subject to be drawn attention; it is necessary for the students to have the ability to use the information they have gained together and at an adequate level when they enter the professional life by providing occupational competence.

Starting from the end of the 19th century, the profession of interior design/architecture has been one of the professions that constantly renews itself with the effect of social, cultural, economic and technological changes. In parallel with this structure and understanding, interior design/architecture education; has a structure that embodies and shapes different approaches and opinions within its structure. This reflection in particular; "design studios" which have a prominent place in the education process. For this reason, studios have become environments where design values are created, different approaches are developed and related.

Today (December, 2019) there are 57 universities in Turkey within the "first teaching" program, and 3 by the "second education" program, while the 6 universities at Northern Cyprus Turkish Republic. The boundaries of the research consists of information related to the content that the "interior architecture/ interior architecture and environmental design" departments announced on their official websites.

In this study, educational programs of the Interior Architecture / Interior Architecture and Environmental Design university departments in our country and Bauhaus educational program have been put forward and the evaluations have been made within the framework of the differences between them, depending on the course groups and weights that we have today. The assessments are done by 57 universities those are currently providing training courses for the examinations on Interior Design/Architecture in Turkey. The results were reached by the process / time information which was declared on the internet sites of the universities those are allocated to the courses.

With the study conducted for training programs; the courses in the departments are examined and divided into groups in terms of their subjects and contents. In

this context, course sets; “History and theory”, “Communication”, “Building construction”, “Elective”, “General”, “Practical” and “Design” are gathered under the fields of knowledge and examined and evaluated within this framework.

Within the scope of the study; in the department programs of the universities, lecture hours for “theoretical” (theoretical) and “practical (practice) were introduced and comparisons were made. For the results of this data; “theoretical-practical” weight ratios of the courses were calculated.

The courses under the fields of knowledge; the distinctions between each other were determined and evaluated according to the number given in the university or the department. By the line with the data obtained, effective course weights were obtained and numerical data were obtained for the information fields in “Interior Architecture / Interior Architecture and Environmental Design” departments’ curriculum.

Within the framework of the data obtained as of 2019; according to the customs administration overall averages were within the universities in Turkey and the current "Interior Architecture / Interior Architecture and Environmental Design" training programs within the distribution ratios were calculated. In this way; course weights were obtained for educational purposes, whole learning outcomes were evaluated and opened for discussion.

4. METHOD

The current educational programs “Interior Architecture / Interior Architecture and Environmental Design” departments of the fifty-seven (57) universities in our country Turkey is examined. For the courses in the program content; Course information fields were created. Based on this grouping; the course hours and course weights are handled with numerical data and they are brought together by tabulation method. Classification through departmental programs; with five (5) years and taking into consideration the date of establishment. The data obtained were based on the information of the curriculum which are announced on the official websites of the departments.

This study is on the comparison and the evaluation of the courses/lessons, and course/lesson hourly weights on the course distribution, those are found within the educational programs of the "Interior Architecture / Interior Architecture and Environmental Design" departments of the 57 universities that we have in Turkey, by getting the information about the hours of the courses within the curriculums announced within the departments’ web pages. The numerical values gotten by the researches were compared and the results of them are evaluated according to the educational procedure of the Interior Design/Architecture.

The data obtained in the context of the subject were brought together by the tabulation method. The results were used in the analysis tables. In this way, in line with the numerical data of the research, net information and ratio values could be provided and suggestions were brought into discussion.

5. INTERIOR DESIGN/ARCHITECTURE

The existence of the profession of interior design/ architecture and the first definition in Turkish; it is an anonymous article published in Arkitekt magazine in 1932;

"Today the internal decoration and furnishing of buildings has become an art in itself. We also want to increase the number of our friends who are specialized in this branch, which we are beginning to feel the need for, and wish them to have a job site in our country and wish them success. (Şumnu, 2013, 23).

The understanding defined and put forward by these words; is it the gathering of the spatial requirements that arise with the needs of people under the roof of a profession? In this study, the answer to this question will be sought.

There are many views on the definition of interior design/architecture. Unfortunately, the generally known definition is;

"Traditionally, the architect defines the structure with the walls created with the structural elements and the buildings come to life after the interior design is finished". If further work is required, the interior decorator may have added color, pattern and texture coatings to the existing walls, ceilings and floors to select the space for a specific purpose and functionalize it (Higgins, 2015),

It is known as like that, however, interior architecture and interior design continue to grow and develop as the spatial requirements of the users increase.

Interior design/architecture is not only within the framework of the structure, but also comes to life in every place where human beings live. Planes, ships, wagons, yachts are examples of this.

Interior design/architecture is an integrated design phenomenon in which the interdisciplinary and multi-relationship systems are designed. Different but related design approaches such as material selection, design of reinforcement elements and ergonomic suitability value, creation of spatial acoustic conditions and creation of necessary lighting environments depending on the function, the design of escape routes for emergencies such as fire and user load relationship are just a few of the works of interior designers/architects. . What is important in the interior design/architecture approach; necessary arrangements and designs to meet the functional requirements of the space, in line with user requirements;

ergonomic, functional, psychological (perceptual), aesthetics and comfort to meet the values.

These approaches, which can simply be called "planning", are actually much more strategic and form a complex relationship system. Space design is more than a “two-dimensional” activity in which the spaces are arranged on the plan, but the “three-dimensional” perception of the space/volume has to be considered:

“Volume and form; proportion, proximity and relationship of spaces; the way they are defined and connected, and roaming between and around them. All these elements have to be developed by interior architects to meet the needs of indoor users and to respond to the constraints set by the existing area where the interior schema exists” (Higgins, 2015).

Depending on all these, interior design/architecture; to design all kinds of spaces with all their requirements for different functions, and purposes in which mankind is involved. When starting with such a definition; we can understand that, interior design/architecture, which is a profession related to human and living together, is a multifaceted body of relationships within its own structure. In this context, interior design/architecture, which constitutes its own definition, has been accepted as a profession to meet the spatial / vital needs in the future.

6. INTERIOR DESIGN/ARCHITECTURAL EDUCATION

The initiation of the training activities for the profession of Interior Architecture/Design; dates back to the late 19th and the early 20th centuries. Mainly in the United States of America, “Home decoration” courses began to be given within the "design" or "home economics" departments of the schools. As the work of interior design/architecture began to develop as a worldwide profession, the issue of training for the occupation became a necessary process besides the practice of the profession. At this point, experienced practitioners have started to work on interior design/architecture education. Under the leadership of Candace Wheeler, the New York School of Decorative Arts was founded in 1877 and became the first official educational institution for women in the United States of America (Kirkham & Sparke, 2000). In the same time period, Nancy Vincent McClelland is being seen as an important figure in the professionalization of the profession. The content of the training program proposed for professional training in interior decoration has guided the profession in many respects. The book An Outline of Careers for Women, published in 1929, brought the necessary technical, historical and cultural knowledge about interior decoration to the society (Edwards, 2011: 56).

The first official education/training program on interior design/architecture was held in 1906 at the School of Applied and Fine Arts in New York (Parsons, The New School, 2012). Then, in 1916, the "New York School of Interior Design" was established (Tate, & Smith, 1986). In Europe; interior design/architecture education was implemented in the late 19th century (Kaptan, 2003: 68). To become a field of education or department independently; interior design/architecture coincides with the aftermath of World War II. In addition to that, the graduate programs on interior design/ architecture education has started within the Royal College of Art education program in England in 1951.

Within the progressing and developing procession, the number of the courses given in interior design/architecture education programs increased; they have begun with 43 courses by the first years, and get continued, and reached an average of 114 courses today (Edwards, 2011: 60-61). A research study which has been done in Ostwestfalen-Lippe University shows that; the profession of interior architecture dates back to 1922 in Germany. The formation of academic discipline in the field of interior design/architecture in Germany, has started in 1971; and the programs has been reconstructed with the formation of "applied sciences" (Pottgiesser, 2011: vi). By the year 2011, the interior design/architecture education programs are provided in 16 universities in the country (Germany) (Pottgiesser, 2011: v).

The Interior design/architecture education in Australia and the Far East continued in line with developments in the United Kingdom and the United States. However, the Japanese traditional educational program and different interior design conceptual approach were not included in this development process (Kaptan, 2003: 69-70).

Today, two schools come to the forefront in the development of the interior design/architecture profession and in the education process and form the basis of the approaches of today's educational programs. At this point, it is possible to say that these schools are effective in terms of interior design/architecture education established and maintained today. The first of these schools; École des Beaux-Arts, developed in France and recognized as the pioneer of academic design education; the other one is "Bauhaus", which originated in Germany (Malnar, & Vodvarka, 1992; Pile, 2009).

Design academies, institutes and schools, which play an important role in the development of design education and shaping today's educational understanding, have contributed to this process. These are as follows in chronological order;

1830 - Academie de Beaux Arts

1837 - British Royal Academy of Art

1845 - Glasgow School of Art

1866 - Art Institute of Chicago

1908 - Amsterdam Academy of Architecture

1919 - Bauhaus

1920 - Vkhutemas

1953 - Ulm School of Design

1974 - NCIDQ (National Council for Interior Design Qualification)

7. 1830 - ACADEMIE DE BEAUX ARTS

The École des Beaux-Arts, with its full name "École Nationale Supérieure Des Beaux-arts". The school of fine arts with Académie Royale d'Architecture. It was founded in Paris in 1671 by Jean Baptiste Colbert, the minister who worked with King Louis the 14th.

Born as an alternative to guild and workshop in the process, the difference between the previous periods and the Academy is seen as follows;

"The unquestionable values of classical architecture, the foundation of education on a theoretical basis and its openness to all who want it as a public service. In the meantime, the workshop system was preserved, but compulsory courses and conferences were organized by bringing formal processes to education (Balamir, 1985).

The educational program of the school, which was changed and reorganized with the French Revolution and called "Ecole de Beaux-Arts", has a qualified content with the formation of nourishing theoretical courses and practical workshops for different fields. Course topics such as chemistry, archeology, administration, law and finance which may be necessary in the field of work are also included in the program (Balamir, 1985; Cret, 1941; Carlhian, 1979).

When the education program of the school is examined; It can be seen that the program is gathered under two main titles; "Practical Training" and "Formal Training" (Table 1). The program also includes monthly and annual competitions. This approach is a clear document of the importance given to "competition" and "ability to make personal decisions".

Table 1. Beaux-Arts Educational Program (19.cc), Balamir, 1985; A.C. Weatherhead, 1941)

Practice Education	CRAFTS EDUCATION						
	STONE	TIMBER	METAL	CLAY	GLASS	COLOUR	TEXTILE
	STATUE ATELIER	CHOPPING ATELIER	METAL ATELIER	CERAMIC ATELIER	STAINED GLASS ATELIER	PAINTING ATELIER	WEAVING ATELIER
	MATERIAL and STOOL EDUCATION						
	FINAL ACCOUNT		AUCTION			COST ANALYSIS	

Formal Education	FORMAT PROBLEMS		
	OBSERVATION	PRESENTATION	COMPOSITION
	NATURAL WORK	SPACE GEOMETRY	SPACE THEORY
	MATERIAL WORK	CONSTRUCTION TECHNIQUES	COLOUR THEORY
		TECHNICAL DRAWING	DESIGN THEORY
		MODEL	

The working method of the Academy; is by creating the schedules of the courses to be given and to organize the contests to be held. The workshops established within the school program were, although dependent on the school administration, working separately from the school's administrative scheme. In order to form out a studio, it is sufficient for up to twenty students to make a request together for a well-known architect who teaches in many schools to establish a workshop and to open the course.

The understanding and effective approach to learn in the workshop system; it was organized as solidarity between new and old students. The new ones used the drawing and model works of the ancients and the old ones played the role as educators (boss) as effective as the educators. Trainer; he was not interested in the number of students, but he managed collective discussions, critics, and took part in juries.

The academic program is designed as follows;

- Aspirants,
- 2nd grade (Eleves),
- 1st class (Anciens).

In the Middle Ages, the master - apprentice training conducted with the hierarchical order within the guild; by removing the students studying at the academy from this form of relationship, it has placed a much more informed and intellectual structure. At this point; it has become the protector of the culture owned (Ertek, 1999; Ozer, Kuban, 1966).

The design education program of the Academy; is the achievements given to the students were formed by studio critics and post-process juries. This layout was accepted by the design community (Gürel, & Basa, 2004; Pile, 2009). In addition, the first design schools established in the United States have accepted this understanding also (Nutter, 2001; Pile, 2009).

8. 1919 - BAUHAUS

The Bauhaus School of Design, is one of the most important schools of the period, which was established in 1919 in the city of Waimar under the direction of Walter Gropius (1883-1969). Gropius united two schools when the Bauhaus was established; Grand-Ducal Saxon Academy of Pictorial Art and Grand-Ducal Saxon Academy of Arts and Crafts. Thus; By designing and manufacturing together, both areas would be jointly bent (The Bauhaus, 2019). This convergence was the realization of the dream of unity established in the Vienna Workshop, and it is also thought to have had a great impact on the and Arts and Crafts movement which was put forward after the Industrial Revolution, as Meshur emphasized (2011). This reveals the commitment of the École des Beaux-Arts and the Bauhaus to each other, even if they are all separated from each other.

In the western societies where industrialization has developed, and developed in a very effective way, the inability of the objects to be produced to respond to the needs has led to questioning thoughts on the designs made and functionality to be brought to the forefront. Again, with having the idea of design, being within the minds of people; it is desirable that every product living in daily use, has to be functional as well as being aesthetically strong (Aslanoğlu, 1988). Because of such an expectation, the fact that a school like Bauhaus, a school where designs and applications are experienced together, was also considered to be at the forefront

The ongoing and developing “questioning“ and “breaking and opposing” attitude was born with the 20th century and they are reflected in art activities and movements, which led to the questioning of ongoing educational processes and methods. The fact that inquiry processes took place in the period also led to the emergence of new searches both in artistic attitudes and in educational methods, and instead of traditional methods, an understanding and structure was formed in accordance with the effective and rapid structure of the era (Sarı,

2005). The most important aspect of this structure was that "manufacturing education and design education are given together". Thus, the fact that; different professional groups come together and work together as a whole within a common structure has been realized. This is an example of stepping into the "multi-disciplinary" formations that will emerge by the coming years. The development of craftsmanship and design concepts by walking together has caused the school to become a "design and manufacturing" complex (Aydoğan, 2010).

During the education period of the school, workshops such as metal, printing, weaving pottery, stage/staging and painting have been established, and such workshops have been realized together with both classical, traditional and original and contemporary art understanding of the past. The syllabus was created by combining the concepts of color, expression, abstraction and classical painting and perspective, as well as basic design, material, construction site and workshop concepts (Sarı, 2005). According to such an understanding, all arts get together within the same environment.

"According to the understanding of this school, all arts were gathered under one roof. Painting, graphics, sculpture, ceramics, textiles, stained glass, wood and metal three-dimensional objects and other works were integrated with the construction. This school prevented the corruption of products in the transition to industry. They believed that, not only them, but all the people had to go through education in order to learn about the arts. For this reason, the art education had an important place in primary and secondary education"(from Tonguç, Ülkü, 2008: 40).

The school's program, which was announced in April 1919, defines the approach as follows;

"All of Bauhaus's endeavor is, to bring all the disciplines of creative arts, such as sculpture, painting, crafts and crafts together, as an integral component of architecture. Accordingly, the aim of Bauhaus; by creating a unified art work, to ensure the formation of a "main structure" that does not distinguish between structural and artistic branches" (Tate, Smith; 1985).

Such an understanding of education has been accepted for the following century and has led to a combination of art and design. The Bauhaus curriculum consists of three main parts; It has a preparation which includes design principles for one semester and then a program for working together with other crafts for three years. This program integrates "practical work" (Werklehre) and "class work" (Formlehre) together (Malnar, Frank, 1992: 173).

The basic education (Vorkurs) courses in the curriculum of the school have formed the basis of the "basic design" course which is in almost all interior

design/architecture schools today. The course initially consisted of a six-month period and students who were successful could attend the school. The most important aspect of the syllabus of the school revealed an environment in which not only technical education but also theoretical knowledge was transmitted (Meşhur, 2011) (Table 2). This was later described by Gropious as "Art and Technique, New Unity".

Table 2. Bauhaus Educational Program, Balamir, 1985.

ATELIER	ARCHITECTURAL DESIGN / COMPOSITION			
	Order and detail	Analytical and Project	Sketch Problem	Archaeology Project
	DRAWING - MODEL			
	Free Hand Drawing	Embellishment	Ancient Figure	Model Relief

CLASSES	MATHS	SPACE GEOMETRY	STEREOTOMY	CONSTRUCTION INFORMATION	THEORY - HISTORY
	Trigonometry	Shadow	Stone Cutting	Stone Construction	Ancient Ages
	Analytical geometry	Rotating Surfaces	Wooden frame	Wood Construction	Medieval Period
	Mechanics	Conical Sections		Iron Construction	Modern Age
		Perspective		Application project	
				Geology	
				Physics	
				Chemistry	

Moving to Dessau in 1925, the school aims to enable the teachers and all the designers under the roof to act as creative, artist, master and industrial designer; the designs would be solved in realistic sizes and sizes that could be manufactured in factories. The furniture, lamps, textiles, metal and glass products designed with this understanding are all produced in their own workshops. This approach; can be considered as practical transportation of industrial design to the world of design education.

Such a design model, the object that designed should be as well as useful and besides being useful, it has to be economic and simple. So; this kind of approach

and education, bringing together mechanization and art, showed that two different ideas can work side by side.

9. INTERIOR DESIGN/ARCHITECTURAL EDUCATION IN TURKEY

The way of understanding was different from each other as the first two departments opened in Turkey in the field of Interior Design. During their education period, "Academy of Fine Arts" conducted the way of Beaux-Arts; the school of French origin; "State School of Applied Fine Arts" was based on the German educational procedure by Bauhaus education program (Unansal, 2013, p: 131).

These two schools, which are working on interior design/architecture education, has formed the foundations of the profession in our country until 1985. Since 1985, as the profession of interior design/architecture has become more effective, the educational approach and programs has gained importance. The most effective reason for the profession to become much more efficient is, by the way of new economic modeling occurred after 1980 in Turkey; that is way of "consumption". The new production conditions, technological structures, new material options and the globalization of information sharing in the light of the consumption culture made the interior design/architecture profession much stronger than before.

Design or designing; it is the main action underlying with the profession of interior design/architecture. This action is handled in an interdisciplinary approach, and it is associated with other areas. Departments providing undergraduate education in the universities such as "City Regional Planning " "Urban Design and Landscape Architecture", "Architecture", "Interior Design/Architecture", "Industrial Product Design" which are the main occupational branches working on design procedure. These professions, which are based on designing action, have differences in scale for each of them. The design is clearly differentiated from the designed product. Consequently; by the differences with the scales, the understanding of specialization towards design action is more clearly seen.

However, "design" focuses on a common approach during the education of all relevant professions. This early design phase, which is called "Basic Design", works on the concepts that make up the main decisions of design procedure. At this point; design-based professional branches, regardless of scale brings together. The development of design education approaches in the process has led to the emergence of different educational cultures and the development of different design methods (Ertek, 1999). In this context, it will be useful to examine the transmission methods and methods of design learning in the infrastructure of interior design/architectural profession, in the formation of the proposals that need to be emphasized in terms of professional gains.

The "design" courses are taken as an active case within the departments of Interior Architecture/ Interior Architecture and Environmental Design in Turkey. The students are beginning to get the design procedure by the first term of the training/learning program and continues until the end of the stage. The process of acquiring students to design and systematics of it, constitutes the main structure of educational programs. Therefore, within the framework of Interior Architecture/Interior Architecture and Environmental Design education, the "Design Studio" courses, together with other nutritional side courses and applications, constitute the backbone of the education programs and take place predominantly.

Within the line of this approach, "design studio" courses are a set of ideas that combines the formation and development of design thought systematics, the forms and approaches of design phenomena with the nutritious application and theoretical knowledge acquired by the other courses. The analysis presented by Ertek reveals this approach very clearly; History-Theory (History of Space Design, History of Furniture, Environmental Psychology, Design Research Methods), Communication (Technical Drawing, Design Geometry, Technical Drawing-Perspective, Visual Expression Techniques, Free Drawing Techniques, Computer Aided Space Design), Building-Construction (Structure Knowledge, Furniture Making Methods and Techniques, Interior Construction and Materials, Indoor Environmental Control Systems), Elective (Department, Faculty, University Elective Courses), General (Atatürk's Principles and History of Turkish Revolution, Turkish, English), Practical (Cost Analysis) , Professional Practice, Internship, Portfolio) and Design (Basic Design Education, Basic Art Education, Environmental Design, Furniture Design) course sets are all feeding the Design Studio (2014).

10. EVALUATION

The "Design Studio" courses, which constitute the main backbone in this form of relationship, which is accepted within the design education approach; the courses covers the transformation, association and projecting of the acquired knowledge supported by other nutritional course groups. At this point, it is aimed to examine the relationship values of courses related to the values, fiction and methods of education of interior architecture/interior architecture and environmental design education system; differences, deficiencies and gains are important in terms of revealing.

The study is, on the courses of the Interior Architecture/Interior Architecture and Environmental Design departments of the Universities of the Republic of Turkey. There are 7 main parts within the training program for the courses which are found in the course distribution (Table 2, Table 3), they are;

- History & Theory,
- Communication,
- Construction,
- Elective,
- General,
- Practical,
- Design.

There were 57 (fifty seven) Interior Architecture/Interior Architecture and Environmental Design departments in Turkey by the year 2019. The schools in question are classified and listed in five-year intervals depending on their establishment years. Topics related to assessment, established the Republic of Turkey which is connected to the relevant faculties of universities "Interior Architecture / Interior Architecture and Environmental Design" section are discussed in the framework.

The content evaluation of the syllabuses were based on the data of the syllabuses on the official internet addresses of the current departments of Interior Architecture/Interior Architecture and Environmental Design departments of Turkey.

The courses within the fields of “elective” and “general” are not included in the assessment since they are not inclusive of vocational courses. Beside this; since the courses in these groups have variable hour content, they are not included in a general evaluation. Since the information on the curriculum of Hasan Kalyoncu, MEF, Özyeğin, İstanbul Rumeli, and Kütahya Dumlupınar Universities could not be reached, they were excluded from the evaluation.

Table 3. Interior Architecture/Interior Architecture and Environmental Design Departments’ (1926-1985) Curriculum with Course Information Areas Evaluation Table (t: theoric, p: practice, n: number)

				T	P	T	P	HISTORY-THEORY			EXPRESSION - CONTACT			ELECTIVE			GENERAL			STRUCTURE-CONSTRUCTION			PRACTICE			DESIGN		
				H	H			T	P	N	T	P	N	T	P	N	T	P	N	T	P	N	T	P	N	T	P	N
1926-1985	1	Marmara University	2	114	120		1	50	16	21	10	12	4	40	38	15	12	0	6	11	12	8	2	16	6	19	26	9
	2	Mimar Sinan Güzel Sanatlar University		51	63		1	21	11	13	7	6	5	0	0	0	16	0	8	8	8	6	0	4	4	21	44	14

Table 4. Interior Architecture/Interior Architecture and Environmental Design Departments' (1985-1990) Curriculum with Course Information Areas Evaluation Table (t: theoric, p: practice, n: number)

				T	P	T	P	HISTORY-THEORY			EXPRESSION - CONTACT			ELECTIVE			GENERAL			STRUCTURE-CONSTRUCTION			PRACTICE			DESIGN		
				H	H			T	P	N	T	P	N	T	P	N	T	P	N	T	P	N	T	P	N	T	P	N
1986-1990	3	Hacettepe University	2	70	82		1	25	6	10	9	14	7	66	25	35	14	0	6	6	6	3	9	14	7	16	40	8
	4	Bilkent University		67	73		1	30	0	10	0	16	4	0	0	7	12	0	5	8	9	5	3	0	3	16	48	8

Table 5. Interior Architecture/Interior Architecture and Environmental Design Departments' (1991-1995) Curriculum with Course Information Areas Evaluation Table (t: theoric, p: practice, n: number)

				T	P	T	P	HISTORY-THEORY			EXPRESSION - CONTACT			ELECTIVE			GENERAL			STRUCTURE-CONSTRUCTION			PRACTICE			DESIGN		
				H	H			T	P	N	T	P	N	T	P	N	T	P	N	T	P	N	T	P	N	T	P	N
1991-1995	5	Eskişehir Teknik (Anadolu) University	2	82	52	1		34	17	15	10	8	8	0	0	20	8	0	4	6	0	3	8	3	4	24	24	6
	6	Karadeniz Teknik Üniversitesi		77	57	1		33	11	14	10	7	5	30	0	15	13	0	6	6	1	3	0	4	2	28	34	9

Table 6. Interior Architecture/Interior Architecture and Environmental Design Departments' (1996-2000) Curriculum with Course Information Areas Evaluation Table (t: theoric, p: practice, n: number)

				T	P	T	P	HISTORY-THEORY			EXPRESSION - CONTACT			ELECTIVE			GENERAL			STRUCTURE-CONSTRUCTION			PRACTICE			DESIGN		
				H	H			T	P	N	T	P	N	T	P	N	T	P	N	T	P	N	T	P	N	T	P	N
1996-2000	7	Akdeniz University	4	99	49	1		20	6	11	11	7	5	20	0	10	16	0	8	16	8	8	2	2	2	30	26	11
	8	Çukurova University		84	62	1		33	14	15	16	12	8	104	0	26	12	2	6	16	2	8	1	10	4	18	24	6
	9	Kocaeli University		115	39	1		43	6	15	18	6	8	0	0	0	16	0	6	15	6	5	8	4	0	31	17	9
	10	Haliç University		35	114		1	7	0	4	16	16	8	0	0	25	14	0	6	10	14	7	2	18	5	0	66	10

Table 7. Interior Architecture/Interior Architecture and Environmental Design Departments' (2001-2005) Curriculum with Course Information Areas Evaluation Table (t: theoric, p: practice, n: number)

				T	P	T	P	HISTORY-THEORY			EXPRESSION - CONTACT			ELECTIVE			GENERAL			STRUCTURE-CONSTRUCTION			PRACTICE			DESIGN		
				H	H			T	P	N	T	P	N	T	P	N	T	P	N	T	P	N	T	P	N	T	P	N
2001-2005	11	İstanbul Teknik University	12	67	82		1	25	6	10	8	22	4	27	0	9	20	0	8	16	14	9	0	0	0	14	40	8
	12	Selçuk University		106	78	1		39	13	22	15	21	9	22	8	14	12	0	3	7	10	5	0	0	2	28	28	10
	13	Bahçeşehir University		44	84		1	17	10	9	2	14	4	0	0	6	8	0	4	9	12	5	0	0	2	16	48	8
	14	Başkent University		80	56	1		27	2	13	15	12	8	32	18	15	24	0	8	8	8	4	0	0	2	30	34	9
	15	Doğuş Üniversitesi		86	55	1		40	8	18	10	21	9	0	0	0	12	0	3	9	10	5	2	0	4	25	16	7
	16	İstanbul Kültür University		56	78		1	24	10	12	12	10	6	0	0	7	20	0	8	6	10	3	0	0	2	14	48	8
	17	İstanbul Ticaret University		65	74		1	32	2	13	9	12	6	0	0	60	12	0	6	6	6	3	2	2	1	16	52	9
	18	İzmir Ekonomi University		47	88		1	26	8	12	4	14	5	30	0	10	26	12	10	2	4	2	1	6	5	14	56	9
	19	Kadir Has University		60	68		1	9	0	4	11	8	5	18	0	6	20	0	8	10	12	4	0	0	2	24	48	8
	20	Yaşar Üniversitesi		62	72		1	29	4	12	0	12	3	28	0	10	14	0	6	7	4	3	0	0	2	20	52	10
	21	Maltepe University		58	80		1	26	2	13	4	4	2	32	0	16	14	0	6	8	6	4	0	0	4	20	68	10
	22	Toros University		107	64	1		39	2	14	16	10	5	24	0	8	20	0	8	18	2	8	0	0	3	34	50	9

Table 8. Interior Architecture/Interior Architecture and Environmental Design Departments' (2006-2010) Curriculum with Course Information Areas Evaluation Table (t: theoric, p: practice, n: number)

				T	P	T	P	HISTORY-THEORY			EXPRESSION - CONTACT			ELECTIVE			GENERAL			STRUCTURE-CONSTRUCTION			PRACTICE			DESIGN		
				H	H			T	P	N	T	P	N	T	P	N	T	P	N	T	P	N	T	P	N	T	P	N
2006-2010	23	Atılım University	12	74	68	1		19	2	9	7	10	5	28	2	10	28	0	10	15	6	6	0	0	3	33	50	9
	24	Fatih Sultan Mehmet Vakıf Üniversitesi		70	60	1		18	8	10	7	6	4	32	0	16	12	0	6	9	10	5	2	2	4	34	34	9
	25	İstanbul Arel University		76	90		1	24	2	11	11	14	7	0	0	3	20	0	8	17	12	8	2	12	2	20	50	10
	26	İstanbul Bilgi University		151	24	1		48	0	13	9	0	3	0	0	6	16	0	6	23	0	4	3	0	3	64	24	8
	27	Altınbaş (İstanbul Kemerburgaz) University		67	72		1	28	6	12	21	10	9	75	0	11	28	0	10	11	8	5	2	4	4	5	44	9
	28	İstanbul Medipol Üniversitesi		72	81			20	0	10	8	8	4	0	0	0	2	0	1	16	16	7	4	3	2	22	54	11
	29	KTO Karatay University		146	58	1		80	12	40	16	10	9	0	0	0	12	0	6	14	6	7	4	2	3	36	32	10
	30	Nuh Naci Yazgan Üniversitesi		86	63	1		28	7	13	14	12	8	47	18	23	26	0	10	9	10	5	2	4	2	34	34	9
	31	Okan University		50	64		1	27	6	16	7	16	6	28	4	14	8	0	4	3	6	3	0	2	4	13	34	11
	32	TOBB Üniversitesi		51	91		1	27	16	13	5	20	6	0	0	6	12	8	8	6	5	3	0	0	0	15	66	9
	33	Beykent University		71	38	1		41	3	20	20	11	9	0	0	0	12	0	3	2	2	1	4	8	6	12	22	6
	34	İstanbul Yeni Yüzyıl University		77	80		1	28	10	11	12	14	7	0	0	10	14	0	6	16	10	8	3	0	0	18	46	10

Table 9. Interior Architecture/Interior Architecture and Environmental Design Departments' (2011-2015) Curriculum with Course Information Areas Evaluation Table (t: theoric, p: practice, n: number)

				T	P	T	P	HISTORY-THEORY			EXPRESSION - CONTACT			ELECTIVE			GENERAL			STRUCTURE-CONSTRUCTION			PRACTICE			DESIGN		
				H	H			T	P	N	T	P	N	T	P	N	T	P	N	T	P	N	T	P	N	T	P	N
2011-2015	35	Afyon Kocatepe University	17	78	32	1		29	4	14	15	10	9	77	11	36	14	0	6	8	2	3	2	0	1	22	16	9
	36	Kırıkkale University		118	37	1		38	8	19	24	9	9	0	0	7	12	0	6	14	6	6	0	0	2	42	14	8
	37	Avrasya University		62	74		1	24	10	11	10	12	6	22	20	12	12	4	6	14	8	7	0	0	2	14	44	8
	38	Çankaya Üniversitesi		83	54	1		31	2	16	6	8	4	33	0	11	12	4	6	12	10	6	2	2	3	32	32	8
	39	İstanbul Gedik University		75	86		1	28	4	12	6	20	7	0	0	9	15	0	7	8	12	5	4	4	4	26	46	10
	40	Hasan Kalyoncu University																										
	41	Işık Üniversitesi		56	97		1	36	19	16	4	6	4	3	0	8	14	0	6	5	14	4	2	2	3	6	56	9
	42	İstanbul Aydın University		89	79	1		34	2	14	5	9	4	0	0	12	14	0	6	15	4	7	6	8	6	20	56	11
	43	İstanbul Esenyurt University		96	71	1		35	5	14	14	18	9	0	0	5	14	0	4	7	8	4	4	4	4	36	36	10
	44	İstanbul Gelişim Üniversitesi		65	74		1	13	6	6	12	10	6	0	0	12	14	0	6	23	16	11	0	0	0	16	40	8
	45	İstanbul Sabahattin Zaim University		63	68		1	22	4	11	4	8	5	0	0	7	20	12	8	19	8	9	0	0	0	20	50	12
	46	MEF Üniversitesi																										
	47	Nişantaşı University		22	40		1	11	4	5	7	6	4	0	0	17	50	0	17	6	0	2	0	0	0	0	30	6
	48	Özyeğin University		55	106		1																					
	49	Yeditepe Üniversitesi		68	62	1		19	8	10	7	4	5	17	0	6	12	4	6	12	12	8	4	4	4	26	28	7
	50	Uluslararası Antalya (Antalya Bilim) University		85	60	1		38	9	17	6	6	3	10	14	8	14	0	6	10	7	5	3	2	4	28	36	8
	51	İstanbul Şehir University		50				17	4	7	8	8	5	0	0	12	12	0	4	8	10	6	0	4	2	34	36	9

Table 10. Interior Architecture/Interior Architecture and Environmental Design Departments' (2015-2019) Curriculum with Course Information Areas Evaluation Table (t: theoric, p: practice, n: number)

				T	P	T	P	HISTORY-THEORY			EXPRESSION - CONTACT			ELECTIVE			GENERAL			STRUCTURE-CONSTRUCTION			PRACTICE			DESIGN		
				H	H			T	P	N	T	P	N	T	P	N	T	P	N	T	P	N	T	P	N	T	P	N
2016-2019	52	İstanbul Ayvansaray University	6	68	30	1		23	0	8	10	4	4	0	0	9	12	0	3	7	4	3	0	9	2	19	38	10
	53	İstinye Üniversitesi		68	45		1	10	8	6	18	18	9	21	12	12	27	16	12	6	14	5	0	8	2	0	64	8
	54	TED University		39	30	1		17	5	7	6	6	3	42	0	15	10	2	5	8	2	3	0	0	2	16	64	8
	55	Beykoz Üniversitesi		88	73	1		31	10	13	13	22	7	0	0	13	24	0	6	4	5	2	0	0	1	16	36	9
	56	İstanbul Rumeli University																										
	57	Kütahya Dumlupınar University																										
				T	P	T	P																					
		TOTAL	57	3824	3394	25	26																					

The values, those are put on the table (table 11) are formed and evaluated according to the courses being carried out in our Interior Architecture/Interior Architecture and Environmental Design departments today according to the previous tables (Tables 3,4, 5, 6, 7, 8, 9, 10). The "Practice" group, which consists of internships and practical lessons consisting of practical knowledge, reveals that the training group does not have an effective role by the education.

Table 11. Interior Architecture/Interior Architecture and Environmental Design Program Courses "Course Information Areas Evaluation Rate Result Table

TOTAL	HISTORY & THEORY		COMMUNICATION		CONSTRUCTION		ELECTIVE		GENERAL		**PRACTICE**		DESIGN		TOTAL
	COURSES (PIECES)	%	COURSES (PIECES)	%	COURSES (PIECES)	%	COURSES (PIECES)	%	COURSES (PIECES)	%	**COURSES (PIECES)**	**%**	COURSES (PIECES)	%	COURSES (PIECES)
	664,00	23,66	308,00	10,97	269,00	9,58	624,00	22,23	337,00	12,01	**141,00**	**5,02**	464,00	16,53	2807,00

However, when the existence of "application courses" is evaluated through Bauhaus education program, it is seen that 6 of the 27 titles are intended for practice (Table 1). This shows that the number of practical courses constitutes twenty-two percent (22%) of the total (Stone Cutting, Wood Frame, Stone Construction, Wood Construction, Iron Construction, and Application Project). The resulting differences in value reveals a worthy result and that more attention should be paid for the practical course title.

Table 12. Departments of Interior Architecture/Interior Architecture and Environmental Design "Practical" Course Group - Number of Courses

	PRACTICE	
1926-1985	5,00	unit/education period
1985-1990	5,00	unit/education period
1990-1995	3,00	unit/education period
1995-2000	2,75	unit/education period
2000-2005	2,42	unit/education period
2005-2010	2,75	unit/education period
2010-2015	2,54	unit/education period
2015-2018	1,75	unit/education period

Another important result was the depreciation of the course weights in the "Practical" course group in our Interior Architecture/Interior Architecture and Environmental Design departments depending on the years of establishment of the universities (Table 12). This demonstrates the value that; practical courses lose importance during the learning process. This shows that the practical course group has decreased in terms of the timing procedure of the other course groups and its importance within itself.

11. CONCLUSION

When the Bauhaus training program is examined; it is seen that, the "practical" approach acquired in the field of design is very important. The support of the verbs "to do" "to think" should not be forgotten; a lifelong education/learning phenomenon, not only by research, and by reading; but also it should be done with, "learning by doing" and "experiencing" as before. At this point, just as within the Bauhaus; theoretical and practical knowledge should form an interrelated and inseparable dynamic. "Practice" is one of the most important methods of education in the discipline of interior design/architecture, and it should be included in the educational process. As a result of the analysis made and the tables; depending on the period of establishment of educational institutions, it has been observed that; the content of the applications/practices within the programs that they have created, lost value during the process, and especially in the programs of the recently opened universities. At this point, it is thought that the dynamic relationship between theoretical knowledge and professional practice expected from the education cannot be achieved at a sufficient level. In particular, if the courses in the "structure/construction" and "communication" course groups are considered to be used effectively in their

professional life; one of the most important points to be emphasized, should be the matching of the those group of courses with the "practical" group. This is necessary, as in the Bauhaus training program; it will be possible by creating the course environments in which "practical" occupation takes place and by making the internship environments and programs much more effective

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ASSESSING INCREMENTAL REFURBISHMENT AS AN ALTERNATIVE TO DEMOLISH & BUILD-ANEW: LESSONS FROM AN ARCHITECTURAL DESIGN STUDIO EXPERIENCE

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ABSTRACT

In this paper, we report on an attempt to test an alternative to the prevalent urban transformation practice in Turkey, which we made within the context and framework of an undergraduate architectural design studio. In Turkey, urban transformation almost always entails the destruction of the existing buildings and constructing brand-new ones when it comes to residential areas. This practice is ubiquitous and quite unchallenged. While urban transformation has historically been quite destructive in most countries, in recent decades there is an ongoing discussion its the alternatives, as well as various accomplished examples. Within this context, we tackled the transformation of a large residential area in Çanakkale, Turkey, for which a wholesale renewal endeavor is underway for some time, but currently is at a standstill. We started the studio with architectural and urban analyses of the area and carried out a questionnaire in order to survey the residents' demographic and economic profile, socio-spatial practices, needs and wants regarding their dwelling and its surroundings. Our studio brief precluded demolishing most buildings and asked for proposals for their revision and refurbishment along the lines of research findings and students' site plan decisions. The brief also required a level of strategic densification through new dwellings, social amenities, and commercial units, in order to increase the program and user diversity and to finance the whole endeavor. In what follows, we contextualize our position and contrast our studio experience with the dominant approach to urban transformation. We argue considering transformation as a process of piecemeal refurbishment of the existing fabric and incremental enhancement of the site with new buildings has advantages over the option of demolishing the entire area; especially in terms of the key notions of continuity, ecology, participation, and

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economy. We also dwell on the various benefits of this exercise in terms of architectural design pedagogy.

Keywords: Urban transformation, Incremental/piecemeal refurbishment, In-fill development, Community-led design, Architectural design pedagogy.

1. INTRODUCTION

Recent 'urban transformation' in Turkey has less to do with 'process' than rupture. Especially when it comes to the residential areas, urban transformation almost always means complete destruction of the existing buildings and construction of new ones with new design and increased floor space. Obviously, such a destructive transformation has a prevalent and long history that goes beyond the Turkish case of recent decades. Modernization of the existing urban fabric involved a good deal of destruction (of buildings) and replacement (of residents) since its historical European examples in the mid-19th century. These historical cases resulted from mass urbanization and were primarily driven by the implementation of modern urban infrastructure and improvement of public hygiene while serving economic, symbolic, and military purposes Turkish cities only experienced a comparable mass urbanization a century later, after the mid-20th century. As the rural population poured into the cities and the countrywide population dramatically increased, major cities witnessed an explosive expansion.[1] Destructive modernization of the existing urban fabric was rare and limited to cities like Istanbul (e.g., so-called Menderes destructions), which was already relatively sizable before the mass migration. However, after some decades, began a destructive transformation of the urban areas formed with the first wave of mass urbanization. In this paper, we contextualize this prevalent urban transformation practice in Turkey, and starting from the framework of an undergraduate architectural design studio experience we dwell on an alternative approach and its pedagogical value.

1.1. Context

Two dwelling types became prevalent in the rapidly growing Turkish cities after 1950: squatter settlements (*gecekondu*) and single apartment blocks on small parcels built by small-contractors *(yap-sat*) (Bozdoğan & Akcan, 2012; Tekeli, 2012). The former was produced informally by the new and low-income urbanites within their means usually on public land. The latter was produced by plot-owners and small contractors conjoining their resources, and it usually

[1] In 1950, the population of Turkey was 21 million, only a quarter of which lived in urban areas. By 2000, it was 69 million and 65% of it lived in cities; resulting in a nearly nine-fold increase in the urban population in the span of mere fifty years.

housed urban middle and upper-middle classes. As one can imagine, *gecekondu* became a subject of transformation much sooner. In the second half of the 20th century, urban transformation usually meant renewal of these informal settlements. This renewal brought densification and involved tearing down detached and small scale *gecekondu* houses and building apartment blocks along the lines of reclamation zoning plans that reproduce the same road structure for the most part. In the same period, the renewal of the apartment blocks was more uncommon.

In the last two decades, however, urban transformation not only became much more widespread, but also changed in character and scope. With the development and construction of larger plots by bigger construction firms becoming more common in big cities, one begins to see examples where former *gecekondu* areas are wiped out completely and replaced by denser and upscale forms of housing quite independent from the former urban morphology (e.g., Sulukule, Ayazma, Fikirtepe). Urban transformation, in this period, also started to include the apartment blocks produced during the first wave of mass urbanization. Much of this kind of transformation is plot-based and mainly mean the construction of higher apartment blocks (e.g., Kadıköy, Kurtuluş).

In the first decades of mass urbanization, dominated by *gecekondu* and single apartment blocks, it is hard to come by larger housing schemes. There were mainly two exceptions. First, there was a very limited amount of state-subsidized housing mostly produced as a result of the welfare atmosphere following the Second World War. Second and increasingly common was the housing cooperatives. Since the cooperatives were not restricted to smaller parcels like small-contractor apartments, they offered more opportunities in terms of urban morphology and planning of collective non-residential facilities. Yet, this opportunity was seldom seized, and cooperatives often became yet another way of reproducing common apartment blocks (Özüerken, 1996).

Because of their relevance to our study, it is worthwhile to dwell on the housing cooperatives furthermore. Despite their relatively low share in total housing production in Turkey, housing cooperatives acted as non-governmental organizations that fulfilled the housing demand of millions, mostly from the lower-middle and middle-classes. They proved their productive and organizational effectivity within the process of collective construction of physical and social infrastructure in many cities, especially between 1984 and 1993 (Geray, 2010). Housing Development Administration of Turkey (TOKİ), established in 1984, made a strong contribution to the housing sector with housing loans mostly provided to housing cooperatives until the early 2000s. The number of buildings produced by housing cooperatives has increased tremendously after the

establishment of the administration. The total number of buildings produced by the cooperatives in 1996 was approximately 8 times higher than the value in 1985 (Turkstat, 2010). On the other hand, this dynamism of collective housing production which is supported by the state (TOKİ) through cheap loans, has gradually lost blood in line with the changing economic policies.[2] Having almost completely abandoned its mission to support this unique mechanism of middle-class urbanization, TOKİ has mobilized all its assets and corporate privileges for mass housing production in the post-2000 period.[3]

Despite their limited share in the overall building stock, and their diminished importance, housing cooperatives are of special interest in our study. In this paper, departing from a design studio experience, we are dwelling on an alternative approach to urban transformation, in which urban space is adopted to present-day requirements and acquired new capacities through a 'process' rather than complete and destructive renewal. Cooperative housing areas are best suited to test this approach for a number of reasons. First of all, because many have larger plots they have a higher capacity for densification. This is important if such densification is needed to make the transformation economically viable, or programmatically more diverse. At a larger scale, densification also corresponds to a more sustainable urban development strategy, particularly adopting a compact city model rather than sprawling towards the outskirts of a city. Secondly, they provide more opportunities in terms of architectural and urban design in contrast to single apartment blocks. Thirdly, mobilizing their dwellers towards a collective transformation may be more achievable because of the collectivity and the network that produced them in the first place.

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[2] The first blow to housing production by the housing cooperatives was in 1993 when "the Housing Fund" was included in the general budget. Then in 2001, this fund was completely abolished. The total amount of cooperative housing in Turkey, which was around 18 thousand in 2001, decreased by almost half to 10 thousand in 2002.

[3] In this new era, TOKI uses public resources for particularly profit-oriented prestige projects for mostly upper-income groups, but not for social housing targeting the increasing housing demand of urban poor and/or middle-lower classes particularly in large cities. The case of Istanbul Metropolitan Area would be preeminently the best example to comprehend the radical shifts especially in scale, density and target population that occurred in urbanization of large cities in Turkey between the 2000s and 2010s, when many of the prestige and mega infrastructure projects were built through the zoning plans of TOKİ. By promoting high-end residential projects over social housing, perpetuating the city's uncontrolled growth, destroying the city's ecological thresholds, and forcibly relocating the urban poor through numerous urban renewal projects, TOKI has established a questionable legacy. The neoliberal landscape of mass housing consists of a new urban blight: disintegration of public spaces, degradation of social links, and segregation of social classes. For a comprehensive study on this subject see Altınok, 2012.

1.2. Scope & Method

We studied this approach in the third-year undergraduate architectural design studio we taught in Spring 2018-2019 at İstanbul Bilgi University, Department of Architecture.[4] The subject of the studio was the transformation of a dominantly residential area. The brief precluded demolishing most of the buildings in the area. This diverted decidedly both from the prevalent urban transformation approach for the residential areas in Turkey and from the brief of the 2014 national architectural competition for this area which was an example of this prevalent approach. In this paper, we dwell on how this alternative approach compares to the prevalent practice but we do not necessarily contrast the studio findings with the projects proposed for the 2014 architectural competition. The school projects and competition projects have different priorities and constraints; moreover, they correspond to different expertise levels. The site and construction conditions we defined for the students differ from that of the competition brief too. It is nevertheless possible to see the competition projects as examples of prevalent large-scale high-density urban transformation practices.[5]

In what follows, we start with briefly contextualizing the destructive modernization of the urban fabric in a larger historical framework. We dwell on the literature on its alternatives such as incremental transformation and refurbishment. This forms the theoretical context, after which we introduce our case study: the studio and the urban transformation project we worked on. In order to compare the approach we adopted with the prevalent transformation model, we define a number of topics, on which, we think, the two significantly diverge. As our approach prevents demolishing the buildings for the most part, one of the topics

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[4] Architectural education is four years in Turkey, after which students earn a bachelor's degree. This is a professional degree that gives the right to enroll in the Chamber of Architects and license to practice. There are various options for a master's degree, which is optional.

[5] In the 2014 architectural competition, one of the teams adopted an approach parallel to our studio brief. They suggested keeping, rehabilitating, and retrofitting the existing buildings. The competition requirements were met by adding more buildings, while preserving the urban form as much as possible. To the best of our knowledge, theirs was the only project with such an attitude. Three members of that team were invited to our studio to give lectures, Elif Yeşim Özgen Kösten, Hatice Büşra Al, and Emre Kishalı. The rest of the team comprised Melis Uysal, Zeynep Gamze Mert, Saliha Durgun, with Burak Sümen, Kubilay Bıyıklı, Zeynep Yiğit, Gizem Özçidem, Fatih Mehmet İpek, Burcu Saral, and Ennur Bayraktar. Kösten also published an article on the issue focusing on the competition, see Kösten, 2016.
It is possible to examine some of the competition projects here:
<https://www.arkitera.com/etiket/canakkale-belediyesi-sosyal-konutlar-mevkii-kentsel-yenileme-ulusal-mimari-proje-yarismasi>

we want to evaluate it through is 'continuity', which refers more than mere preservation of the buildings. Another important topic is 'ecology'. The approach tested in the studio requires less construction activity, less materials, and it is less destructive to the existing flora. We dwell on the issue of 'inclusivity' in relation to the survey with the residents of the area. Our findings helped the students to better relate to the site and its users; moreover, it rendered the whole endeavor less abstract. On the other hand, we believe it also helped the residents to better express themselves, their use of the dwellings and the area, their needs and wishes. We also dwell on the issue of 'economy' as it is a crucial aspect of transformation projects. We discuss briefly, how the alternative approach is economically viable.

2. BACKGROUND OF CONCEPTUAL FRAMEWORK

2.1. Contextualizing Destruction

Modernization has often been associated with destruction. Marshall Berman posits 'rapid and often cataclysmic urban growth, creating new human environments while destroying old ones' as one of the distinctive features of modernity (Berman, 1982, p. 16). It is hard to imagine how it could be otherwise when the sheer speed and scale of urbanization brought around by the processes of modernization are considered. Leading industrial countries witnessed this rapid urbanization in the 19th century, in the course of which London grew from 860,000 to 6,500,000, Paris from 550,000 to 3,350,000, Berlin from 172,000 to 2,400,000 of New York from 63,000 to 4,250,000, and Chicago from virtually none to 1,700,000 (Chandler & Fox, 1974). This explosive increase entailed rapid outward expansion in all cities, and densification of existing urban land where applicable. The expansion destroyed the natural and agricultural land surrounding the cities. The seemingly out-of-control growth, infrastructural deficiencies, and sanitation problems led to viewing the city with a clinical eye, as a diseased condition, cancerous or even monstrous deformity (Choay, 1969, p. 10). This, in turn, played a part in the destruction of the rapidly formed city in the name of rehabilitation, sanitation, and regulation. The paradigmatic example in this sense was the modernization of Paris by Haussman and Napoleon 3rd.

This attitude was adopted and radicalized by the early 20th century modern architecture. The position of the most prominent figures of modernist architecture *vis-a-vis* the existing city had notoriously been negative. This had everything to do with the fact that the critique of and the intent to replace the industrial city was very central to the formulation of modern architecture (Figure 1). That is why most modernist city visions were products of an internal logic offering systematic solutions to housing, work, leisure, and transportation. Just as

these city visions aimed to replace the existing city rather than searching for continuities and improvements, many modernist projects were conceived as partial implementations of the comprehensive city visions, less interested in an effort of forming connections with their actual urban contexts. In the after-war decades, however, the general outlook towards the existing city changed even within the modernist circles, such as CIAM. Starting with a 'clean sheet' was deemed unrealistic by members of Team X, for instance, who rather promoted a 'new realism' that is more about 'going on' and 'acting in a given situation', which entailed a more genuine effort to understand the existing, 'found' urban condition (Smithson, 1968, p. 85).

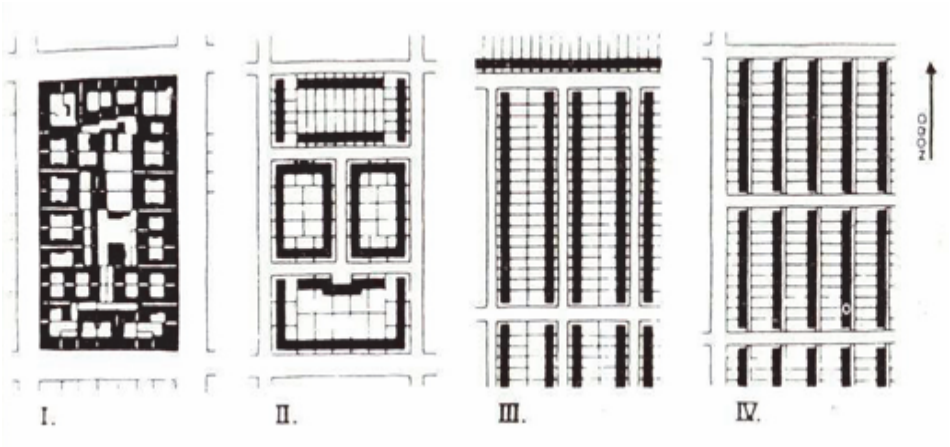

Figure 1. Ernst May's diagram in Das Neue Frankfurt of 1930 demonstrating an evolution from 19th century city block to modernist freestanding linear housing slabs (*Zeilenbau*).

The 'desire' for the wholesale destruction and reinvention of the city was left for the most part in the mainstream architecture and urban discourse after the 1960s. On the contrary, many seminal studies from this period were motivated by an effort to better understand, learn from, theorize, or salvage the existing city (Lynch, 1960; Jacobs, 1961; Rossi, 1982[1966]; Venturi, Scott Brown, & Izenour, 1972; Ungers et al., 1977; Koolhaas, 1978). This shift in the position of the architect/designer *vis-a-vis* the city can be viewed as one 'from writing to reading', after which reading the multiple signifiers in the city, trying to create meaning, and rewriting it by picking up the existing clues became more important (Gandelsonas, 1998, p. 133). Attaching a renewed importance to what is already there fueled various forms of contextualism for a while, yet after the 1980s, the importance given to context again diminished, especially through criticism of its more simplistic, conservative, and restrictive aspects. Today, Rem

Koolhaas's emblematic motto,[6] seems to acquire a much wider currency and application than he intended.

A parallelism can be observed in planning theory, which in the 1960s and 1970s also distanced itself from the more destructive approach. Many critics were questioning the philosophy behind massive urban renewal, which was essential for the realization of modernist ideas, such as that of Corbusier's (Hall, 2002, p. 52). Many concerns in terms of the social objectives of planning were being raised, initially evident in American city planning. Essentially, the argument was that physical or spatial planning had failed many of the people that it ought to have helped, because it had not started with sufficiently clear and explicitly social objectives. In particular, critics pointed to the many examples where American urban renewal had simply displaced low-income residents from inner urban areas without providing alternative housing, leaving them worse off than before (Hall, 2002, p. 129). These were the years when the diversity of people's experiences, aspirations and social worlds became increasingly evident, as civil rights movements challenged systemic injustices, not only of class, but also gender, race, ethnic and religious background, and physical ability (Healey, 2012). Since the 1960s, the legitimacy of insulated technocratic decision making by planning authorities has been challenged,[7] citizen participation in planning has become widely accepted, and the concepts of deliberative democracy have been imported into planning theory. Public participation and democratization in planning became the main ingredient of almost all reforms in planning, largely in the context of the civil rights movement (Marcuse, 2012).

The rise of democracy demand in planning theory continued into the 1970s. However, the social concerns began to lose weight with the deconstructive effects of the postmodern paradigm shift in political discourse in the 1980s, despite the critical urban theories of the era.[8] In the 1990s, therefore, a new planning theory

[6] In his 1994 essay on large buildings Koolhaas argued beyond a certain scale architecture acquires the properties of bigness, and one of them is no longer being a part of any tissue. Such a building, then, 'exists, at most coexists. Its subtext is fuck context'. See Koolhaas, 1995, pp. 495-516.

[7] Paul Davidoff questions this 'technicalist' view of the planner's role and argues that planners should involve themselves more actively in the political process by acting as 'advocates' for client groups within the public, especially disadvantaged or minority groups whose interests were not well represented in the process of planning (Taylor, 1998, p. 85).

[8] The critical urban theory that has made important contributions to the historical evolution of urban theory, was first consolidated in the late 1960s and early 1970s through the pioneering interventions of radical scholars such as Henri Lefebvre (2003 [1970]), 1996 [1968]), Manuel Castells (1977 [1972]), and David Harvey (1976). Despite their theoretical, methodological, and political differences, these authors shared a common concern to understand the ways in which, under capitalism, cities operate as strategic sites for commodification processes (Brenner, 2012, p. 3).

came to prominence which viewed planning as an exercise in 'communicative action'. Theorists drew more heavily on communication than on negotiation literature and, in doing so, they concentrated especially on the rather abstract philosophical work developed by the social theorist Jurgen Habermas (Taylor, 1998: p. 112-113). Not only the epistemological break in political discourse but also the doctrinal change in the regime of capital accumulation and the neoliberal agenda stirred up unemployment and its attendant economic hardship that hit especially the most disadvantaged groups in society along with the middle class (Taylor, 1998, p. 147-148). In Turkey too, there is hardly a shortage of the problems caused by gentrification and displacement. Neither the concern for the disadvantaged nor participation played an important part in recent urban transformation.

The 'demolish & build-anew' model is not simply widespread and dominant in current urban transformation in Turkey; it is pretty much the only model to the extent that its alternatives are almost never searched for. At times this has to do with the issues on the structural integrity of the existing buildings, especially in the face of earthquakes. In such cases, seismic retrofitting is an option, but one that is chosen more frequently in public buildings, rather than residential buildings.[9] The appeal of newer houses is fed by various sources. Most of these are on the economic side. The rising dwelling prices in the last two decades, especially of newer buildings, made renewal through destruction economically viable.[10] In most of these two decades building loan conditions and interest rates were rather advantageous. In some cases, municipalities encouraged the urban transformation by increasing floor space ratio allowed for the plots (e.g,, Kadıköy). On the administrative side, new legislation in 2012 made transformation much easier.[11] Last but not least, there were also the cultural aspects. The desire for

[9] According to Istanbul Governorship data nearly 1000 public buildings underwent seismic retrofitting since 1999. <https://www.ipkb.gov.tr/en/what-is-ismep/b-component/retrofitting-works>

[10] Dwelling Price Index issued by the Central Bank of Turkey was 48,13 for 2010 and 117.10 for 2019.

[11] Beside its function to overcome administrative impediments in large-scale urban transformations, Law no. 6306 "Transformation of areas under the risk of disaster" or "Urban transformation law" as it is commonly known, gave both central and local governments the opportunity to further increase their political power and to suppress citizens through "disaster rhetoric". The law facilitates local municipalities to redistribute benefits through the supervision of central power, and this process calls forth a new form of patronage relations. The mainstream "partnership model", the cooperation between municipalities (mostly governed by ruling party) and construction companies, essentially facilitate the consolidation of existing hierarchical relations and centralization of political power. In this scheme, the state manages the opposition of landowners by offering a combination of benefits and punishment (Eren, M. Ö., & Özçevik, Ö., 2015) and can actually remote-control the whole process with a carrot-and-stick strategy.

new homes, cultivated by the prevalence of real estate ads and aggressive marketing, was inevitably related to other forms of consumption. Moreover, one can even perhaps relate the lack of alternative models of urban transformation with the overall lack of practices of recycling and upcycling in Turkey.

2.2. Literature review on Incremental Housing and Refurbishment

This study mainly deals with the discussions on two main phenomena: [1] incremental housing and its role in the scale of production of urban space, [2] the problematization of "refurbishment or demolition" dichotomy, particularly for housing estates that produced based on Modernist design principles.

Incremental change in housing includes the ability to renovate, alter and extend existing spaces for new uses, services and technologies or the addition of entirely new spaces to an existing building (Griffin, 2007). This flexibility in building processes that has been mostly appreciated by many scholars may reflect itself as a controversial phenomenon in urban scale in terms of managing cities' urbanization dynamisms. The literature on the phenomena of incremental development in both architectural and urban scales comprises two main approaches. In the first approach, there is a great deal of studies of scholars who assess the lessons from history of *self-help* informal and/or vernacular housing where the phenomenon is most common and visible. In this cluster, some scholars focus on building process including expansions and improvements over time - especially the examples from the Third World countries (Acioly, 1994; Malaque et al., 2015; Turner & Wakely, 2015; Harnish, 2018), while others focus on government-assisted incremental housing and its finance (Amoako & Boamah, 2017; Offia Ibem et al. 2012). In the second approach, a smaller amount of studies contextualize the phenomenon from the perspective of urban planning and design. Within this cluster, some scholars mainly criticize incremental change and 'incrementalist planning' in terms of city management (Hall, 1997; Ünlü, 2011), some suggest incremental change to be a tool for urban densification through infill development (Barker, 2019; Forsyth, et al., 2016; Tillner, 2013), some examine case studies for incremental low-cost housing (Wainer et al., 2016), while others adopt the perspective of citizen participation (Lizarralde, 2011; Hasgül, 2016) or sustainability (Romaya, 2002; Terracciano, 2017). As the second phenomenon we deal with for this study, the refurbishment of Modernist housing estates corresponds to another controversial debate. The main dichotomy here is whether or not to preserve housing estates aging both ideologically and socio-spatially; and more importantly, whether these urban areas will be marketed through gentrification projects.[12] Indeed, while

[12] For comprehensive discussions on this issue, see Crawford et al., 2014; Ferreri, 2018; Bell et al. 2014.

some of the scholars suggested the total transformation of these residential areas by pointing out the market realities, some suggest the refurbishment option as a participatory, owner-driven[13] and sustainable solution. For the latter group of authors, refurbishment can deliver significant improvements in energy, environmental and health performance, which can lead to cost savings and improved living standards for residents, and can cause less disruption to communities and residents. Engaging residents in regeneration decisions is therefore crucial and has resulted in successful refurbishment of a number of social housing properties (Bell et al. 2014). According to Crawford et al. (2014), the varying aspects of refurbishment and demolition (such as costs and impacts for residents, energy and carbon, water and waste, health, wellbeing and housing improvements, resident empowerment and involvement etc.) are complex and interact with each other. What is needed is a more balanced inter-disciplinary view of what housing interventions mean for people, and who the winners and losers are in the short and longer term.

Despite the emphasis on the multidimensionality, a considerable amount of studies focus merely on the energy efficiency aspect of the subject. Such approaches[14] mainly suggest viable design solutions for different cases with goals such as: *energetic improvement, typological improvement (redistribution of the available dwelling space, reorganization of interstitial spaces, addition of buffer spaces within the envelope) and architectonic improvement* (Riccardo, 2006).

3. CASE STUDY

We use our architectural design studio experience as a case study. As the method we deploy in this paper is studying our findings in this case study in comparison with the widespread demolish & build-anew model we start with introducing the studio and the case, after which we will dwell on the points of comparison.

In our studio we consider architectural design as urban intervention. It is important that the students see the area not simply as an urban plot, but as a specific, inhabited place subject to diverse urban dynamics. We expect the student projects to be driven by extensive analyses of the urban context as well as the study of the relevant precedents. Within this framework we studied a residential neighborhood in Çanakkale, a city in North West Turkey along the Dardanelles, the narrow strait that separates Asia and Europe along with Bosphorus. The area is colloquially referred to as 'social housing quarter' *(sosyal konutlar mevkii).* It lies on the eastern edge of the city center and runs between two dominant east-west

[13] See Maharaj, 1989; Sendra, 2018.

[14] See Kovacic et al., 2013 and Carpino, 2018.

lines in the urban macroform, Sarı Çay on the south and Piri Reis Street on the north (Figure 2).



Figure 2. Satellite photo showing the project area within the urban macroform.



Figure 3. One of the identical apartment blocks in the area (Photo by the author, March 2019).

Despite what its name suggests, the dwellings in the area are not social housing. The area was expropriated with the intention to be used for social housing first. But later, it was sold to and were produced by a number of housing cooperatives in the early 1980s. It is approximately 10 hectares big and comprises 860 dwellings. Most of the apartments, and consequently the flats are identical (Figure 3). In any case, there is a very limited number of building types, many of which follow the same site layout pattern. This results in a quite homogenous residential neighborhood, with a few identifiable sub-areas. The whole area is intended for transformation for some years but this endeavor is currently at a standstill. The project for a new scheme was acquired through a national competition in 2014 (Figure 4). The brief of the competition presupposed the destruction of the existing buildings and suggested almost tripling the building density.[15]



Figure 4. Çanakkale Social Housing District Urban Renewal Project Competition, 2014, 1st Prize.
Design Team: Oknur Çalışkan, Mehmet Zeyat Hattapoğlu, Jülide Alp, İbrahim Alp.

It is questionable if the architectural quality of the mostly identical apartment blocks currently in the area is particularly special. Yet, they certainly are representative of the low-cost dwellings of an era. Built in the early 1980s, the buildings are not very old, yet still many of them are somewhat time-worn and most flats need refurbishment and modernization. On the other hand, the urban

[15] See <https://www.arkitera.com/yarisma/canakkale-belediyesi-sosyal-konutlar-mevkii-kentsel-yenileme-ulusal - mimari-proje-yarismasi>

fabric they form and the open space quality of the neighborhood is rather unique for Çanakkale (Figure 2, 5). The area has a site plan reminiscent of modernist layouts with its relatively linear housing blocks set back from the roads and set apart from each other by open green areas. Whereas the city center is a typical dense apartment block fabric and the newer residential areas deploy mostly point blocks, here the buildings form a loose fabric and quite defined open spaces. Nearly all buildings and flats enjoy direct access (physical or visual) to green open spaces.

One of the priorities in our architectural design studio brief, thus, was to recognizably preserve the overall structure and ratio of open spaces. The studio brief, in stark contrast to the competition brief, also stipulated that nearly all the buildings were to be kept. Students were expected to offer spatial and structural betterment for these existing buildings. However, the building density of the area was to be increased by means of new buildings (Figure 6). Up to 12,000 m^2 of new dwellings or temporary accommodation (e.g., dormitories, hotels) was to be designed. Introducing new dwelling and accommodation types that the area lacked at the moment was encouraged so as to increase the diversity in the neighborhood.[16] Similarly,

[16] The brief allowed students to propose demolishing a maximum of 10% of the existing dwellings. This margin was mainly given for pedagogical purposes, as it enabled the students' design schemes more flexibility, resulted in richer variety, and offered more opportunities to transform the area along with the results of their analyses. Since the densities and the spatial qualities of the building blocks vary within the project site, many students preferred to create better-performing open spaces for the densely packed blocks by eliminating some of the existing structures. According to our observations, this elimination, which the students generally did in order to improve the open space quality and the light or air intake performance of the buildings, largely coincided with the survey results: those who were not satisfied with their house and its immediate surroundings (or who tended to renew their properties) are relatively clustered in such dense building blocks. According to our studio brief, students who decided to demolish a building or building section had to propose as many units as they eliminated apart from the required new units.

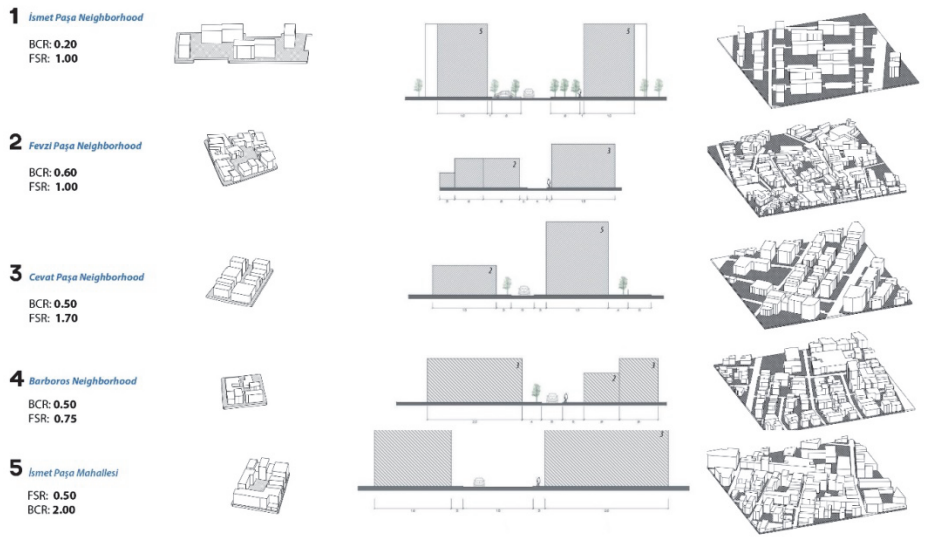

Figure 5. Various residential typo-morphologies in Çanakkale. Başak Cevahir, Elif Soylu, Nebile Ertürk, Selen Küçük.

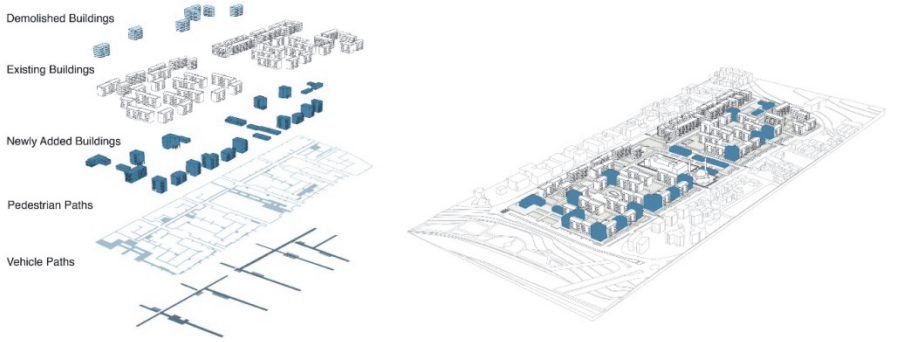

Figure 6. Drawing showing the existing, added, and demolished buildings in a student project. Ceren Göçmen.

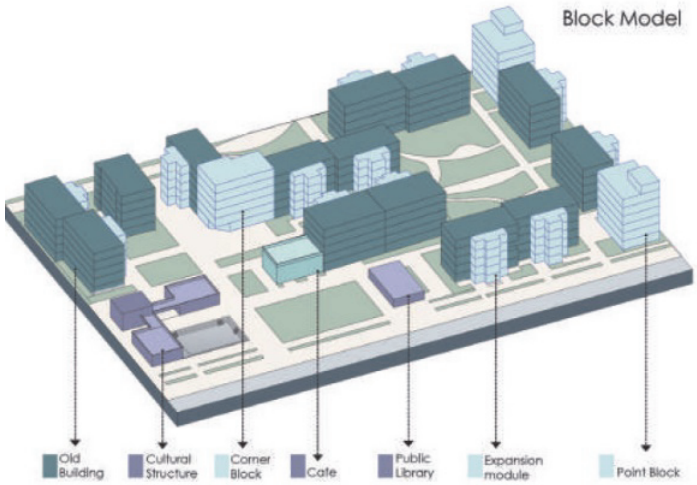

Figure 7. Schematic view showing densification by means of new blocks, modifications on the existing blocks, and introduction of non-residential functions. Gizem Atalık.

increasing the programmatic diversity was also a discussion point (Figure 7). Intending to enhance public life in and around the neighborhood, the brief suggested the design of new public facilities around 5,000 m^2 and a limited amount of retail up to 2,000 m^2. The specific function, character, and capacity of all these non-residential buildings were to be decided by the students according to their individual architectural position (Figure 8,9). There was a seven-story limit for the whole scheme. Next to the revision of existing buildings and the design of new ones, students were also expected to rethink the entire landscape, all open spaces and the street network (Figure 10).

Prior to focusing on their individual projects, students collectively carried out two kinds of research: on the topic of housing as a subject, and on the various aspects of their site. For the former, they studied relevant precedents of housing units and layouts, they made case studies on other building types that they intend to propose for the site, they looked into cases of 'refurbishment' and 'infill development' in the contexts of social/public housing and co-housing. For the latter, they carried out analyses on the following topics: [1] the history of architectural and urban change in Çanakkale and the current projects/trends that are going to potentially affect its future, [2] urban morphology of both the city and its identifiable sub-sections, [3] land use on an urban scale and building use in and around the site, [4] transportation on a walking scale and on the urban scale, [5] urban economy, [6] topography [7] climate.

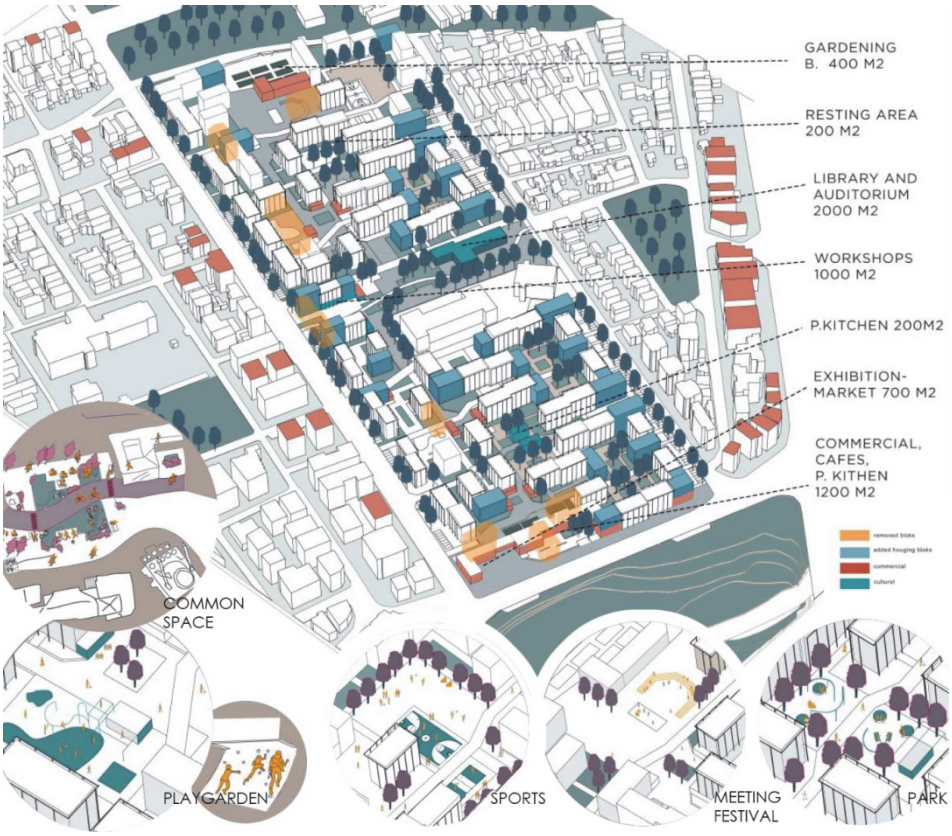

Figure 8. Drawing showing the proposed public facilities and retail. Ayça Özgün.

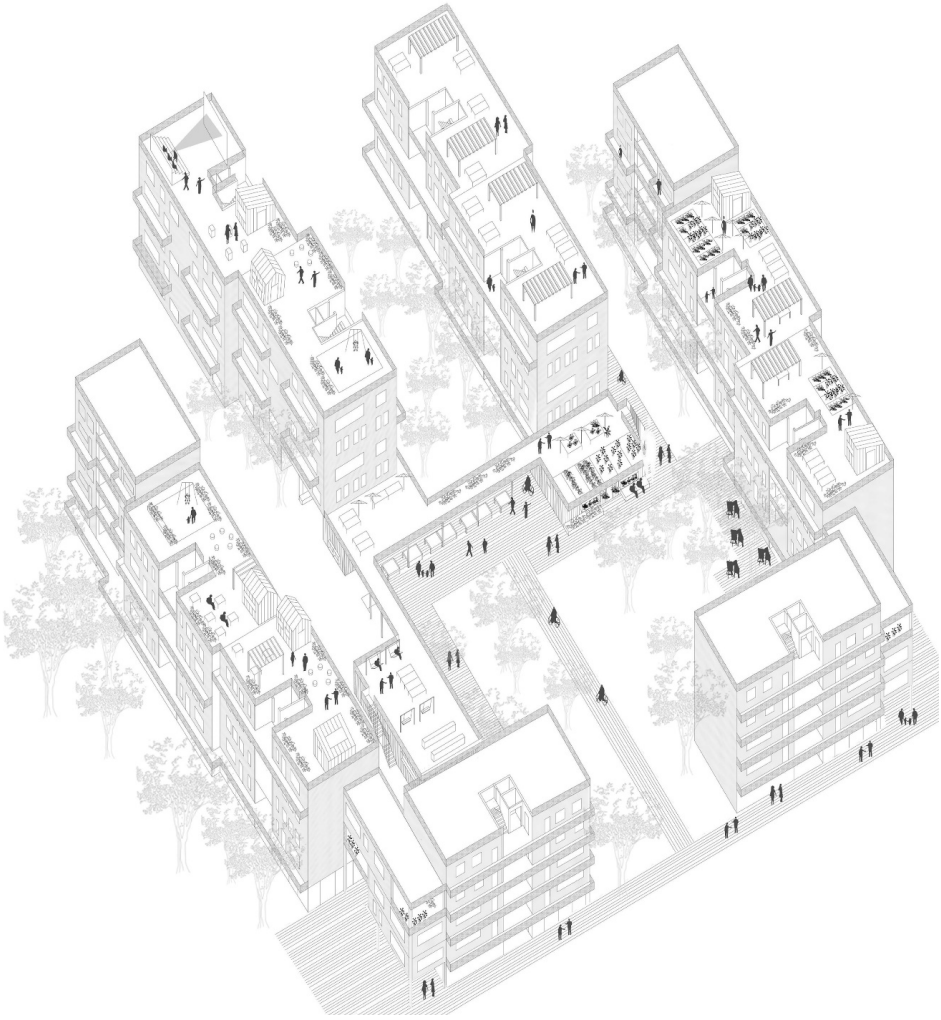

Figure 9. A proposal for diversification of uses in open space and in buildings. Ebru Okşaksin.

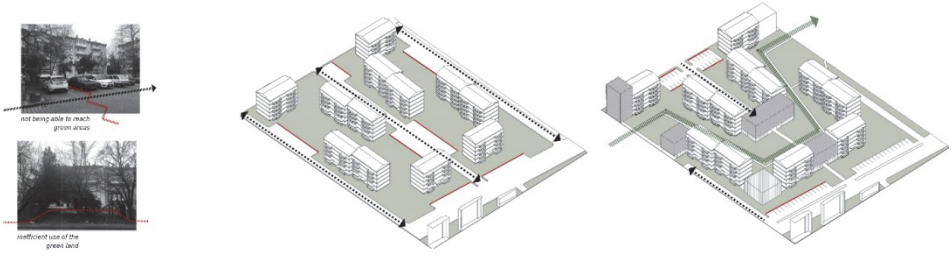

Figure 10. Diagrams showing the proposed densification and the landscape intervention. Elif Soylu.

4. FINDINGS OF THE STUDY

Studying on an alternative to the 'demolish & build-anew' model forms the core of our approach. It is obviously not that we reject this model, which may be the reasonable choice depending on the case. Yet, we wanted to question its almost unchallenged position. We also saw pedagogical benefits in doing so. Students were asked to question and think beyond the common market habits and practices. Beyond offering an alternative vision, this contributed to their capacity to come up with authentic design approaches different from the much-repeated commonplace schemes. They also acquired experience in criticizing the commonplace schemes through their architectural and social aspects. Due to the limited space of the paper, there is no way of including a meaningful number of student projects here. Yet, below are the main topics through which we want to discuss them:

4.1. Continuity

The main merit of our approach is that it allows the existing urban form to persist by adapting to the new expectations and taking on new functions. This helps to protect a housing scheme that is both unique in Çanakkale and representative of its period. However, the stakes go beyond the concerns of architectural and urban preservation alone. First of all, not demolishing the buildings allows the continuation of most spatial relationships, social praxis, personal habits, and collective memory. As it is a forty-year-old neighborhood, the area produced a number of various social relations. Our survey revealed that there is a considerable level of social cohesion and interaction among the residents. Routinely visiting the neighbors seems to be quite prevalent, especially among women. We have observed even the limited common space inside the apartments are used quite innovatively for socializing among neighbors. Residents also asserted that coming together on special days (e.g., religious holidays, weddings, funerals) is common and it strengthens social bonds. Many of these activities have strong spatial aspects and depend on spatial proximity and the availability of close collective open areas.

Second, the decision to not demolish the buildings extends to not destroying the open space as well. The brief required a level of densification; thus, the students were expected to design new buildings. Yet, in line with the spirit and the focus of the brief, most students tried to be as sensitive as possible as to where they choose to build. In many cases the areas that already have hard landscape (e.g., pavements, asphalt roads) were chosen as the new building sites. If not, students aimed for the least damaging solutions. In any case, just like the buildings, the open space was also treated not as some generic space that is kept simply

because the brief demanded, but as a specific place protected as much as possible for it is already inhabited by people, flora, and fauna. The continuation, in all of these senses, also were in the hope that it would help to prevent the potentially alienating effects of a wholesale transformation.

4.2. Ecology

That the cities contribute significantly to current environmental crises seems to be obvious enough. Since they house the majority of the world population, the cities draw plenty of resources and products. In return, they discard a lot too. What makes this more problematic is that because of the current global scale of trade networks, all this exchange happens over a large geography. Banal acts such as dressing oneself or eating may very well have trails that travel most of the globe. This raises many issues on what is at times called the 'ecological footprint' of cities (Massey, 1999). There is also the problem of a city's actual footprint. Cities may occupy just 2% of the total global land surface, however, their expansion has often been at the expense of natural or agricultural land around them.

As discussed at the outset, Turkish cities experienced a rapid increase in urban population after 1950. Çanakkale may not be one of the most populated cities in the country, but its population grew considerably. In the last five decades, the population of the city center increased five-fold.[17] This resulted in the expansion of the city center towards the mainly agricultural land surrounding it. Because of this and other various burdens that a larger urbanized area would bring (e.g., on transport infrastructure) a level of densification in the already built-up areas of the city seemed advisable. That is partially why the project brief required increasing the floor space ratio from 0.9 to 1.35.

Perhaps more importantly, on the issue of ecology, the condition of the studio brief to keep and rehabilitate the existing buildings prevented both the production of a considerable amount of debris and the use of even more new construction materials. Both the elimination of the former and the production, transport, and implementation of the latter would require much more resources and energy, along with creating environmental consequences. The revision and refurbishment option produced significantly less debris and required less construction.

Çanakkale has very fertile lands, and is among the cities that has a significant part in the total agricultural production of the country. Although obviously the large-scale agricultural production is not visible in the city center, the small-scale

[17] In 1970 census overall population of the city was 360,764 and that of city center was 27,042. by 2018 they are 540,662 and 136,002 respectively according to Turkish Statistical Institute data.

production is quite visible in the project area (Figure 11). Many gardens are transformed into allotments, which are intended for hobby, yet also contribute to the sustenance of the household. This issue was picked up by many of the students, who in their own proposals suggested to increase the cultivation areas. The production in this scale perhaps does not have a significant economic value. People do not sell what they produce or live off of their garden, but apparently, their hobby-scale agricultural production contributes to the home economy besides providing a case for so-called zero-mile food.



Figure 11. One of the many hobby gardens in the area.

Many students also aimed to keep, encourage, and expand the existing agricultural activity for its social benefits like increasing collectivity, interaction and cohesion among the residents. A very crucial benefit this activity also offered for the students was helping them becoming more aware of the advantages and importance of soft landscaping, water-absorbent surfaces in the urban areas. This, for many students resulted in avoiding unnecessary construction and the over-use of hard-landscaping.

4.3. Inclusivity

One of the ways that urban transformation in residential areas differs from the development of a completely new area from scratch is that the former usually involves many more actors. In cases where the ownership of the land is not fragmented, a new residential scheme can even be undertaken by a small number of actors. Whereas the transformation of sizable areas involves many, sometimes hundreds of owners. This not only increases the complexity of the process but affects some of its other aspects. In the transformation of residential

areas, at least some of the new dwellings are not produced for the market, for a generic consumer. Instead, they are produced for the owners of the existing homes. This potentially means that their demands and preferences may influence the design and qualities of the new scheme. Yet, this seems hardly to be the case. More often than not, the design and planning of transformed areas follow the same market trends as the new schemes.[18]

In our case, we wanted to first understand and then include the needs and wishes of the existing residents of the area in the design process as much as possible. To this end, a carefully designed household questionnaire survey was put together by the studio instructors (Figure 12, 13). Although more frequently seen in education in neighboring areas like urban design and planning, questionnaire is a method seldom used in architectural education. The approach frequently adopted by the architectural design studios that problematize the design of mass or multi-family housing is that the students tackle the social relations, changing demands and expectations of different social groups and individuals in a hypothetical framework. This is usually based on the description of 'generic' user types resulting from the hasty observations at the site. The market practice, in which the urban environment is reproduced on a large scale in a top-down framework, is no different: essentially, what design students call a 'user profile' becomes a 'customer profile' in the profession and the real estate market. Because we aimed at an architectural exercise in which students were expected to design a more nuanced transformation process rather than a total redevelopment of an old mass housing area, the questionnaire focused on revealing the expectations of the residents of the area.

The questionnaire was organized under seven main sections: [1] demographic profile, [2] employment status, [3] cost of living, [4] environmental conditions and agents of socialization, [5] housing comfort and architectural qualities, [6] the desire for capacity building, and [7] the process of neighborhood renewal. The set of questions under the first three sections served to describe the current social and economic conditions of the residents. In the fourth section, many parameters such as socialization, walkability, accessibility, the use of open spaces, and the competence of the present social amenities were considered. In the fifth section, spatial relations were addressed mostly from an architectural standpoint, particularly based on the condition and qualities of the existing dwellings. Finally, the sixth and seventh sections aimed to understand and measure how residents approach the issue of neighborhood renewal and to what

[18] For a recent research that focuses on the similarity of the plan schemes of various apartment block produced through plot-based demolish & build-anew model urban transformation see (Aksoy & Bingöl, 2018).

extent they are prepared, socially and economically, for a possible renewal process. We asked the residents, if the transformation is considered as an incremental refurbishment process, what is necessary to reconsider in their homes and in their immediate surroundings.

Instead of trying to come up with generalizations through the statistical results, we conducted the survey in order to reveal the knowledge of 'performative spatial practices' within an 'interpretative' methodology framework. We essentially encouraged students to learn not only from the spatial aspects of the place but also from its social aspects. Focusing on 'actual residents' instead of 'generic' user profiles and the forces that socially reproduce the space, has become a reflective process for the students, who tried to interpret the survey outcomes through their real communication experiences in the field. Thanks to this reflective process, while adopting alternative approaches to the existing destructive practice of urban transformation in Turkey, some of the students also were able to reconsider their own architectural position and discourse.

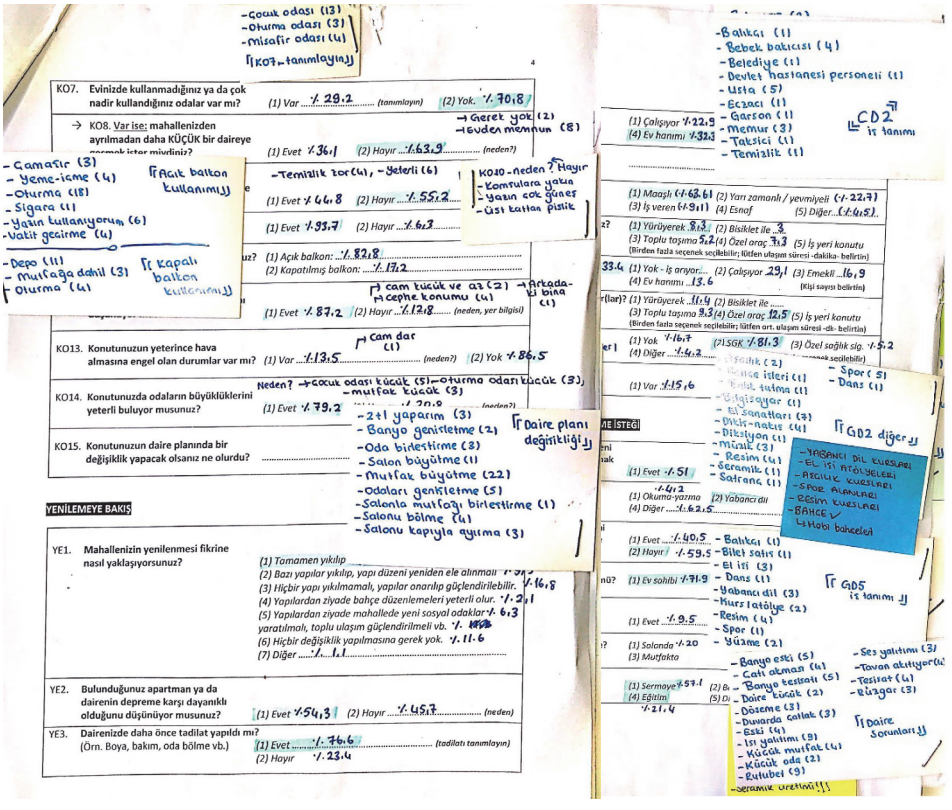

Figure 12. Some of the questionnaire pages filled by the students.

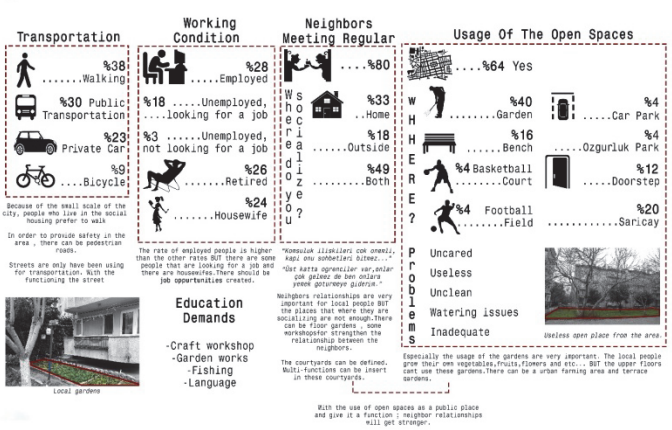

Figure 13. Some conclusions from the questionnaire.

4.4. Economy

Urban transformation through demolish & build-anew model may have made economic sense for many cases. The construction sector has been the driving force of the Turkish economy in the last two decades. Rising real estate prices, coupled with increasing floor space rights in many cases, produced enough value that made such transformation economically lucrative. But, there is enough reason to search for its alternatives. In our case, preserving some of the qualities of the area is desirable for the reasons explained so far and it could be possible doing so while making economic sense. In such a large area with a relatively low floor space ratio, there are possibilities for keeping the existing buildings and increasing the building density without losing the qualities and overall ratio of open space to a significant degree. The new residential and commercial buildings can be used to finance both the construction of these new buildings as well as revision, modernization, and refurbishment of the existing ones. In order to do so, a housing cooperative, the very model that was used for the production of this area in the first place, can be redeployed.[19] In Turkey housing cooperatives

[19] According to Turner & Wakely (2015), cooperative alternatives, such as Community Land Trusts (CLTs) that has spread throughout the US, Canada, and the UK over the past 40 years reduce costs because the land is removed from the market to ensure perpetual affordability, and the mortgage is corporate and collective. Members thereby gain the initial reduction of capital costs (on the land and on the finance) and share the benefit of any future valuation of the property as a whole. When the comparative development is large enough to rent plots for nonresidential uses, public or commercial, the cooperators can reinvest the earnings in improvements that may also reduce charges or services taken over from former providers. Adding the great advantages of incremental development potential to that of recovering the traditional separation of land and improvement costs could eliminate the need for 'beneficiaries' and all that word implies.

have almost always been a way to attain owner occupancy. That is why many cooperatives discontinue and their ownership is divided as soon as the construction ends. This is true for our case as well. That is why a cooperative need to be reestablished here, at least for the transformation period, in order to procure the revision project for the area and oversee its implementation.

Moreover, what may have probably been seen as a more hypothetical suggestion at the time of the competition, when construction economy was still perceived to be strong and profitable, is perhaps as convincing as the demolish & build-anew today in the context of the crisis and stagnation in the sector and in the overall economy. Country-wide dwelling production decreased significantly in the last three years. More precisely it shrank -15% in 2017, -32% in 2018, and another -39% in 2019 according to the building permits statistics issued by the Turkish Statistical Institute.[20] Again the official statistics indicate that the construction costs of residential buildings more than doubled since the time of the competition.[21] Obviously, economic reasoning for dwelling production is quite complex, and it is hard to paint a picture of it by a few indicators. It nevertheless seems possible to argue that a large-scale construction endeavor in a peripheral city like Çanakkale is more unlikely than it was five years ago. A strategically constrained construction and renovation activity on the other hand would require less capital and may make more economical sense even with the possible marginal increase in construction costs due to the decrease in the scale (Figure 14).

5. CONCLUSION

Urban transformation is a complex phenomenon with many social, political, and economical aspects. In no way do we assume that we fully evaluated it through all these aspects within the modest framework of a semester long undergraduate architectural design studio. Yet, it does have its benefits to question the prevalent transformation method in the context of education. We would like to conclude by touching on these benefits, some of which relate to the issue of urban transformation, while others relate to architectural design pedagogy.

Historically speaking, urban transformation is usually a quite destructive act. The Turkish case of recent decades also followed this path. However, it is possible to observe some alternatives in recent discourse and practice. Inspired by these, we tried to imagine an alternative for a site, for which the prevalent demolish & build-anew model was already underway but is at a standstill at the moment.

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[20] Data retrieved from http://www.turkstat.gov.tr/UstMenu.do?metod=temelist.

[21] Construction cost index for residential buildings was 97,68 in January 2015 and 190.70 in December 2019. Data retrieved from http://www.turkstat.gov.tr/UstMenu.do?metod=temelist.

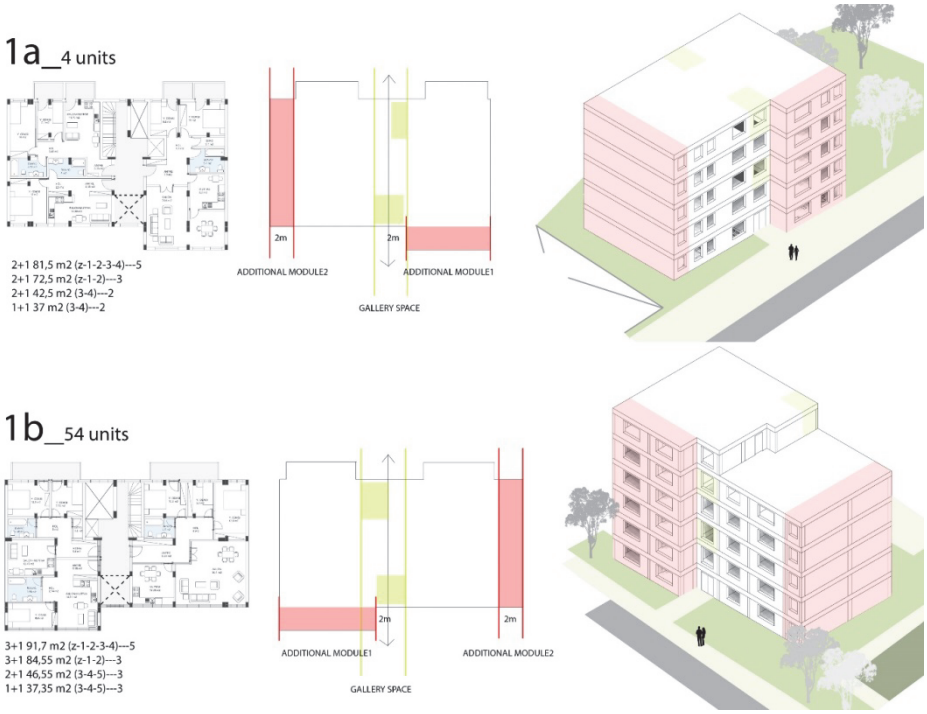

Figure 14. Some of the improvements and modifications proposed for the existing blocks and units. İpek Öztiryaki.

Some of our various motivations to do so were: [1] The area may be worth saving from an architectural and urban preservation perspective, as it is a characteristic example of low-cost mass housing of its time, [2] While buildings need refurbishment and retrofitting, the overall ratio of the open space is quite high and its current use is inspiring. The new scheme, quite independently from its architectural qualities, would definitely harm this as it involves almost tripling the building density, [3] Preserving the area would mean the continuity of social and collective practices developed over the last forty years, [4] Protecting the open areas would mean saving the considerable number of trees in the area, [5] Refurbishment would require less construction, thus consumption of less materials and energy, [6] A wholesale renewal would almost inevitably reproduce prevalent apartment types. Whereas a community-led, inclusive, and piecemeal refurbishment has the potential to be more nuanced and better tailored for specific needs of the residents, [7] In the current economic situation a large-scale renewal is becoming less likely in Çanakkale, while it is still possible to deliver a refurbishment, and finance it with the resources to be derived from the strategically limited new construction.

From a design pedagogy perspective, we aimed for and later observed a number of benefits of the approach we adopted. Some of which are as follows: [1] It fosters critical thinking. Students get an opportunity to first study and then evaluate the prevalent professional practices critically. It opens their minds to the possibility that alternative ways of approaching a problem is possible, even when there is a quite set and widespread model to accomplish it, and especially when that model has its limitations and rather problematic consequences, [2] It increases students' sensitivity to existing urban landscape. As stressed above, we have long been in a theoretical framework which attaches more importance to the existing city and prioritizes working within it. Unlike completely replacing a given area, improving on what already exists requires to develop a good understanding of it. So, studying the transformation of an urban area with the constraint of keeping its essential positive features encourages students for a genuine effort to understand it, [3] It helps students to better bridge the gap between the more abstract and representational field of architectural design and actual urban life. For almost any design task, architecture requires operating on it within its own representational media. But, while it is useful to transpose a site to the realm of representation, thus detach it from its actual context; it comes with a cost. At some point, mostly due to the intrinsic complexities of the design task, many conditions of the actual site wither, especially when these conditions are not incorporated by the new scheme. Having to preserve many aspects of the existing site helps retaining a connection with it. This connection is especially stronger when the act of preserving involves the existing life patterns of actual people that students themselves interviewed or the flora that they personally mapped.

ACKNOWLEDGEMENTS

We formulated and taught the architectural design studio that is reported in this paper with a group of colleagues. We would like to acknowledge the invaluable contributions of **Bülent Çetin**, **Caner Bilgin**, **Deren Uysal**, **Devrim Çimen**, **Elvan Arıker**, **Eylem Erdinç**, **İdil Erkol**, **Mert Cığızoğlu**, and **Tülin Hadi**.

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SESSION 8B

Theme: Social Structure and Politics

15 October 2020 Thursday, 11.15 – 12.15

Chairperson: Prof. Dr. Mohsen VAFAMEHR

Nazmiye ÖZTAŞ, Ebru YILMAZ

A Research on the Urban Commons and Commoning Practices in İzmir

Gülsüm OYGUR POLAT, Nurefşan BATMAZ, Muharrem Melih UTKAN

Integration of Newcomers to Ayvalık (Turkey) via Social Integration Centers

Gülce GÜLEYCAN OKYAY, Demet BİNAN

Capacity Building, Heritage, and Community Participation: Examining the Gap between Global Approaches and Local Needs

A RESEARCH ON THE URBAN COMMONS AND COMMONING PRACTICES IN İZMİR

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ABSTRACT

Today, all over the world, the struggles of the communities which protest the commodification of the common life sources and urban spaces have become more visible in the urban stage. These struggles of the urban users aim to organize alternative channels to criticize the existing production and re-production processes of the common sources. They bring into together different approaches from various disciplines such as architecture, planning, economy, sociology, etc. This situation provides us a chance to explore new forms of relationalities between different approaches and practices from different disciplines. In this regard, it becomes necessary to evaluate all these applications in a more general framework. Within the scope of this study, these efforts of urban actors to seek and discover what is called "common" are considered within the commoning discussions. It is believed that this kind of approach to such practices can have a more holistic and alternative ways of understanding while examining them. In line with all these concerns, this study conducts a case study that examines the commoning practices that question the production and reproduction process of the common space in İzmir. In this regard, *Kapılar* as an open and free common space has been chosen as a case. This common space and the spatial practices which are performed here are evaluated within the framework of commons/commoning concepts. It is believed that this framework is important for thinking about the relationship between space and politics. With this case study, following critical questions are tried to be questioned, such as; how commoning practices can find a response in concrete physical space, how they operate within the potentials and limits of the city of Izmir and finally what kind of conditions make this particular common space possible. In order to achieve that, semi-structured interviews have been conducted with the participants of these practices. The voice record taken in these interviews has been converted into a written transcript. This written transcript has been analysed with the context analysis method. And finally, with the evaluation of the results of this context analysis, the mentioned practices of common space and the

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practical structure of these commoning practices have been tried to be deciphered.

Key words: Urban Commons, Commoning, Spatial Practices, Public Participation, Social Reproduction

1. INTRODUCTION

Capitalist urbanization continuously tends to destroy the common urban spaces. The process that started with the enclosure movements in the 14th and 15th centuries, later continued with the occupation of some common resources such as green areas, water basin, forest, soil, etc. Today, this process has almost reached to a point of destruction of urban space which is the most important common source of the urban life. In today's neoliberal urbanization processes, the urban space is also commodified like everything else. Its use-value is almost unspoken and it is considered only through its exchange value. In such a situation, it seems inevitable for urban users to take action against this opportunist attitude that encompasses his/her entire life. In many parts of the world, people are taking action for reclaiming commons. They take place in different kinds of social movements to regain the control of their lives and to demand a more liveable urban life. In all these struggles, many different alternative channels have been organized. So, it becomes necessary to address all these different struggles under one theme to discover their commonalities and differences. Relating this issue, this study puts the commoning debates at the center of this study and in this way, it aims to evaluate all these alternative channels within this framework.

By means of addressing above issues, this study mainly aims to discuss, what kind of potentials do the struggles on commons have for a more participatory and emancipatory social life. In order to achieve that, firstly the concepts commons and commoning will be defined. After explaining these concepts, social conditions that require commoning and the situations that make these commoning practices possible, will be discussed. And finally, different approaches which have been studied so far in the literature relating to the government of the commons will tried to be explained. And then, in line with all these concerns, a common space example in İzmir and its reproduction process will be analysed in this context.

2. THE CONTEXTUAL FRAMEWORK

The definitions of the common and commoning concepts are sometimes confused. The reason for this confusion may be due to both multi-layered meaning of these concepts and sometimes also misusage of these concepts. This

confusion in their definitions may evoke a false perception in people's minds and it maybe even change their understanding of the practices that are represented by these concepts. Therefore, in this part, the meaning of these concepts and also some other concepts that share the same root such as; commoning, commoners and common space, will be explained. Regarding the concept of commons, Jay Walljasper- American writer, and community consultant- says that "commons are in everywhere, but sometimes it can be hard to see them" (Walljasper & Rowe, 2014, p. 21). Because, these alternative collaborations sometimes may not be discovered with our conventional ways of understanding. Even if they are discovered, sometimes it may not be possible to define them with the existing jargon. Therefore, he emphasized the importance of a need to create a common language to describe these new and alternative collaborations (Walljasper & Rowe, 2014, p.22). In line with this thinking, Walljasper and David Bollier -American activist, writer, and policy strategist- have prepared a kind of glossary for the most used concepts in commoning discussions. And they gave a place to this glossary in their book *All That We Share: A Field Guide to the Commons*. In this study, both the definitions in this dictionary and also some other definitions made by the leading theorists working in this field, will be briefly mentioned.

The first concept to be defined, is *commons*. Jay Walljasper and Bollier explain the *commons* in their dictionary as follows; "Commons are creations of both nature and society that belong to all of us equally and should be preserved and maintained for future (Walljasper & Bollier, 2014, p. 312). As Walljasper and Bollier emphasize here, commons are the product of both natural and social processes and everyone should have equal access to these commons. Marxist geographer Harvey also describes the commons as follows: "common is not 'a particular kind of thing' but 'an unstable and malleable social relation between a particular self-defined social group and those aspects of its actually existing or yet-to be-created social and / or physical environment deemed crucial to its life and livelihood" (Harvey, 2012, p.73). Here, what Harvey emphasized for the commons is, it is a set of relations that constantly changed and transformed. So, it is created and recreated by the community each time. Of course, many more different definitions can be added to these two examples. And each definition will flourish the content of the concept. In a sense, this means that the concept is actually reproduced with the new definitions of the new actors. Another concept to be defined in this study, is *commoning*. Commoning basically can be defined as social practices performed by the commoners to reclaim the commons. As it can be understood from this definition, in order to talk about the existence of a commons, firstly it is necessary to mention about commoners and his/her

commoning efforts. Bollier summarizes this situation very clearly with his following statements; "There is no commons without communing" (Bollier, 2011).In here what is mentioned with the commoners is the person who uses the commons and devotes his or her life to reclaim the commons (Walljasper & Bollier, 2014, p. 24). Another important concept for this study is *common space*. Stavros Stavrides- an architect and activist- defines common space as follows; "it is a set of spatial relations produced by commoning practices that create forms of social life, forms of life-in-commons" (Stavrides, 2016, p. 2).

In fact, the main questions of this study are not what is common or what do we call as common. Rather, it is more about how the spaces and resources that we call as common, are produced, shared or managed by the society. In the literature, a study relating with these issues about the management and sharing of the common sources, which almost everyone refers to it, stands out. This study is *The Tragedy of the Commons of* Garrett Hardin, 1968. In his article, he claims that all shared common sources will inevitably disappear and there is not much to do about it (Hardin, 1968, p.1244). In fact, what he emphasized in here is that it is not possible to manage common resources with a common process. Against this pessimistic picture drawn by Hardin, Elinor Ostrom - American political economist - mentions about eight principles for managing the commons (Ostrom, 1990). Some of the principals that stand out between these eight principles of Ostrom' can be listed as follows; involvement of everyone in the decision-making process, establishing a control system that determines the behavior of participants, establishing a gradual/or stepped responsibility network, searching ways to solve the conflicts, etc. (Ostrom, 1990, p.90). According to Ostrom, each principle helps to improve the governing model of the commons. In other words, it is possible to talk about many different ways of managing common resources and, in the same way, common spaces. These different paths create alternative modes of production. The issue of how these alternative modes of production differ from the market is one of the main discussion lines of this study. Within the scope of this study, it is thought that the commons concept will present an important set of tools in order to understand the internal dynamics of the reproduction process of common space by the urban users.

3. METHODOLOGY

Firstly, a literature review has been conducted in this study. This literature review especially focuses on some concepts like commons, commoning and social reproduction. This mentioned commoning practices are considered together within their theoretical framework and in this way, it is aimed to make more

holistic reading for them. In addition to that, a case study has been conducted in this study. For this case study, *Kapılar* as a common space example in İzmir, has been determined. *Kapılar* is also a collective which includes various actors from different disciplines. An interview has been made with several members of this collective. This interview was semi structured and involves ten open ended questions. The voice record that was taken during interview has been converted into a written transcript. Content analysis method has been chosen to analyse the written transcript.

In this content analysis, the answers of the collective members have been interpreted together with the theoretical links. For this study, the way that the collective members choose to express their practices is also valuable as the answers themselves. Because, talking with a common language strengthens the involvement of the actors in this kind of similar practices. This common language is also a final product of the reproduction process of this space. So, it is thought that making an evaluation based on the statements of the collective members can provide lots of important potentials.

4. FINDINGS OF THE STUDY

This study includes a case study in line with the contextual framework that is mentioned above. For this case study, *Kapılar* which is a free and common space in the Basmane district of İzmir has been chosen. Within the scope of this case study, *Kapılar* as a common space, production and reproduction process of this space and the practices that are performed in here, will try to be evaluated within the discussion of "Commons and Commoning" concepts. First of all, it would be more appropriate to mention what *Kapılar* is. *Kapılar* was established in 2016 in the Basmane district of İzmir. It took its name from the region in which it is located. It works as an experience center where its users come together to share their skills and knowledge (Figure1,2). The team members who put forward the idea of creating a kind of sharing or experience center, define this space with their own statements as follows; “Kapılar is a free space open to anyone looking for a welcoming place in the heart of Basmane, Izmir. Kapılar is for socializing, building relationships between various people in Basmane, sharing important and useful information regarding the rights and opportunities of those living in the community, whether they are locals or migrants" (Kapılar, 2016). In addition to this definition, they say that the description of what *Kapılar is,* actually lies in the history of this space. Because, this common space is constantly reproduced and transformed by its users. So, in order to understand this space, it is very important to evaluate it with its production and reproduction processes. Actually, Kapılar which we considered here as a common space, is also a

collective. The internal dynamics of this collective should also be taken into consideration while reading this space. But in here, it is not possible to talk about a team where such a few leading names come to the forefront. The team comes together with many different and independent actors and actor groups with similar concerns. They came together in a common ground. Barış, one of the groups' member within the Kapılar team, explains the earlier stages of this common space as follows;



Figure 1. Front facade of Kapılar Common Space From Kapılar Archive, 2020



Figure 2. Backyard of Kapılar Common Space From Kapılar Archive, 2020

"*We always want to take place in a kind of solidarity practice. We have organized various activities with different organizations in that district. In that way, we have created a kind of solidarity network. We have started to think about what else we can do. In those times, we also had some ideas about the concept of open space, but we*

didn't know so much. And then, we have started to question the ways how this open space could be possible. We were thinking about finding a place that is suitable for this. We even thought of occupying some places. While thinking about such space, our main aim here is to create a kind of space where different people come together and share their experiences and knowledge."

As Barış stated above, everything has started with the effort of the urban actor to create a kind of solidarity practice against some situations in the urban life that they see as problematic. Such an idea for urban life was a driving force for the realization of spatial commonality. For this study, it is important to start from that point before moving to the spatial commoning discussions. In this respect, understanding the motivations that lay behind these commoning practices to create such a common space has gain importance while reading this whole commoning process. Because the main point here is not just about how this space is produced or how it is used. The questioning of such issues; what kind of conditions required that kind of common space, and also what conditions allow us to meet in a common ground or what conditions restrained it, also have an important place for this study. There are many different dynamics that make these common practices possible or lead them to a dead end. Space has an important place in this context both in terms of making this common life possible and also being a result of this common life. It is like a living organism that constantly changes and transforms with different actors that it includes. It has been reproduced to meet the changing needs of this common life. And this process also produces who reproduces it. So, this whole intertwined process must be read together.

Another important concern of this study is the issue of how the idea of creating a kind of commoning practice has come to realize in a concrete physical space. Because it is a complicated thing for such an abstract idea, it can even be called a bit utopian, to find a response in such a concrete space. Ömer and Serkan, explain the first relationship that this idea was established with this space. By the way, Barış and they are from different groups at first. It is important to emphasize it at that point. Because Barış and a few friends were looking for space when Serkan and Ömer found this space. So, their paths crossed in that way. Ömer and Serkan explain that process as follows;

"We were planning to create a semi-social and semi-economic place. We wanted to design a kind of self-transforming space. There were not many spaces around us that we could use. We found this space. I have also a historical relationship with this district. I was working as a leatherworker in that area about 20 years ago. So, I know this district very well. And we can say that our journey in that process has started with this space. Here, we met with Yalçın. This person has an oral/verbal agreement with

the owner of this space. The owner allowed him to use that space in return for taking care of that space. This is a two-storey building. Yalçın was using the ground floor as a depot. The depot eventually has been turned to a dump. It was not used. We asked him why they did not use the ground floor and he said if you clean, you can use it. Of course, our agreement with Yalçın is just verbal. And then we have started to clean this space. When we finished cleaning this space, we have confronted with an empty garden. By the way, we were cleaning this space but we did not have any idea about what we can do with it. Of course, we would not imagine today's use. After cleaning, many people joined us and we have started to design our agenda".

As understood from Ömer and Serkan's statements, the answer to the question of how this whole idea found a response in one space, has a multi-layered explanation. It is so clear that, in this case, space has been a driving component for commoning practices. Maybe, it can be said that the controversial ownership status of this space helps to achieve that. This building is a private property, but the meaning that this space gains today is beyond that. As the team members expressed, the owner of that building has passed away and two heirs did not talk to each other. Because of the reason that it is a registered building, they cannot decide what to do with that space. Since they cannot take care of the building, they gave it to someone named Yalçın and ask him to take care of that building. And Yalçın has started to use this space and also allowed some associations to use it. As it is seen here, it is necessary to mention a different ownership status apart from public and private, even in-between them. That's why it is so valuable in terms of blurring and questioning the boundaries between these two ownership statuses. It is a different kind of ownership established through use rather than a property relation (Petrescu & Trogal, 2017). This is especially very important in today's capitalist system. Regarding this issue, Stavrides states that common spaces should be considered as a set of relations that challenges the very essence of these ownership statuses (Stavrides, 2016, p.276). This situation brings along so much potential with itself. It allows different kinds of encounters between different actors and produces a different kind of relationalities between them. These different new encounters and the new relationalities also constantly transform the meaning of that space. That's why this situation is considered as important when evaluating the reproduction process of this space.

As it is mentioned at first, this space has been constantly changed and transformed by the commoners that participate in this process. In addition to that, the socio-economic dynamics of that region also have effects on that change. With the participation of various users, different new needs and in connection with that, different usages and practices emerge. So, it is possible to say that such a common space has been produced as a result of the necessities in

this region. In this regard, the examination of the socio-economic structure of this district has gained more importance.

"In the past, there were mostly leather ateliers in this district. Before the pace of the tannery has changed, approximately 10000 leather workers were living in here. When the organized industry has opened, the tannery has been closed and the leather workers have moved from here and the population has decreased. But this region allows continuous migration. Our main concern is, even if we can't do anything here, racism inevitably will rise and we should think about how we can prevent this. In 2015, you need to know how this district was. People were living in the streets. Many of them did not have any place to stay. This is one of the reasons why this space is refugee friendly. You cannot do anything in here despite of it. If we were designing such a common space, it had to be like that. Today, of course, this situation has changed. But the reason for this perception comes from those times. This perception has evolved over time and everyone who heard us has begun to come."

As the team members said, immigrants are an important part of the users of this place. But of course, there are also many different users from different social backgrounds involved in the activities of this space. As Wungpatcharapon emphasized in his study, the involvement of so-called other or marginalized actors in such common practices provides them a chance to transform their social relations by regaining the sense of being common (Wungpatcharapon, 2017,p. 42). When the structure of the collective is also examined, it is seen that there are many different actors from different disciplines such as; a city planner, psychologists, leather workers, teachers, a painter, etc. According to their statements, at least 100 people have been involved in this team so far. There is a constant circulation in the team. Everyone is here for different reasons. Nobody has a fixed or specific duty because it works voluntarily. They say that they use the advantages of the absence of any rules. There is a kind of system that doesn't require anyone to devote his or her whole life there. In addition to that, they emphasize the importance of the horizontal organization structure. They adopt an organizational model in which no one has superiority. And Barış explains the position that they put themselves as follows;

"The main purpose of this space is to remove the third agent between the two actors that are in solidarity. Our position in that process is to bring the two sides, who want to act with solidarity, together and create a kind of space where they spend time together and understand each other. We want to create such an environment in which they can come together and share something without looking at each other from above. In brief, we aim to create a more organic environment that makes the common life possible".

Apart from individual actors, there are also many different associations that use this space according to schedule. The associations from many different backgrounds conduct their activities here and this diversity also provides important diversity in the usage of this space. At this point, it is important to answer a question; while governing such a free, open and common space which activities will be welcomed and which of them will not. Of course, if it is called as a free space, it should be free from all kinds of restrictions. But it is also expected that some activities that are thought as inappropriate to the spirit of the commoning practices, should be excluded from the agenda of this common space. The team member expresses what they decided to include in their agendas and what they did not, and how this decision process has been managed, with the following statements;

"*This process is not so complicated for us. All kinds of activities are accepted unless someone says this should not be done. Of course, the issue of what kinds of activities are not accepted is so important here. This process doesn't work like we don't want it, so it should not be done. But it has happened a few times. Gülistan had an objection to an activity. But of course, she evaluated it within the framework of her discipline. As I remember, it was a playback theatre workshop. They wanted to do something with the Syrian immigrants. It was something like a psychodrama. And they wanted them to come and tell their migration experiences in here. Gülistan was not the only one opposing it. There were three psychologists at that meeting. We only said that if you plan to do such an activity, you should have an expert with you. In our opinion, when you open these traumas, you should also think about how to close them. This kind of activity should have continuity in the long term and should be planned by experts. We have discussed this issue among ourselves. And we decided that it is not appropriate for us and this kind of approach did not meet with our concerns. Sometimes such kinds of things also happen; one organization came here for some kind of activities, but they wanted to make a video. We did not want this in terms of security. When they say if you don't allow us to record it, we won't come then, we understood that our decision was so right. They were on different frequence and their concerns were different from ours. In such a situation, we can't say ok for these activities. Everything is okay for us, except for such things. Because we are not an authority here. Our position in this practice is not something like that*".

As it can be seen from the above examples given by the team members, what is so valuable in here is the creation of such kind of negotiation environment and looking out for common good. As Stavrides emphasizes, commoning practices, in fact, a little bit conflictual and negotiated process and in that process sometimes it can be said that the existence of such a negotiation ground is more important than the act of sharing (Stavrides, 2016, p. 2). In order to express the

diversity of the usage of this space, the activities performed so far can be listed as follows; People's Kitchen/*Ahali Mutfağı*, (Figure 3), children game workshop, migration stories festival, immigrant rights workshop, movie screening, women's meeting, upcycling: dismantling and recreating workshop, English lessons for adults, Turkish lessons, instrument workshop (Figure 4), Swap Market (Figure 5), Drew Colby, etc. These are only a few of activities performed in here. Of course, it is difficult for one space to be able to answer the different needs of each of these different uses. That's why, for all these different uses, it is reproduced. This reproduction process of this space is also a kind of commoning practice. It is a process in which everyone involves an act of sharing in line with their competencies. The existing condition of "Kapılar" today, is the result of the collective effort of many people.



Figure 3. A Photo of the Peoples Kitchen/ *Ahali Mutfağı* in *Kapılar* From Kapılar Archive, 2020



Figure 4. A Photo from the Instrument Workshop in *Kapılar* From Kapılar Archive, 2020



Figure 5. A photo from the Swap Market Activity in Kapılar From Kapılar Archive, 2020

"*The cleaning and construction process of this space took six months. In a meeting, someone said that we need a kitchen. Then someone took the measurements, made the kitchen shelves done and brought it to here. And suddenly that space became a kitchen. For example, there was a toilet problem. I worked on that very long time. We have changed the whole infrastructural system. In addition to that, someone brought brick and sand for construction works. Hasan made all plaster works. Barış and Hasan also painted the walls. We can give many more examples like these. In every corner of this space, everyone has so much effort. And they all involve in all these decision-making processes.*"

It is understood that it is an ongoing process. For each new usage, the new commoners of this space will transform this space and add it to new meanings. And of course, this meaning will be read differently by everyone. Kapılar is now enclosed due to the problems between several actors in this process. This is also actually a part of the reproduction process of this space. The meaning that the space gains now also brings into question a lot of things about commons. Trying to understand the problems that it points out, is so valuable for this study. At such a point, the question of how these practices that started here will transform into another physical space is so interesting. Or the issue of what kind of relationship that the new space of the Kapılar will establish with the current space needs should be examined.

5. EVALUATION OF THE FINDINGS OF THE STUDY

All the narratives of the participants have been transcribed word by word. The written transcript obtained from the interview has been re-read and analysed to determine which keywords has been mostly repeated. The prepared table below,

shows the most frequently repeated keywords and how often they are repeated (Table 1). While preparing this table, the mostly repeated keywords, the keywords with the same meaning or the words with similar associations have been evaluated together.

While evaluating this whole interview, the prominent keywords will be considered as base points. The reason for making such an analysis is that nothing is to be missed while interpreting this written transcript. This analysis will also help to test whether the interpretation made in here reflects the same intensity with the answers of the collective members. While evaluating this table, it can be said that some of these keywords stand out more than the others. These keywords are; everyone, solidarity, collective, aid, space, and enclosure. The fact that why these keywords are repeated so much is that the team wants these themes to be more prominent while expressing themselves and their goals. For each keyword the reasons why the group members want to emphasize this word is tried to be interpreted as follows; If we start with everyone, the emphasis of this keyword here points out the effort of creating a more inclusive process that everyone can be involved in. They want to manage this space with an approach of where nobody is marginalized, equally involved in all kinds of the decision-making process.

Table1. Frequently repeated keywords by interviewees

Keywords	Frequency
everyone	14
solidarity	17
aid	21
collective	11
sharing	6
experience	14
hierarchy	6
enclosure	15
space	27
common	6
ownership	5
self-transformation / transformation	8
encounter	6
participation	9

Another important concept is *solidarity*. In the interview, the team members especially emphasized that it is very important for them to perceive the difference between *solidarity* and *aids*. They said it is so crucial for understanding the main motivation that lay behind all the commoning practices in here. In order to express their practices, they use solidarity concept rather than aid. Because they believe that *aid* includes a kind of patronizing attitude between both sides. They regard solidarity as a sharing experience under more equal conditions. That's why they aim to create a strong solidarity network between all actors. So, it is not surprising that these two concepts are repeated too much. Another commonly used concept is *collective*. Act of producing something together is the most important component of providing solidarity. This situation can be expressed with the manifestation of the collectives. The main goal of the collective is to create an environment in which the participants can be in contact with each other and share their experiences by making production together.

The other two concepts that stand out in here are *experience* and *sharing*. What Kapılar basically tries to realize experience sharing. Another important keyword for Kapılar is *space*. There is a strong connection between the space and the practices of the collective. Here, space has been a driving component for all these commoning practices. That's why they express themselves and their practices over the production process of this space. So, the last keyword is the enclosure. The reason why so much emphasis they put on this keyword is that Kapılar is closed now by some other stakeholders in this process. So, they want to use this situation as an opportunity for revival. That's why they emphasized this keyword frequently.

6. CONCLUSION

In summary, this study examines the social reproduction processes of the space, through the *Kapılar* common space and commoning practices performed in that space. While examining that, this common space has been considered not as a concrete material object, rather it has been considered as a social process and a set of relations that are created in this process. Therefore, in order to understand the production process of this common space, the conditions that create this commonality have been examined first. In this regard, this study firstly questions why individuals take part in such a spatial commoning practice. For the *Kapılar case*, it can be said that they participate in such a commoning practice to create alternative solutions for some problems that they observed in social life. In here, the idea of considering common goods of the society instead of just thinking their own individual problems comes to the forefront. This situation reinforces the idea of being a community and acting together. As the group members

mentioned, everything actually starts with finding the space. As they expressed, the controversial ownership status of the space helped them to create such a commonality. In this case, a different kind of ownership status has been experienced rather than private and public. This common space provides a common ground for various actors with similar common concerns to come together. This situation creates new encounters and new relationalities between them. Of course, the scale of production grows with each new encounter, and in this case, the question of how to organize this whole process becomes prominent. Regarding this issue, team members said that they conduct a kind of horizontal organization model that mostly comes from bottom-up. But the absence of such a decision-making authority may bring some questions in mind how this common space should be governed or managed. As the team members state that, in such a situation the existence of a negotiation environment gains importance. Although it is a free and open space, they said that they try to create an environment that will not interrupt the commonality. For them, it is very important for all stakeholders to be involved in every decision-making process related to that space, in every stage. In this process, although participants can be in disagreement, they eventually reach a compromise. And sometimes the existence of this negotiation atmosphere can be more valuable than sharing.

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INTEGRATION OF NEWCOMERS TO AYVALIK (TURKEY) VIA SOCIAL INTEGRATION CENTERS

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ABSTRACT

"Refugee" is usually defined as a person who seeks shelter due to reasons of war, conflict, assimilation, femine, natural disasters and so forth. However, in a much more humanistic approach, we should perhaps start with Hannah Arendt's words, "In the first place, we don't like to be called refugees. We ourselves call each other newcomers or immigrants." Immigration basically defines a shift in place and it is an instinctive act for human-beings; therefore, rather than being a "problem", it actually is a solution to the problems which makes it hard or impossible to live in a certain place. Within this point of view, the aim of the research study focuses on the question of how the experiences of place and space affect the relationship between newcomers and their location. The paper focuses on the place-making experiences of newcomers, through the perception of space and its effect on individuals. Results of the research indicate that the experience of place is a vital aspect for achieving integration between newcomers and locals. Integration and adaptation are actualized when the opportunity arises for newcomers and locals to meet and cooperate with each other, both physically and socially. The dynamics of social integration is standing on two pillars which are social entrepreneurship and common acts between locals and newcomers; and through the experiences' of place-making, it becomes possible to create and maintain a physical integration. This research paper introduces three graduation projects, known as Integration Centers, from X University, 2019 Spring semester. The projects were designed by students for social integration of Syrian people through the social entrepreneurship idea. Students created different design proposals which offer public, semi-public and private space for newcomers to encounter locals and places, and to be able to understand the relationship between individuals and place, and its effects on their integration.

Keywords: immigration, refugees, newcomers, social integration, plural societies

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1. INTRODUCTION

"Refugees are not migrants." United Nations High Commissioner for Refugees (UNHCR) states (Feller, 2005, p.27). Immigration studies starts academically at the post World War II era but they do not address the distinction between migrants and refugees, as a result, United States, Canada and Australia do not label "newcomers" as refugees or migrants but they state them as immigrants (FitzGerald & Arar, 2018; Jupp, 2002). In this context, Hannah Arendt as an opening sentence of We Refugees (2017) states that "In the first place, we don't like to be called refugees. We call ourselves as immigrants or newcomers." Even if countries did not have a distinction between refugees and immigrants, in a sociological context, there is this distinction between refugees and locals.

In a new from Katy Fallon (2018), she talked about newcomer or immigrant or refugee terms and how they feel when you call them a refugee or immigrant or newcomer. She also mentioned that in the Netherlands, the society mostly prefers to call the Syrian refugees as newcomers to make them feel better (Fallon, 2018). It is dangerous to marginalise immigrants who have just arrived to the society based on social equality by naming them as refugees.

In the post-war era, ambiguity of definition was exceeded by the 1951 Geneva Convention. The convention creates a base for 1948 Universal Declaration for human rights, Article 14 (UNHCR, 2010). In the convention paper the term "refugee" is defined as a person who is under pressure because of race, religion, nationality, membership of a political or social group and who is away from his/her habitual residence and does not want to turn back to it (UNHCR, 1951). Geneva convention defines refugees according to the political borders that were created after World War II.

At the state level, the 1951 Geneva Convention draws an outline for refugee status and rights of refugees but there is another level for refugees' cross-border which is integration. Berry (1997) states that "After immigrations many societies became culturally plural." When immigrants arrive at their new place, with locals, they create a plural society which generally does not contain equal communities. What makes these communities unequal could be numerical, political or economic reasons (Berry, 1997). In the 20th century, nations began to try to prove that they are greater than other nations, so they had to find internal and international enemies so, inside the country minorities became targets (UNESCO, 1985). Thus, minorities came together in order to protect themselves from this "racist" movement. Minorities created "ghetto" neighborhoods and created perceptional borders between local communities and minority communities. In city scale, cultural groups live together even in the conventional approach, ethnographic

maps are created to draw borders of different categories (Gupta & Ferguson, 1992). In contrast, homogeneous societies were created in some cases (Berry, 1997). According to Searle and Ward (1990), measurements of adaptation are behavioral and cultural adaptations. Besides group level acculturation, there is a term called "psychological acculturation" which cover individual change in a society (Graves, 1967). According to Berry (1997) there are 3 main approaches discussed: "Behavioral shifts" (Berry, 1980), "culture learning" (Brislin, Landis and Brandt, 1983), and "social skills acquisition" (Furnham and Bochner, 1986). The main effect occur for newcomers is "culture shock" as a result of conflicts (Oberg, 1960). Rather than "culture shock", Berry (1970) suggests the term "acculturative stress", because "culture shock" represents one culture rather than multiculturalism and "shock" represents after war and one moment effect but stress has more long term meaning (Berry, 1997).

According to Berry (1997) plural societies occur in three types: voluntarily, mobile and permanently. Basically, when groups of volunteer immigrants come to a place, it is voluntarily acculturation process, when a group temporarily comes to a place, which case studies are about, is mobility and when groups permanently attached to a place it becomes permanent acculturation (Berry, 1997). Starting with the first attachment of newcomers to a place, does not matter what kind of plural society is going to be created, integration strategy has to be discussed. Migrants have fear of losing self however, they need to leave their home (Ralph and Staeheli, 2011). Even if it is not possible to bring home to the place where migrants are placed, feeling of home should be created in order to prevent newcomers from acculturative stress.

Besides adaptation of newcomers to a place, locals should be adopted the new situation either. Host place should be considered both physically and economically. Cultural codes and behaviors may be welcoming or aligned to the newcomers (Philips and Robinson, 2015). The place where new communities are placed can already have plural societies or, that place can have a very conservative population. In any case, placement and political approach to a place where newcomers settled, temporary or permanent, sociological, physical and economical aspects should be considered. Moreover, refugees could no longer be an issue for a community (FitzGerald and Arar, 2018) if physical, economical and social integration is provided.

2. PLACE-MAKING AND REFUGEE INTEGRATION

2.1. Place Making

In the early 1970s, the architects and planners used the term of 'place-making' to define the method of creating spatial elements such as squares, streets, and

parks. Humanbeing has the responsibility of creating their own places during history. In the world, where both modernity and change are welcomed, in the way they make places, people try to situate themselves. (Kellett 2003, p. 94). To understand the relationship between the case of place-making and being displaced voluntarily or forcedly, as well as where and why people feel like at home, it is important to take the concept of human attachment that describes people's perceptions about specific places, the way of how people connect to several places and the way of people's place-making, into consideration (Unwin, 2003).

The meaning of displacement has gained a paradigmatic significance in anthropology when making place is conceptualized. From a rooted, stable and mappable integrity, there has been a shift over two decades to a transitory, fluid and migratory comprehension. People are now considered as moving constantly through open-ended, flexible and contested space, instead of being bounded by an unmovable and timeless place and in time, migrants and refugees have become the symbolic figures of this radical shift of globe (Malkki, 1995). As a result, the idea of place and space obtained an indefinite position and for this reason, the dispute on place and space in discussions on place-making gained more significance (Erdal Baran, 2018).

The re-creation of a living environment has a significant role in human life, and as a result of this, settlement in a new country is one of the most challenging parts of the migration from the perspective of immigrants. For displaced people who have to leave the places they know as home, in order to create a new livable environment and continue to survive, what is the meaning of "home"? Place-making acts as a vehicle for individual and collective actions, cross-cultural learning and the goal of striking roots and path and goal, departure and arrival of the immigrants point out its instrumental nature. While the understanding of "home" is almost universal, the place-making process varies from one group to another. With the help of physical facilities of home, individuals can bond themselves to society and can create and improve their identities. A person benefits from the coded practices about place-making in his/her memory, when he or she decides to settle and mentally place himself (Erdal Baran, 2018).

From Tuncer Gürkaş's point of view, while the place-making practices of displaced people aren't adapted and contained into the urban life, nevertheless such practices create a new form of urban life when it's seen from another perspective. In addition to the challenges that immigrants face with, in the responsibility and need of re-making their own places after displacement, spatial and social breaks between the natives and the newcomers can arise during the process of adaptation to the urban space (Tuncer Gu̇rkaş̧, 2010). On the other

hand, place-making acts as a bridge between newcomers and the new host community by creating a sense of belonging, while it is helping to bond cultural identities. Erdal Baran says, "In the extended stay, interaction with space, spatial transformation and spatial production is a direct result of the time factor. In the first generations: family, tranquility, shelter, homesickness definitions come to the forefront, while the second and third generations stand out in terms of comfort, privacy, security." (Erdal Baran, 2018).

When unintended, unexpected and unplanned events, that can be named as authentic practices of place-making, occur in a space, that space turns into a 'place'. During the process of recognition and adaptation, the behavioral networks and relational patterns are structured by individuals in order to make their own appropriate place in a new environment (Tuncer Gu̇rkaş̧ 2010). In a place unfamiliar to them, newcomers try to recreate their home in physical, mental and social ways (Erdal Baran, 2018). Tuncer Gürkaş says, "In this process, to recognize a new place, to adapt to a new built-in order and the desire to get used to it, is the action of re-making the own place, which is creating the content for the place-making concept." She mentions that immigration is the desire of people, who have necessarily moved to a new place by deciding to leave the origin place, for physical and mental settlement and adaptation to the place. During this process of change, the displaced people try to strike roots by discovering the existence of the places (Tuncer Gu̇rkaş̧ 2010).

2.2. Integration Process

There are several initiatives that explore and draw a solution for newcomers integration. For example a study conducted by Guma et al. (2019), investigates the situation of Wales after refugee-crisis and the effects of refugee-supporting organizations on the society and discovers the differential mobilizations of civil societies while representing a comparative research between three different localities, a university town, a seaside village and wealthy suburban and an inner-urban neighborhood, to express the impacts of refugee-crisis in localities and to highlights the importance of place. After several observations and interviews with locals, the study indicates that, during the process of transforming Wales to a "welcoming place", each of the localities has contributions by their varied civil society responses such as reshaping of civil society networks, the creation of the new local group, the rise of new connections and activities, the variation of local population profiles and the increase in the awareness of the locals. The research argues that solidarity and hospitality has an important effect on the refugee-crisis as humanitarian responses but also the writers shed light on the crucial role of practices of locality production in such cases. In another research, a group of

researchers studied on creating better neighborhoods for different ethnic groups in Finland. In some cases, creating a neighborhood with different ethnic groups seems disadvantageous but it may be hidden inside some opportunities like economic and social integration of the migrant society with the local society. They use a multinomial specification method which allows them to compare the taken data. This method focuses on the migrant and local mobility to define by empirical analysis within the scope of the collected comparisons (Vaalavuo et al., 2019).

In 2020, Papatzani and Knappers conducted a research to explore Athens city center area Onomia. Greece is the next stop where migration pauses after Turkey. Thus, the study areas have common features in terms of behavior of newcomers. According to Papatzani and Knappers, newcomers in Athens are creating ghettos where accommodation is cheaper and isolate themselves from local people. Moreover, their main aim is to work, so they work as unlicensed workers in the local shops or they start unlicensed workplaces under the apartment buildings. By this analysis, it is obvious that newcomers need occupancies in order to work because they need to work in order to sustain their lives. However, they are not accepted in the local community thus, they create ghettos and isolated streets. If they were skilled workers they could be accepted in the community by their occupancies. In order to solve the occupancy problem, Freudenberg and Halberstadt (2018) drew a framework for social entrepreneurship for newcomers. According to Freudenberg and Halberstadt, there are several ways to integrate newcomers to the labor market that could be company initiatives, governmental initiatives or self-employment of newcomers. In order to increase company initiatives, the organization called Refugee Action created an internet platform that brings newcomers and companies together. Moreover, Refugee Council of UK provides advisory service for newcomers (The Refugee Council, 2015). Besides that, according to Freudenberg and Halberstadt, most of the countries do not give permission to newcomers to run their own business, that's why newcomers before departing to Europe need to have matching occupancies in order to have a job in their new home.

Integration with entrepreneurship is one of the ways of long-term integration and it is a very effective method. There is a lot of work on how to improve this work and how to overcome other challenges. Also, a lot of work needs to be done in the future (Ager & Strang, 2008). This way offers many opportunities for both local entrepreneurs (society) and the newcomers. At the same time social and traditional problems begin to be solved through entrepreneurship. Social entrepreneurship helps to apply and improve the necessary innovations for integration with entrepreneurship for newcomers. With this way, we can offer to

the newcomers to be someone who can solve social problems and offer creative new business models in the future (Gidron, 2014). From another perspective, social entrepreneurship is a method based on work to solve social problems. It needs a social mission with discipline and innovation (Grimes & McMullen & Vogus & Miller, 2013). As a summary of the literature on the topic; the integration via social enterprise into the refugee labor market looks like hopeful approach.

These entrepreneurial actions are a solution for newcomers' dependence on aid. At the same time, the integration of this workforce into the host society is sustainable. Specifically, these entrepreneurship steps that create employment are a model that increases the competence and diversity of the newcomers in integrating this workforce. The amount of such events around the world is increasing day by day.

According to UNHCR, the integration of immigrants is defined as a two way process. It is required endeavors by all gatherings concerned, including a preparedness for the piece of adaptation to the host country without their own social personality. The procedure of integration is mind-boggling and progressive but with all lawful, monetary, social and cultural values, it is significant for newcomers' ability to integrate effectively to the host country (UNHCR, 2014, July). The two way process can be defined as long-term integration and short term integration. Mostly, we will focus on the long-term integration for newcomers and the most effective way with its place, integrated its architectural design.

3. METHODOLOGY

The aims of this search is the needed data analysis for understanding of refugee integration with case studies. The methodology that we use is shaped with a qualitative method. During this data collection; we have decided to use a combination of four of the classical social research tools; face to face interview, ethnographic search, case study research and observation process. Face to face interview, with its another name called an individual meeting review is an overview technique that is used when a particular objective populace is included. The reason for directing an individual meeting overview is to investigate the reactions of the individuals to assemble more and more deeper data for our search. (Leeuw & Desiree, 1992) Face to face interviews are used during the Ayvalık case searches to understand Ayvalık people and their needs. In this method, the interviews did not have any statistical results, but it helped us to understand Ayvalık content clearly. The interviewers are selected randomly from the streets and we continue the interviews and direct the interview questions according to interviewers' answers. Ethnography search actually is in both qualitative and quantitative research methodologies' tool that is utilized by

sociologists when studying with explicit groups to understand a piece of a bigger complex of selected society. (Naidoo, 2012) We used the ethnographic search for our data collection phase, to understand Refugee, Place-Making, Ayvalık, Integration concepts clearly. A case study is both a research and empirical methodology that researches are with real-life context (Gerring, 2007). With contextual analyses, we are doing research that depends on in-depth examination of an individualist, to investigate the reasons of underlying principles. In our study, as case study; beside research of the integration case examples, we developed our own cases to understand the content clearly. For the last tool, we need to understand what the observation is first. Observation can be defined as the recording of information by means of the utilization of scientific instruments. The term may allude to any information gathered during the scientific actions. In our article, we use this tool in the data collection phase with a minimum rate, because it is mostly something we use during the data analysis process.

The method of the research is to create an observation supported literature-based design method. As a result of literature review and the city, in that case Ayvalık, observations, there are several principles that were detected in order to design a social integration center. First of all, layers of the city should be analyzed and the integration center should be a bridge that connects both layers of a city and the newcomers both physically and socially. Moreover, the most crucial point is to integrate newcomers economically in order not to face the situation as Papatzani and Knappers' (2020) example in Athens. Thirdly, while doing the first two articles, immigrant's long-term and short-term situations should be considered. In that case, if the settlement is long term only contribution to the host countries' economy could be enough however, if it is short term next stop should be considered while gaining occupation. Fourth, in order not to let newcomers create ghettos and isolated from locals, cultural common grounds should be searched between locals and newcomers both physically and socially because locals do not believe that newcomers and locals have common grounds. As a result, while designing an integration center, the design should be a bridge both spatially and socially. In addition, locals should be felt that newcomers would contribute to the social and economical life. Case studies are different applications of the parameters explained above.

4. AYVALIK

Ayvalık is a district and port city in the Aegean region of Turkey's Balıkesir province. In addition to being the place where commercial products come and go, the port has also been the area of interaction of cultural relations. In this view, a similar spatial and cultural formation was experienced with Ayvalık and other

cities in the Aegean region. (Özbek, 2018) It was founded right across the island of Lesbos. The district, which is rich in pine and olive trees, has an archipelago called Ayvalık islands.

In this region, the first settlements reach to Helenistic period (330 BC-30 BC) and the Roman Empire period (30 BC-395 AC). In these periods, the Ayvalık were called as 'Kydonies'. According to the Roman Empire data, Ayvalık lived the most brilliant period of itself, it had been a commercial, cultural and religious centre between the 17th -20th centuries (Şahin Güçhan, Papasotiriou & Harmanşah, 1997). In the 13-14th century during the Byzantium Empire, Aegean region consisted of small principalities as fragmented districts. In the 15th century during the Ottoman Empire, the Turks started to come to Ayvalık (Özbek, 2018) In 1773, this region started to be called as 'Ayvalık' officially. In the date of 1789, this region is became an autonomous region for non-Muslims because in Ayvalık, the non-muslim population was nearly almost 100 times of muslim population. This autonomous period continued until the Greek uprising of 1821 (Bayratar, 2002). Ayvalık exports olive oil, beeswax, domestic silk, wine, soap and imports sugar, coffee, wool, cotton fabric, raw leather in this period (Sakin, 2008). Economic structure was strengthened due to industrialization and reflected the urban texture. Being an industry and port city was affecting its diversity of building groups. This is why the attacked buildings occur in more narrow parcels. In 1922, it was rescued from Greek occupation and with Lozan agreement in 1923, the population exchange actualized. (Yılmaz, 2005) In the beginning of Turkish Republic period, the muslim population was 13.088. Finally, Ayvalık became a district on 19 May 1928 and the population of the district is 62,460 in 2009 (Turkish Statistical Institute, 2020)

The economy of the district largely depends on olive and tourism today. In addition to olive, agricultural products such as cotton, pine nuts, grapes and mandarins are also grown. In recent years, vegetable and pine honey production has also made (Yorulmaz,2000). In Ayvalık, there are also coppersmiths, wood carvings and other handicrafts. There are industrial establishments that produce soap and olive oil from olives in Ayvalık, where 70% of their land is olive groves (Terzi, 2007). According to a study conducted in 1994, Ayvalık has a total of 363 buildings from the 19th century (Yorulmaz, 2000). A big market is established every Thursday in the center of Ayvalık. Thousands of Greek tourists from Greece in particular make a day visit. On the other hand, fishing and fish restaurants are an important source of income thanks to the Aegean Sea conditions (Cevri, 2015).

For cultural developments, that can divide it into two parts; kitchen and architecture. Since it is located by the sea, the appetizers made with seafood and olive oil dishes form the basis of Ayvalık cuisine (Ayhan, 2015). Ayvalık has gained

importance with its traditional and different architectural structure and the houses it owns are called 'Ayvalık Houses'. These houses have a special architecture reflecting the social life of Turkish and Greek Cypriots. The buildings of the 18th-19th centuries determined the shape of the city (Akın, 2015, Asımgil & Erdoğdu, 2013).

5. AYVALIK CASES

5.1. Case 1: HANDICRAFT-LAB INTEGRATION CENTER

The cultural elements of a society consist of beliefs, values and lifestyle of that society. Handicrafts that carry the past to the future are important vehicles that reflect the economic, cultural and social lifestyle of the society and play a crucial role in the transfer of traditions to future generations. As one of the branches of folk culture, that creates the essence and the base of culture, handicrafts provide an important contribution to the relevant society as well as to other communities and cultures at universal level.

Handicraft-Lab Integration Center aims to create a connection between the culture of Syria and Ayvalık with the help of handicrafts. The reason behind the idea is protecting Syrian traditional handicrafts from disappearing while creating an integration between local people and refugees via workshops. As a reflection of the richness of Anatolian cultural heritage, traditional handicrafts such as woodcarving, stained-glass, pottery, ceramics, and copper engraving continue to be kept alive in Ayvalık. On the other hand, as a consequence of the war, several Syrian traditional handicrafts like glass blowing, mosaics, stained-glass, wood engraving, mother of pearl marquetry, ceramics and pottery, chandeliers and steel production have already begun to disappear.

In order to create an environment in which the locals and newcomers share common values and have interactions, a few branches of handicrafts from the common heritage of the two cultures were focused and mainly ceramic, stained glass and wood carving were chosen. It is one of the main objectives of this case to increase the interaction of newcomers with local people through workshops and exhibitions that are frequently organized while providing vocational training to Syrian newcomers in the Handicraft-Lab. Furthermore, the project creates a ring by connecting City Square, At Arabacıları Square and marketplace that are the main public places of Ayvalık, while the integration center is located at the marketplace that has a strategic location in the historical side of Ayvalık. Macaron Street, which is the most famous street of Ayvalık with its history and craft shops, is too close to the marketplace, and during summer sessions, it becomes so crowded. As another idea, it is aimed to create new handicraft retail shops

between the integration center and Macaron Street and also use the re-created bazaar as a fair area periodically for the use of both locals and newcomers. By this way, the pedestrian density at Macaron Street decreases and while new ways of business opportunities are created, the interaction of newcomers and local people rises.



Figure 1: Left: The location of Handicraft-Lab Integration Center in Ayvalık Middle: Idea of protecting streets, Right: Idea of completing missing parts

It can be easily seen from the urban pattern of Ayvalık, the most remarkable features of Ayvalık are streets and courtyards that are the main influential elements for the idea behind the replacement of the buildings of integration center: Protecting the pedestrian paths with connecting surrounding streets in the site area and re-creating courtyards with the help of surrounding buildings compatible with the existing urban pattern of Ayvalık.

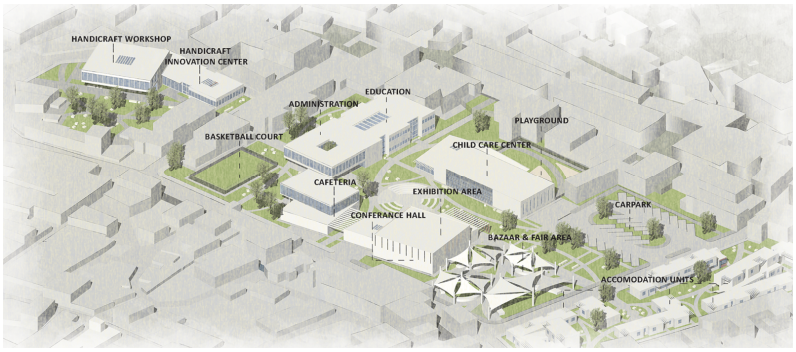

Figure 2: Handicraft-Lab Integration Center Building Program

Handicraft-Lab Integration Center consists of three main parts: Handicraft Workshop and Innovation Center where the vocational trainings and workshops are made, cultural and language education centers, child care center, public

spaces such as exhibition areas, conference hall, cafeteria and re-created bazaar area where the education and integration process of newcomers mainly occur and accommodation area near by the integration center where newcomers can stay with their families and feel like at home. While a linear connection from accommodation to vocational training center is provided to ease the daily routine of newcomers, the fragmented settlement of the buildings turns the integration center into a transmission area that can be used by everybody.

5.2. Case 2: OLIVE INTEGRATION CENTER

Plural societies are already created in Ayvalık during several immigrations. Thus, there are physiological borders as locals call "Kurdish Neighborhood", "Roman Neighborhood", Native Neighborhood" and "Tourists District". All these separations are visible on a section line from sea to the higher areas. In the shoreline, there are touristic places, at the upper place there are native Ayvalık people are settled where people are more integrated with the tourist area because of commercial concerns. Highest areas of Ayvalık are settled by Kurdish and Roman population where they work like psychological islands, not connected to each other and city center. Roman neighborhood has a close community with its own markets, butcher etc. However, this community's wealth is less than the rest of Ayvalık. If newcomers are integrated to Ayvalık , the new community shouldn't create a new "ghetto". Moreover, newcomers coming from Syria should get over acculturative stress easier. To do so, the cultural learning process should be accelerated. As a result, the design of an immigrant integration center should provide integration at home and integration of newcomers to the city.

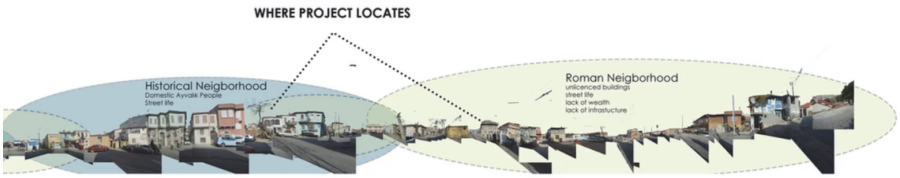

Figure 3: The location of Olive Integration Center in Ayvalık

Olive Integration Center aims to create a bridge between Roman neighborhood and native neighborhoods. So, the project stands on the valley that is between Roman neighborhood and the historical native neighborhood. Besides social integration, physical integration is needed too. Thus, over morphological analysis of Ayvalık, it is decided to be followed Ayvalık's morphological rhythm on the massive context.

Newcomers are planned to be inserted on the psychological bridge between Roman neighborhood and the historical native neighborhood which is located at the very strategic position. Newcomers are intended to be felt like home when they arrive. Besides, this home feeling should not disturb locals of Ayvalık. So, design decisions should be set on common behaviors. In that case, both in Syria and Ayvalık courtyard culture is accepted so, courtyards are familiar to both Ayvalık locals and Syrian newcomers. However, courtyard is an enclosed form that opposes nature of integration. So, the courtyard that is designed to let Ayvalık people in and use that space and all the facilities inside.

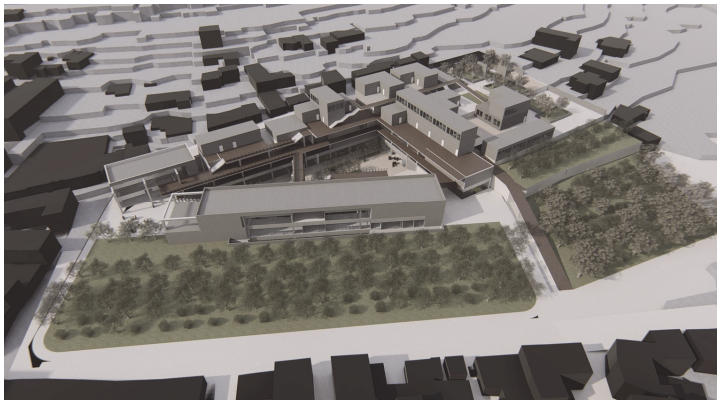

Figure 4: Courtyard shape of Case 2

Economical common feature of Ayvalık locals and Syrian newcomers is olive production. Both Syria and Turkey, in specific Ayvalık, are leading olive and products producers with Greece, Spain and Italy. So, Ayvalık Olive Integration Center can be accepted as a station point where olive production is taught and acculturative stress is reduced before newcomers are placed to Greece, Italy and Spain.

Olive Integration Center works as 3 levels, courtyard level (-4.00) where olive production education is given, olive simulation is done and productions are sold and supported with a café and restaurant. Courtyard level is expected to be used by newcomers, locals and tourists. Ground level (0.00) is reached directly from the street that contains shops and public education facilities. Ground level is also expected to be used by newcomers, locals and tourists. Upper levels (+4.00 and +8.00) contain houses of newcomers and owners of demolished houses in the process of Olive Integration Center.

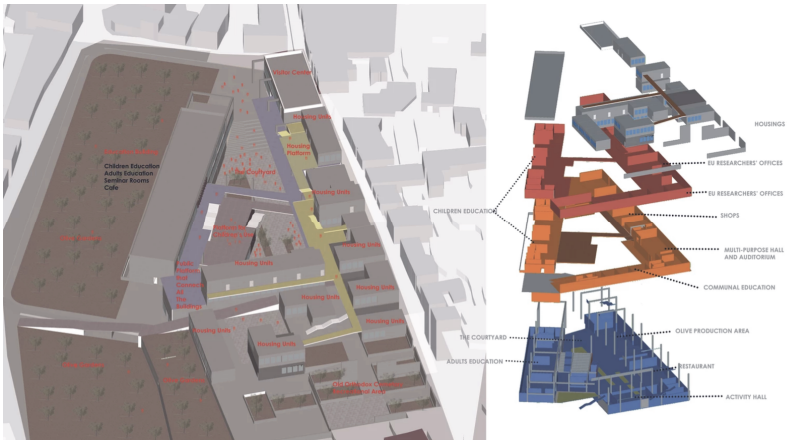

Figure 5: Olive Integration Center building program

5.3. Case 3: GREEN LINE INTEGRATION CENTER

According to the information obtained, Ayvalık is a region which has green texture in 1500 years and has not yet settled. After 1750, the first settlements began in Ayvalık, the first settlement was in the upper parts of the center. With the addition of a coastal highway in 1821, the number of residential neighborhoods increased to eight. With the socio-cultural development of Ayvalık in 1850, the number of neighborhoods increased to ten. At the same time, the existing green tissue began to shrink between the neighborhoods. In 1950, the settlement situation was slightly reduced due to population change and other incidents. In 2019, as we have seen in the visual, the neighborhoods were well spread and new neighborhoods were established towards Dolap Island. In addition, the shrunken green texture is no longer green, but has become a concrete bazaar area. As can be seen in this case, the integration of the Ayvalık citizens and newcomers in this green tissue, where the green is completely lost, was aimed to be linked to the revitalization of the green tissue.

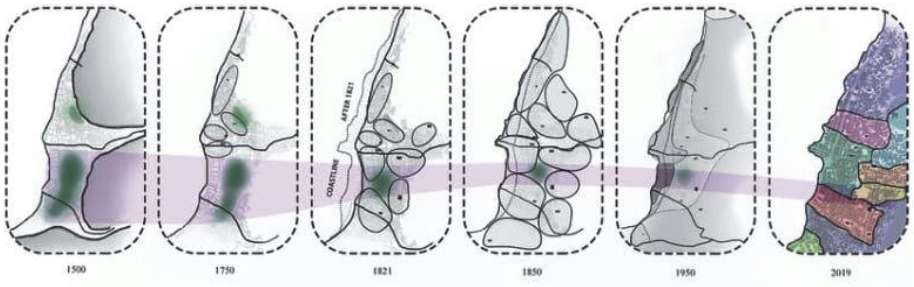

Figure 6: Development of Ayvalık throughout the history

So that, the aim of this case was to revive *the green texture* from the past and to ensure the integration of newcomers with the texture of green. Because of the large proportion of fish populations in the world and especially in the Mediterranean, it was aimed to raise awareness of both newcomers and Ayvalık citizens and to provide correct training in fisheries. Within the scope of the generated green line; it is starting with a few pieces in accommodation, it is continuing to the main building as one piece, then it is tearing until the sea, and finally it is disappearing in the sea, just like a lotus. The green axis that connects all these units will also be an accelerator for the integration of newcomers and Ayvalık people.



Figure 7: The location of Green Line Integration Center in Ayvalık

The building program includes "language training, cultural education, rehabilitation services and child care unit" for the integration center. In addition, it conducts studies at the global level through fishing training courses, awareness training and marine research institute. On the seashore side, the spaces for fishing practical courses are designed. In addition, the aim of this process is to provide an economic contribution to the newcomers and practical lessons learned; fishing services, fish food and restaurant management in green recreation and bazaar areas. The accommodation is designed by building, environment and concepts for mobile use. In addition, the pre-existing bazaar area is built between the two pieces of the main building as vertical by creating some recreation areas. All these units support to *the green axis* both for Ayvalık people and newcomers.

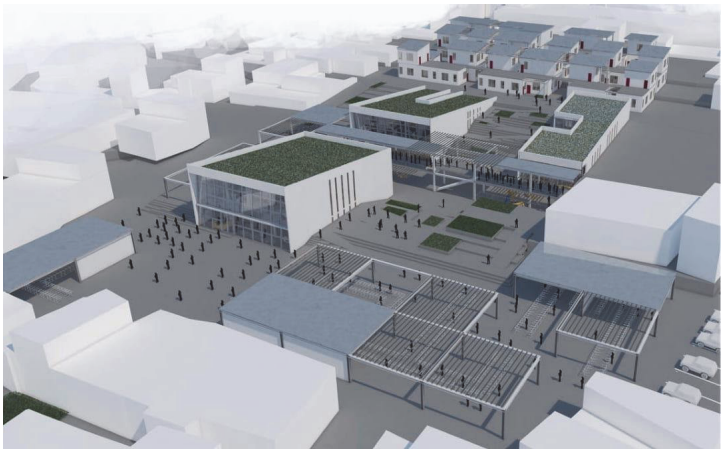

Figure 8: Perspective view of Green Line Integration Center

6. CONCLUSION

As a result, the social integration center model depends on the culture of newcomers and characteristics of the area that newcomers are planned to be placed. Social integration should be considered different than how states consider. States give newcomers a new statue called "refugee" and draw borders as it is done between states. So, the state approach creates ghettos in the cities. Cities are already occupied by plural societies living in the psychological borders without communication. Thus, it is obvious that this kind of approach does not work. This paper offers a new kind of model for integration and spatial arrangement. First of all, in order to let newcomers to be beneficial to society, acculturative stress, when they arrive, should be reduced. So, the culture and habits where newcomers coming from should be analyzed. Home feeling should be provided accordingly. However, while creating a home environment, it should be considered that a new environment should not create a border. To do so, the sociological and environmental situation of the area should be analyzed. As a result, interaction should be provided by crossing the borders. In Ayvalık case, there are already borders created by natives and other communities. Without spatial and political decisions, there can be new plural societies. In that case, cases offer new political and spatial designs in order to cross the borders. As case 1 offers the protection of shared cultural values while case 2 offers a link between two societies in Ayvalık with a familiar spatial organization "courtyard", then case 3 offers a linear buffer zone between newcomers and Ayvalık people. In conclusion, social integration center projects cannot be considered as only architectural projects. But they are also politics makers that change and shape the new life where newcomers are placed. Newcomers and the situation when

they come should not be ignored but new politics and solutions should be developed. In that case, architecture could be the most concrete solution.

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CAPACITY BUILDING, HERITAGE AND COMMUNITY PARTICIPATION: EXAMINING THE GAP BETWEEN GLOBAL APPROACHES AND LOCAL NEEDS

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ABSTRACT

Capacity building is becoming an increasingly popular agenda in heritage studies with regards to good governance, decision making and developing strategies for a sustainable future. These strategies aim to enhance the current situation in World Heritage properties, and in many significant heritage sites, within the scope of various key themes including disaster risk reduction, sustainable tourism, heritage management, involvement of communities, legal and administrative frameworks and raising awareness.

On the other hand, these themes and general perspectives seem to remain slightly vague and inadequate in terms of site-specific practices, actors and managerial processes. The idea of empowering locally related communities and capacity building for autonomous decision making, for instance, is still a largely uncharted territory in heritage and management scene. Since some of the advised protocols for target audiences and areas fail to find a local response in existing dynamics of heritage sites, the gap between global approaches and local capacity needs requires further examination.

These contemporary practices demand systematic results that can be transformed into methodological agendas to support sustainable heritage management and positive social transformation. Within the scope of this paper, main methodologies proposed by institutions and organizations will be examined and alternative perspectives will be investigated. It is also aimed to discuss the possibility of a locally oriented capacity building approach for community participation that may contribute to the overcoming of the practical inefficacy of global discourse.

Keywords: Capacity Building, Heritage, Community Participation, Global Approaches, Local Needs

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1. INTRODUCTION

Many systems can be placed somewhere in between clouds and clocks, just as Karl Popper[1] successfully suggests while referring to a spectrum of regularity, order and predictableness of things. Having decent amounts of formative elements from both ends, capacity building serves as a great model for these of hybrid nature.

Capacity building (or development)[2], with its one of the most widely recognized definitions, is "the process whereby people, organizations and society as a whole unleash, strengthen, create, adapt and maintain capacity over time".[3] What this definition really implies, however, leads to a very complex and grey area full of unknowns and not yet knowns. Dealing with inadequacies and creative possibilities at the very same time, practitioners, experts and academics are collectively assembling the pieces of a compelling puzzle.

That is mostly because, capacity building, has its roots in education and training, is an ever changing and evolving agenda with so many different dimensions. The conceptual predecessors can be dated back to 50s and 60s, when public investment for developing countries and institutional building were on the agenda, whereas from 80s, the focus of development started to be more human oriented.[4] Nowadays, fundamental human rights and accessibility to basic services are still a priority[5] while the approaches have a notably broader perspective.

Even though levels of capacity building are generally classified as individual, organizational/institutional and environmental/societal, the processes are essentially interrelated in a lot of ways. For instance, a well-designed process can be linked to human, scientific, technological, organizational, institutional and resource capabilities of countries at the very same time.[6] In the same way, for individual capacity, not only personal abilities, but also alternative combinations

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1 1972.

2 The terms "capacity building", "capacity development" and "capacity strengthening" are used in alternative forms in various documents. They have particular nuances. For example, "capacity development" is mostly used for cases where an initial capacity exists. On the other hand, "capacity building" implies creating or forming something from the very beginning. Within the scope of this paper, "capacity building" is preferred to be used for all situations.

3 Organisation for Economic Co-operation and Development (OECD), 2006.

4 Lusthaus et al., 1999.

5 The 2030 Agenda for Sustainable Development and the Sustainable Development Goals makes it clear that there is still too much work to do to combat inequalities.

6 United Nations Economic and Social Council Committee of Experts on Public Administration, 2006.

of political, social and economic environment regarding that abilities become relevant.[7] Consequently, in a lot of situations, responsible bodies have to deal with several layers at the very same time.

Varying from educational planning, creating lifelong learning and training centres, supplying technical support and guidance to fostering welfare and good governance, capacity building also has so many faces and understandings. In this perspective, almost any practice that induce strengthening, increasing and/or enhancing existing capacities of the target, whether they be people, institutions or communities, has a relevance to the concept. Yet, these activities are generally expected to be sustainable as well as having long term and meaningful impacts. For this reason, they should have a well-planned structure with strategically measurable outcomes, rather than being accidental achievements.

Communities, on the other hand, are among primary targets of these practices. Being potential actors for a desired future, their awareness on fundamental issues seems highly important. However, as human beings and their relationships are at times very complex, any processes that concern individuals and groups of individuals can also be quite challenging. Although, the notion of participation has no absolute paths, practices aim to foster effective and purposeful involvement in line with active agency, responsibility and equal rights.

In this light, community-based planning, management and implementation along with participatory decision-making models are becoming increasingly popular. This approach enables empowering communities as well as enhancing their living environment on the way to reach social welfare and a sustainable future for all. Accordingly, it is possible to say that all human-oriented perspectives have a direct relationship with the fundamental origins of capacity building practices.

2. CAPACITY BUILDING AND THE METHODOLOGICAL FRAMEWORK

One of the main capacity building frameworks is proposed by United Nations Development Programme (UNDP). UNDP's (2005, 2007, 2008) capacity building[8] scheme consists of five steps and they are adaptable for various assessments (Figure 1). It describes an ongoing and evolving process, through which, the suggested approach can be adapted and renewed through new outcomes and experiences.

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[7] Nussbaum, 2011.

[8] UNDP is using the term "capacity development" instead of "capacity building" for this framework. According to their definition (2009), Capacity Development is "the process through which individuals, organizations and societies obtain, strengthen and maintain the capabilities to set and achieve their own development objectives over time".



Figure 1. UNDP's Capacity Development (Building) Process

In this framework, the first step is defining and engaging stakeholders with the respective processes. This includes identifying the target group or groups including local dwellers, workers, communities, professionals, NGOs, CSOs etc., depending on the context. Setting the right target is the initial key to obtaining right answers with regards to defining capacity needs accurately. To whom and for whom the question of capacity has been directed to is a matter of utmost importance.

Assessing existing capacities and defining needs, being the second phase, is actually one of the most critical aspects of the process. Understanding and reflecting capacities demands facilitating a detailed investigation and scrutinizing a wide range of aspects. It may also require the implementation of a broad scope of data collection methods from examination of related resources to interviews with experts, decision makers or target groups. In this sense, addressing the vital questions regarding what capacity you are building as well as why and for whom you are building it is essential.

In conjunction with the collected data, a proper response to the existing situation can be formulated. Yet, revealing the above-mentioned needs, or "capacity gaps" as they are alternatively called, requires completing another task: setting a target. Therefore, in order to make a proper capacity assessment, actually three interrelated analyses should be performed instead of one:

identifying existing key capacity elements and/or areas, defining target capacity and addressing the capacity gaps.

The next aim is to bridge the gap between current and future capacities. Therefore, a response to the existing situation should be given. This response may involve actions that produce estimated and measurable outputs. A capacity building response is actually a foundation that serve as a basis for continued development, and therefore it should try to combine short- to medium-term initiatives with quick-impact activities.[9]

Finally, the last phase is called evaluation. For nearly all of the cases, perpetual modification and enhancement is vital after the implementation. Optimization of any process will be necessary since there will be practical inconsistencies with the estimated feedbacks. As a result, this requires regular and systematic monitoring and reporting for the evaluation of the ongoing practices and their outputs. Through steady revisions that almost lead to a cyclical behaviour, a suitable capacity building mechanism can be revealed.

3. ADAPTING HERITAGE STUDIES TO THE CAPACITY BUILDING FRAMEWORK

Heritage is essentially a social practice where related communities collectively value and give shape to their irreplaceable and ever-growing cultural accumulation. That being the case, building capacity for such a significant involvement, both as a fundamental right and responsibility, can be another complex and perplexing agenda in itself. To further interpret this complexity, two approaches proposed by prominent heritage institutions should be examined.

3.1. UNESCO's Perspective

In correspondence with the 5Cs[10] of the World Heritage Convention, capacity building is mentioned as "promoting the development of an effective capacity building mechanism for the understanding and implementation of the World Heritage Convention and related instruments." As a key objective to ensure success regarding the other four, this definition remains vague in many terms.

However, what this explanation tells us is that: By the end of 20th century, what needs to be initially developed was the mechanisms that build capacity within the context of conservation and management of cultural heritage. In the meantime, adopting general principles from the proposed methodologies and

[9] UNDP, 2008.

[10] Five strategic objectives: Credibility, Conservation, Communication, Capacity Building and Community. First four is mentioned in Budapest Declaration on World Heritage (UNESCO, 2002) while the fifth 'Community' is added in 2007.

re-evaluating broad implementations in the context of conservation as well as identifying existing issues have seemed to pave the way for following studies.

By 2011, World Heritage Committee declared two substantial paradigm shifts: stepping beyond training to adopt capacity building approach within a broader agenda and connecting this agenda for cultural and natural heritage.[11] Simultaneously, disaster risk reduction, sustainable tourism, heritage impact assessment, management effectiveness, involvement of related communities, strengthening legal and administrative frameworks, better awareness of the World Heritage Convention and better integration of World Heritage processes are listed as key themes for capacity building.

Three main target audiences are identified in this framework. These include practitioners -including individuals and groups who are directly involved in the conservation and management of heritage-, related institutions such as heritage organizations, NGOs, Advisory Bodies etc. and finally communities and networks (Table 1). The main goal is for all actors to become active, responsible and capable agents regarding conservation of cultural and natural heritage through various practices with diverse contemporary aspects.

Table 1. Target Audiences and Principle Learning Areas as Listed in World Heritage Capacity Building Strategy

Target Audiences for Capacity Building	***Principal Learning Areas***
Practitioners	• Implementation of the Convention • Conservation and management issues: planning, implementation and monitoring • Technical and scientific issues • Traditional conservation processes at the site level • Resource utilization and management
Institutions	• Legislative issues • Institutional frameworks/issues • Financial issues • Human resources • Knowledge
Communities and Networks	• Reciprocal benefits and linking with sustainable development and communities • Stewardship • Ongoing sustainability of traditional conservation processes • Communication / Interpretation

[11] World Heritage Capacity Building Strategy requested by UNESCO World Heritage Committee was adopted during 35th COM in Paris.

Within the scope of above-mentioned key themes, the areas that need to be strengthen derive from diverse aspects. In a participatory context, conservation, management, planning, implementation, technical and scientific issues as well as financial, legislative and regulatory ones, education, knowledge and various resources are involved within the list of principle learning areas. These areas in line with related target groups, aim to bridge the capacity gaps in World Heritage Properties with the help of global, regional and national strategies.

3.2. ICOMOS CIF's Perspective

International Council on Monuments and Sites International Training Committee (ICOMOS CIF) is a particular group of experts within the council that aim to promote international cooperation in the field of training and education in the protection, conservation.[12]

The first "Guidelines for Education and Training in the Conservation of Monuments, Ensembles and Sites" was adopted by the ICOMOS General Assembly in 1993 in Colombo, Sri Lanka. By 2013, another framework document was submitted by the Committee. It was called "Principles for Capacity Building through Education and Training in Safeguarding and Integrated Conservation of Cultural Heritage".[13] In line with the World Heritage Strategy, the change from Education and Training to Capacity Building was a reasonably foreseeable paradigm shift. Since the general understanding and perception has changed and the number of related heritage groups has increased, a broader perspective was needed. In this light, concepts like awareness, management, knowledge and skills, fundraising, building networks are also mentioned within the recent documents.[14]

[12] ICOMOS CIF's mission statement. URL-1, 2020.

[13] In the most recent document submitted by the committee, in order to maintain an integrated and holistic approach, "Natural Heritage" was directly added to the scope as well.

[14] ICOMOS CIF 2013, 2018.

Table 2. ICOMOS CIF's Capacity Building Practices for Target Audiences

General Target Groups	***Capacity Building Requirements***
Communities and the General Public	• Understanding the importance of heritage • Education and awareness • Improved management • Repair and maintenance knowledge and skills • Documentation and transfer of traditional knowledge
Non-Governmental Organizations	• Technical framework • Managerial framework • Fundraising • Institutional capacity • Communication skills
Governmental Authorities and Institutions	• Technical framework • Managerial framework • Fundraising • Administrative and institutional capacities • Communication skills
Property and Site Managers	• Elements of history and theory conservation • Knowledge of the heritage site and its context • Leadership skills regarding site planning • Management of conservation, maintenance and monitoring • Management of relations with communities
Conservation Project Managers/Leaders	• Specific qualification elements of the history of conservation • Technical characteristics of construction and methods of work • Programming of conservation activities and the implementation of projects • Knowledge of the materials, traditional and innovative proven techniques •Documentation of the works

The principles identify general target groups while broadly reviewing the capacity building requirements for each audience (Table 2). Following this, many specific professions including architects, planners, engineers, technicians and specialists are highlighted in a very detailed way as the roles and possible responsibilities of all actors are mentioned without diminishing. The needs and

suggested actions to fulfil them are quite elaborative and well defined in terms of improving their active role within the context.

Recent principles also offer four modules for different stakeholders and widen the horizon of previous education and training approach by involving alternative kinds of initiatives such as seminars, publications, manuals, videos, computer programs, podcasts along with hands on experiences and demonstrations. These practices combine both traditional and contemporary learning approaches and allow related groups to obtain new skills while benefitting from the opportunities of new technologies.

4. DISCUSSIONS ON LOCALITY AND CONTEXT

Having examined the general perspectives on capacity building, locality of the issue still offers an interesting case. It is a reasonable consensus that good capacity building practices share some common characteristics such as dealing with capacities at several layers, following holistic approaches, working with intersectoral partners and being adaptable to local conditions.[15] However, there is not a singular and well prescribed way for all circumstances, since an approach that is suitable and useful for one situation may well not work in another, so that specific capacities, needs and priorities must be articulated[16].

In other words, any capacity building processes may have situation and context specific elements that need to be taken into consideration carefully. They may be particular to the culture, time period, community and/or the place itself. Hence, what Kaplan[17] states explicitly with regards to organizational capacity is actually valid for all levels and dimensions:

a) even though they (organizations) may share similar features, each example/case is unique

b) while the framework may describe the elements of capacity or their togetherness, it cannot predict the change process definitely

c) the interplay between capacities may add to existing complexity and eccentricity

[15] Stiles Associates Inc, 2007.

[16] Bester, 2015.

[17] 2001.



Figure 2. Capacity Building and Its Alternative Associations

Accordingly, any related practices should specially be designed for the very occasion and its dynamics, with a semi-flexible content leading to multi-layered and pluralistic meaning-making scenarios without excluding any potential associations (Figure 2). Remembering Popper's famous clouds and clocks once again, providing such an inclusive structure that successfully keeps the balance with the principles of pioneering institutions becomes more compelling.

As mentioned earlier, the trickiest part of following UNDP's scheme is usually identifying the key capacity areas. Many institutions including The European Centre for Development Policy Management (ECDPM)[18], the World Bank Institute (WBI)[19] and UNDP[20] itself, suggest different capacity elements and indicators to measure these elements. Even though there is a slight possibility that these indicators can be used directly within the process, there are several occasions where key capacity areas are also quite specific to the subject and to the context that the subject is evaluated.

For instance, if capacity building is to be explored within the context of heritage in conjunction with community participation, then the process might undergo a dramatic change. As the key capacity areas would originate from sub-themes of

[18] Land et al. 2008.
[19] Otoo et al., 2009.
[20] 2005, 2008.

conservation, community participation and their intersection areas, regarding associations[21] will also be drastically different (Figure 3). The fact that it is possible to diversify this single situation through numerous examples forms an opinion about the general evaluation framework.



Figure 3. Capacity Building in the Context of Local Participation and Its Alternative Associations

Moreover, each identifying process will probably handle the issue with a different understanding. Just as each of these contexts has a group of potential actors with particular capacities, every setup may also bring along a very specific set of challenges and opportunities. In other words, every situation may introduce a variety of compositions, which await to be understood, interpreted, made measurable and perhaps most importantly, improvable.

It is particularly because, capacity building is about change and transformation, and consequently, necessitates culturally appropriate local solutions in addition to operationalization of the fundamental agenda to the particular mandate.[22] It is possible to say that existing/previous recommendations adopt a relatively upper-scale perspective and provide an overall understanding of the principles. However, as each context has its own specific requirements, the global approaches should be applied while being localized, adapted and specified at the same time.

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[21] These associations are identified by elaborative keyword scanning in reference documents on the subject within the scope of first author's ongoing doctoral research "Capacity Building and Local Participation in the Conservation of Multi-layered Cultural Heritage: Bergama (Pergamon) City", Supervisor: Prof. Dr. D. Binan.

[22] Pearson, 2011.

Various solutions and scenarios should be further developed for different alternatives.

For this reason, communities as well as their effective participation become the key elements for capacity building. Communities reflect values that do not feature in selective identification processes performed by experts, and moderation of top-down and bottom-up perceptions is, therefore, needed.[23] Local people, their dynamics, values and potentials that play a formative role in the process may ease overcoming the above-mentioned complications. In addition to ensuring the sustainability of communities and their values by taking local needs into consideration, empowering related groups with necessary skills and capabilities may also help experts with naturally expanding their existing understanding on the issue.

5. WHILE CONCLUDING

OECD[24] states that even though our experience on the subject have been deriving from a series of successful evaluations, this cumulative process of capacity building has been relatively slow. After nearly fifteen years of more experience, this argument still seems to be partly legitimate. Especially for new fields of capacity building, such as inclusive conservation of heritage sites with active participation of the regarding communities, the path seems to be long and compelling.

It is an undeniable fact that the pioneering efforts until today have absolutely been inspiring and encouraging. However, what is known about capacity building is still the tip of the iceberg compared to what can be discovered. Based on existing experiences, functional tools, which are able to overcome the current capacity gaps for the actors of different situations, can be developed. In order to achieve this, the current approach, which usually predetermines/pre-connects the target audience, key capacity areas and capacity building practices should be taken one step further.

In this sense, one of the most fundamental requirements is the successful implementation and particularization of capacity building frameworks for many study areas, including heritage studies. It is necessary to ensure that the existing knowledge and previous experiences are carefully integrated while a healthy balance between hard and soft edges of hybrid methodologies is maintained. As in many well-designed processes, there is a different mixture of various indicators that lead to success, unleashing future capacities becomes even more

[23] Rodwell, 2016.

[24] 2006.

significant. Accordingly, while importing fundamental principles from global practices or experts, locally oriented and place-specific paths should also be discovered. Especially for heritage sites and their effective conservation in the long run, just as for any other discipline, a functional guidance for capacity building should be nourished from the very environment, and the existing know-how should be blended with local expertise.

"The right approach" should, therefore, embrace all ends in a flexible, yet holistic manner. Highlighting the importance of community participation once again, building capacity on this basis may naturally result in developing an autonomous, self-sufficient and effective mechanism. A mechanism that can hopefully provide consistent outcomes in the long run and transform societies. Since it is an undeniable fact that capacity building and community participation are integral prospects of conservation, as well as all other disciplines, a healthy balance between the global scope and local needs should be established.

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