# CHANGING SOCIO-SPATIALITIES IN KADIKÖY, ISTANBUL: A CASE STUDY

**Aslı Ulubaş Hamurcu[1]** , Istanbul Technical University, Faculty of Architecture, Department of Urban and Regional Planning, Istanbul, Turkey

**Fatih Terzi** , Istanbul Technical University, Faculty of Architecture, Department of Urban and Regional Planning, Istanbul, Turkey

**This study aims to reveal the relationship between the social structure and urban pattern in a specified urban area by means of the socio-spatial dialectic. To understand the circumstances behind this dichotomy, analyses were conducted on two intertwined subjects – social structure and morphology – as part of a case study of the historical core of the Kadıköy district in Istanbul, Turkey. Based on the findings, some inferences, depending on the predefined social and morphological components, are made about changing socio-spatialities in the given place by means of time-space-society relations. The results show that each socio-cultural group brought their own culture and adapted their physical environment according to their basic needs, and that culture has a restrictive and explanatory effect on the formation of space. In addition, population growth and the adaptive capacity of society to external forces demanding change in the urban space also turn out to unavoidably affect the development scheme of the morphological character of the area.**

***Key words***: **socio-spatial change, urban morphology, spatial theory, Kadıköy, İstanbul.**

## INTRODUCTION

Urban planning is based on shaping the built and natural environment, in other words, it is based on shaping a place (Bayer *et al.*, 2010). A place can be any point in the universe, from the micro level – a table – to the macro level – a planet (Gieryn, 2000). It allows people to differentiate between being *in* or *out*, reaching *there* or moving from *here*. However, when it is the case of space, it is the result of an individual or a group of individuals interrupting a certain place. After determining the land uses, a place turns into space where human activities and transactions take place.

For Batty (1993), cities were, at first, artefacts which were designed by human-beings, where complex systems originated, developed, and changed. Afterwards, the foci shifted to the urban form, which was regarded to be the vital factor affecting human behaviour. Although the initial

material for urban planning was taken as the physical being of the city, the social dynamics that are concurrently shaping it have only started to be taken into consideration within recent years (Caner and Bölen, 2013).

Edward T. Hall (1969), the founder of *proxemics* theory, defined people's use of space as an expression of culture. For him, spatial organization based on social relations is a fact of culture, and its pattern differs from culture to culture as people from different cultures perceive space differently. As a result, they experience space and act in it differently. Accordingly, making assumptions about shared human experience will cause misunderstandings related to the cultural dimensions of space and its relations (Low, 2003). For this reason, while working on space, the cultural context should be read by starting from its historical roots and continuing with its traces on space. Thus, the palimpsest characteristic of space serves as a tool for digging each layer of socio-spatial development/change.

As with Hall, Alexander also regarded space as being a repercussion of culture: "It is invented by culture, transmitted by culture, and merely anchored in space" (1979, p. 92). Supporting this, for Rapoport, "the effect of site is cultural rather than physical, since the ideal site depends on the goals,

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[1] Istanbul Technical University, Faculty of Architecture, Department of Urban and Regional Planning
Harbiye Mah., Taşkışla Cad., No:2
34367 Şişli, İstanbul, Turkey
ulubas@itu.edu.tr

ideals, and values of a people or period, and choice of the 'good' site – whether lake, river, mountain, or coast – depends on this cultural definition" (1969, pp. 29-30). Culture, which is the primary causal factor, has a restrictive and descriptive effect on the formation of space, as "the physical setting provides the possibilities among which choices are made through the taboos, customs, and traditional ways of the culture. Even when the physical possibilities are numerous, the actual choices may be severely limited by the cultural matrix; this limitation may be the most typical aspect of the dwellings and settlements of a culture" (Rapoport, 1969, p. 47). Secondary and modifying factors are listed as climate, use of materials and technology.

Following these, with Edward Soja, the paradigm shifted from *space* itself to *spatiality*: the genesis of the socio-spatial dialectic. He defined space as being a "given contextual thing", but went a step further, adding the new concept of *social-based spatiality* that means: man-made space of social organization and production (Soja, 1989). In other words, "social relations of production are both space-forming and space-contingent". The reciprocal relationship or the balance between space and the individual is, therefore, based on people modifying the spaces they live in, and in turn being modified by them (Soja, 1980). Soja (1989) states that space, in terms of physicality, is pre-given; however, the organization and the meaning of space are man-made, resulting from a series of produced "social translation, transformation and experience". For these reasons, he proposed the analysis of urban areas in terms of their historical background (Beauregard, 2011), whereby he put "space first as the primary discursive and explanatory focus" of social studies (cited in Soja, 2010). For Soja (1980, 2010), people are *social*, *temporal* and *spatial*, and in return, space is an evolving material product of human action.

Moving from Soja to Michel de Certeau (1984), space gains new dimensions and is defined as a combination of direction, velocity and time variables. Thus, it is the combination of mobility and place, whereby mobile elements intersect, and place is a combination of elements where there is an order/rule defining a location according to the relative positions of these elements. Therefore, "space is a practiced place" which is an "instantaneous configuration of positions" based on its locality, which has a stable character.

For Alexander, what gives a *place* its character is the *pattern of events* taking place there. "Indeed, a culture always defines its pattern of events by referring to the names of the physical elements of space which are 'standard' in that culture" (1979, p. 71), which are actually inseparable. Each pattern of events is defined by the space itself. Therefore, to understand people's way of life, the elements of the space should first be investigated. Elements coming together fully construct the pattern, no matter the scale – whether building, neighbourhood or town. The general framework of these entities defines the *pattern language* of a place. This means that although each element has its own pattern, which may be different from the others, in the end together they formulate a general outline, the so-called language. Lively places are a result of life-generating deep patterns; therefore, it is important to find these out, as "the pattern in the space is, precisely, the precondition, the requirement,

which allows the pattern of events to happen" (1979, p. 92). Similar to Alexander, Marcuse (1993) defines this case as the *spatial pattern* whereby society is made of "relations of production, consumption, race, income, ethnicity or colour, gender, household composition, age and housing tenure", which are, hence, reflected in space.

With increasing importance given to socio-spatial processes that have helped us to understand the city, a transformation/change in urban planning has appeared, from being design-oriented to process-oriented, resulting in a search for the multi-dimensions of city space. Hence, space is no longer regarded as an independent variable (Abu-lughod, 1969), but it is assumed as having a direct link to society by means of social interactions.

Moving from this point of view, the aim of this study is to examine this close relationship between space and society in a particular place through morphological analysis, by referring to socio-spatiality. To begin with, different stages that have affected spatial theory are defined, and the changing emphasis in spatial theory is put forward to define the theoretical framework of the study. After that, the case-study area, the historical core of Kadıköy district in Istanbul, Turkey, is examined via its historical background, with the help of the socio-spatial dialectic. This study uses morphological analysis to define how this case area has changed physically in parallel with changes in society over time. As a result, some inferences are made depending on the predefined social and morphological components about changing socio-spatialities by means of time-space-society relations.

According to Alexander *et al.* "[p]eople need an identifiable spatial unit to belong to" (1977, p. 81). For Galster (2001, p. 2112), this spatial unit is the neighbourhood, and it is simply a "bundle of spatially based attributes associated with clusters of residences, sometimes in conjunction with other land uses", based on Lancaster's definition of "complex commodities as a multidimensional bundle comprised of simpler (albeit sometimes abstract) goods". The neighbourhood consists of structural, infrastructural, demographic, class status, tax/public service package, environmental, proximity, political, social-interactive and sentimental characteristics (Galster, 2001). Alexander declares that these elements give a neighbourhood its character (1979). All in all, a neighbourhood can be defined as the interaction between human behaviour and geography (Lee, 1968). For these reasons, the scale of the study is defined as a neighbourhood, which is also the 'identifiable spatial unit' of the study. Additionally, as Alexander *et al.* (1977, p. 49) explain, "... different subcultures need their own activities, their own environments. But subcultures not only need to be concentrated in space to allow for the concentration of the necessary activities. They also need to be concentrated so that one subculture does not dilute the next: indeed, from this point of view they not only need to be internally concentrated – but also physically separated from one another". By this model of concentration and separation, it is easy to follow the footsteps of different socio-cultural groups in urban space simply by looking for their traces on the physical environment. Thus, another aim of the study is to reveal the traces of different groups in the case-study area, in order to show the two-sided relation of the poles in the socio-spatial dialectic.

## DATA AND METHODOLOGY

In the nineteenth century, Kadıköy started becoming an important urban settlement with expanding territories. And today, it is one of the primary city centres in the Istanbul metropolitan region. The neighbourhoods of Caferağa, Osmanağa and Rasimpaşa, which make up the historical core of Kadıköy district, were specifically chosen for the research due to their palimpsest character of socio-spatial change. In addition, it is easy to track the process of change in society and space in Kadıköy through different periods of time, as it is documented in written and visual form. In this respect, the methodology mainly focuses on exploring the effect of social changes on the urban pattern, and it consists of three main parts (Figure 1).
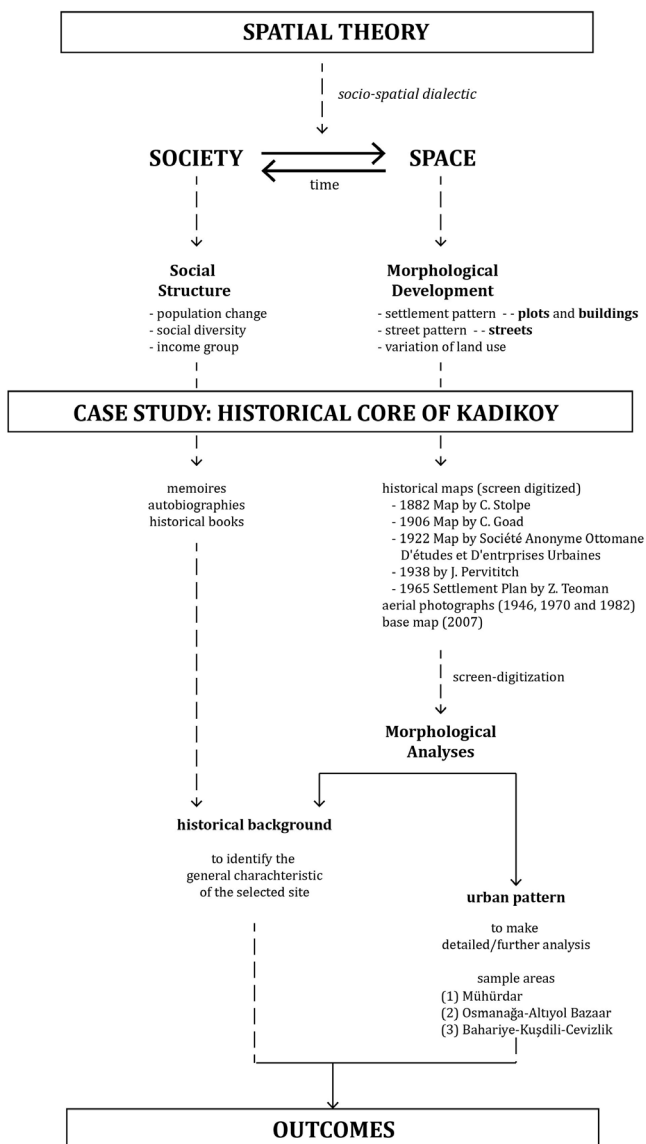


*Figure 1. Research framework*

Firstly, data and information about the historical background of the selected site in terms of its social structure and morphological development were gathered by means of a literature review. For both factors, certain components were defined depending on which data type could be found

and gathered continuously. With regard to social structure, *population change*, *social diversity* and *income group* were defined, whereas, for morphological development, these components were *settlement pattern*, *street pattern* and *variation of land use*. Then, the selected site was analysed under these two main topics. Changes in the social structure in terms of demographic and socio-economic factors were discovered in order to understand the social conjuncture of the selected site, in other words, the different archetypes within the society. Through the analysis of morphological development, changes in the physical structure of the selected site were determined by representing past and present situations. Finally, the selected site was evaluated based on the socio-spatial dialectic.

For the morphological analysis, first of all, visual data for the case-study area (Caferağa, Osmanağa, Rasimpaşa neighbourhoods) were gathered, namely, historical maps (1882 Map by C. Stolpe (Stolpe, 1882); 1906 Map by C. Goad (Goad, 1906a); 1922 Map by Société Anonyme Ottomane D'études et D'entrprises Urbaines (Société Anonyme Ottomane D'études et D'entrprises Urbaines, 1922); 1938 Map by J. Pervititch (Pervititch, 1938); 1965 Settlement Plan by Z. Teoman (Teoman, 1965)), aerial photographs (dated 1946, 1970 and 1982) (Istanbul Metropolitan Municipality, n.d.), and a 2007-dated base map. After that, historical maps and aerial photographs were screen digitized to create a common data type for analysing the urban pattern and its change through time. The 2007-dated base map was used to represent the current situation in the area as the urban pattern has not dramatically changed recently.

Using memory books (Aktunç, 2010; Gürpınar, 2009; Kavukçuoğlu, 2010, 2015) as primary sources, and then history books written on the area (Ekdal, 1997, 2004; Kütükçü, 2014; Türker, 2008), other books and research on Istanbul (Alus, 1995; Ayvazoğlu, 2011; Halıcı, 2008; Hızlan, 2011; Satan, 2012; Tuna, 2011), as well as webpages on the history of the area (Atılgan, n.d.; Biçer, 2013) and research on the urban renewal process (ÇEKÜL, 2014) as secondary sources, it was found that local names given to sub-regions have not changed over time. Thus, the district names in the 1938-dated original document by Pervititch are used.

Following this, detailed urban pattern analyses were made. For this, three sample areas were taken within the case area: (1) Mühürdar; (2) Osmanağa-Altıyol Bazaar; and (3) Bahariye-Kuşdili-Cevizlik (Figure 2). Comparisons between the sample areas and periods of time were made based on a 1906 map by C. Goad, a 1938 map by J. Pervititch, a 1982 aerial photograph and a 2007-dated base map. In order to systematize the data, three main layers of urban pattern (Kaya *et al.*, 2013) were selected - *buildings*, *plots* and *streets*. By means of figure-ground map analysis, changes in the general layout of the sample areas were revealed. After that, axial lines were drawn from the middle of each road, taking into consideration the road geometries. If the angle of a road changed, a node was placed there, standing for the change in the road geometry. Hence, *geometrical segments* and *nodes* were extracted. Following this, pre-defined geometrical nodes which represent the junction points were combined with new axial lines to ensure the straight links between them. These are called *topological*

*segments* and *nodes*. Hence, if a road is broken into several geometrical segments, it is now represented as one line named as topological segment. Therefore, those pre-existing geometrical nodes are removed, and the road geometry is simplified. Also, the general road pattern of the area was schematized with junctions (topological nodes) and axial lines (topological segments). These were used to analyse the morphological development of the sample areas in detail.

The reason behind choosing these sample areas is their differences in morphological character. Sample I exemplifies a typical grid pattern, whereas Sample II represents a loose grid pattern and Sample III represents an organic/cul-de-sac pattern. However, simply looking at these maps does not mean anything without knowing and understanding the social background. Therefore, it is important to go through history to reveal different layers that hosted different societies and resulted in a change in the urban pattern, and to make interpretations regarding this change.
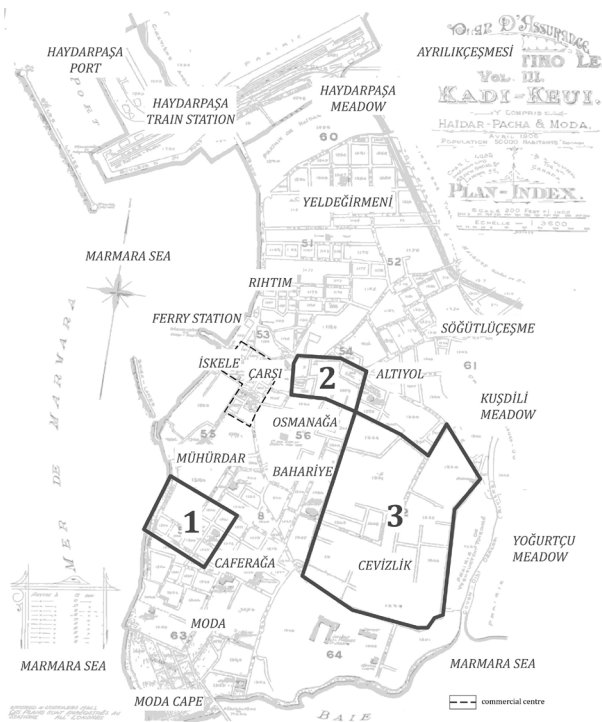


*Figure 2. Location of sample areas (prepared by using 1906 Map by C. Goad as base map)*
*(Source: Goad, 1906b)*

**CASE STUDY: UNDERSTANDING SOCIO-SPATIAL CHANGES IN THE HISTORICAL CORE OF KADIKÖY, ISTANBUL**

In order to understand the socio-spatial change in the historical core of Kadıköy, İstanbul in a comprehensive manner, the historical background of the selected site is delivered first. After that, the results of the morphological analyses are discussed so as to identify changes in the urban pattern with regard to the three sample areas with three distinct urban characteristics. To avoid certain repetitions, only morphological analyses and their specific links between the socio-cultural structure are referred to.

**Historical background of the selected site**

With the conquest of Constantinople, Halkedon came under the rule of the Ottoman Empire and was named after Kadı Köyü (Kadı Village, later on Kadıköy) (Kavukçuoğlu, 2010). In this period, Kadıköy was extremely popular with its summerhouses and excursion spots. Haydarpaşa and Kuşdili Meadows were the most popular spots. Hence, it was not surprising to see big palaces with vineyards and Turkish gardens built in the region at that time (Ayvazoğlu, 2011; Ekdal, 1997; Kütükçü, 2014). These mansions, palaces and *konak*s (traditional Turkish mansion) belonged to those from a higher socio-economic class of senior managers, factory owners, naval officers, generals, etc. and even sultans (Ekdal, 1997). However, Kadıköy was still one of the most important agricultural production centres on the Anatolian side of Istanbul. Until the end of the 1700s, the historical core of Kadıköy housed Greeks and Turks, mainly involved in agricultural production and fishing, living in organically scattered single-family houses with gardens (Ayvazoğlu, 2011). With new investments being made, Kadıköy started developing and attracting people from different socio-economic backgrounds (rather than just high-income groups, elites, and families of the bureaucratic class that dominated the area until the nineteenth century) as well as those from different cultures. Starting with the nineteenth century, Armenians and Jews settled down in the area. Following the political reforms made in 1839, Levantines started entering commercial and daily activities, and they preferred living in Kadıköy (Hızlan, 2011). Not only economically, but also culturally, they brought their lifestyle to the region, with open-air theatres, promenade activities, and European art deco style houses/mansions with gardens (Kavukçuoğlu, 2010, 2015; Kütükçü, 2014). Moda (south of Kadıköy's historical city centre), from this time onwards, became the most important and attractive spot in Kadıköy (Kavukçuoğlu, 2015; Kütükçü, 2014). Similarly, Jews who moved to Yeldeğirmeni (north of Kadıköy's historical city centre) constructed a synagogue and started living in this neighbourhood. They adapted their way of living and culture to this particular place, resulting in the emergence of the first apartment quarter in Istanbul (including *yahudhane*s - three to four storey apartments specific to Jewish culture, where each family lives on a different storey of the same apartment, sharing the same kitchen and the toilet, mostly inhabited by low income groups) (ÇEKÜL, 2014). Not only Jews, but also Germans working on the construction of the railroad and Haydarpaşa port facility chose this area for living. Osmangazi Primary School is one of the buildings that was built by Germans in this period in Yeldeğirmeni (Kavukçuoğlu, 2010). As a result, the social structure underwent a dramatic change, as the character of the settlement turned from being Muslim and Greek to a more heterogeneous and cosmopolitan composition (Figure 3).

Traces of these cultures can be easily read from housing typologies (Figure 4) and the variety of religious buildings (Catholic and Protestant churches, mosques, a synagogue) that are specific and unique to a socio-cultural group, and have mainly been constructed to point out the centre of each socio-cultural group. Street life was vivid: women chatting in front of the doors, and children playing games on the streets.
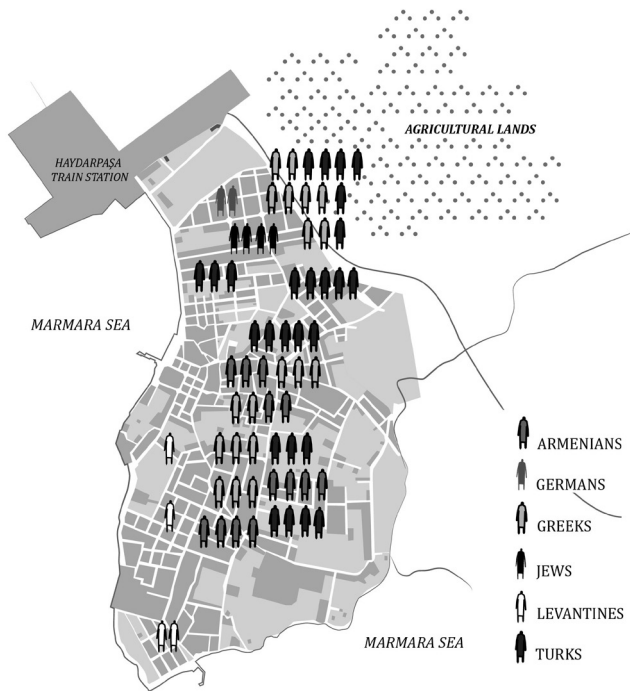
*Figure 3. Spatial differentiation in terms of socio-cultural groups by the end of the nineteenth century in Kadıköy (based on Kavukçuoğlu, 2010; drawn by the authors using Rojo's Man figure)*



*Figure 4. Examples of housing typologies from the selected site, which still exists today (a) an Armenian apartment – Demirciyan Apartment – in Yeldeğirmeni; (b) Greek houses in Caferağa; (c) a Jewish house in Yeldeğirmeni (source: Olgar, 2021); (d) a Levantine house in Moda; (e) a Turkish konak in Moda*

With the growth in population, there was a great need for areas to host the new and modern urban life that was being demanded. So, big fires that occurred in 1855/6 and 1878 were turned into an opportunity to plan and rebuild

the area (Kütükçü, 2014). The historical core of Kadıköy that still exists today can be dated back to the 1880s, as the fires in 1856 and 1878 resulted in the very first systematized urbanization movement. This can be defined as the first dramatic change in the urban pattern, because the commercial area (Çarşı), which acted as the centre of the district, had to be planned again, and a gridiron pattern was selected as the best way to initialize this goal. Not only did the central area where the commercial activities are located change, but also, most of the natural (meadows, coastal line and beaches) and semi-natural areas (agricultural lands, vineyards and orchards) were turned into either semi-urban or urban areas to house the increasing population; in addition, Kadıköy became a new city centre on the Anatolian side of Istanbul (Figure 5).

By the 1920s, with the impact of sea transport, which connected both sides of Istanbul, the coastal line between the port and the bazaar area kept developing so that beaches and orchards between these two important urban facilities were either turned into new housing or public areas. This movement can be regarded as the second breaking point for Kadıköy's socio-spatial change. The population kept increasing and the social structure was changing. In addition to Turks, Armenians, Greeks, Jews, and Levantines, Roman Catholics and Protestants, and Bulgarians were now living in this area (Akbulut, 1993, cited in Kütükçü, 2014, pp. 20-23). Kadıköy attracted the attention of the highly educated middle class and artists so that, depending on demand and force, the urbanization process gained pace. In this period, Kadıköy was regarded as a small European town with mansions, *konak*s with gardens, and coffeehouses where Turkish classical music was listened to (Kütükçü, 2014). During the Armistice Period, migration from Anatolia to Istanbul started, and ex-servicemen in particular moved into this area (Satan, 2012).

By the mid-1900s, the third dramatic wave of physical change appeared with the emergence of tremendous growth in the speed of constructing apartment blocks, either through demolishing the existing housing stock or through changing the type of land provision as a result of modernism. Following these, the area of plots and lots became smaller, supported by the development of new streets, in combination with the emergence of new public transport facilities and with the effect of changing technology from sea transport-based, railway-based or horse carriage-based transport to motorized transport used for travelling from residential spaces to working spaces. In other words, with the appearance of automobiles and increased car ownership for daily personal use, increasing inner/intracity mobility became a general trend. With the introduction of two important technological developments to residential units – electricity and telecommunications – the speed of urbanization increased. Following these trends, more and more people from high income groups with a higher education moved to Kadıköy, especially towards the Moda and Caferağa regions (Kütükçü, 2014). Although the multicultural, multilingual, multi-religious structure changed context, cosmopolitan culture still had a continuing character. However, this change had repercussions within the urban pattern, as the old neighbourhood structure and

its features began to disappear, leaving in their place multi-storey reinforced concrete buildings with a standardized urban pattern, called modern settlements of the new era.

As the old neighbourhood changed its physical structure with the impact of modernization, it also attracted new settlers who were potential workers in several economic activities. People migrated from Anatolia to Istanbul towards new urban areas that were under construction, to work either in construction or as doorkeepers. In addition, incidents in 1955 and 1964 resulted in Greeks being deported, thus causing a sudden change in the social conjuncture, which resulted in a big gap in trade/commercial and socio-cultural activities (Kavukçuoğlu, 2010). These gaps were filled by migrants from Anatolia. The restaurants located in Kadıköy previously owned by Greeks became traditional or orientalist restaurants owned by the newcomers from Anatolia (Satan, 2012). With the implementation of the Law of Property Ownership in 1965, the speed of construction of apartment blocks gained pace. Mansions, *konak*s, and houses within gardens were replaced by newly built apartment blocks (Satan, 2012). The houses left as a result of the population exchange became derelict and empty, so that the region was more and more dilapidated, which was the case in the central areas of most big cities. Vacant areas were filled with apartment blocks, not leaving any open space for the inhabitants to spend their leisure time or for their children to play games.

By the 2000s, the historical core of Kadıköy had undergone another transformation movement that was triggered by large-scale urban transportation projects and several urban renewal projects, resulting in Kadıköy becoming a transitionary place for travellers and a lively region housing young white-collar workers, students both foreign and local, foreigners and professionals from different sectors (ÇEKÜL, 2014). Thus, the cultural composition of Kadıköy experienced a huge renewal.

## Understanding the change in urban pattern

Only by looking at the general view can it be derived that there has been almost no change where there are gridiron and loose grid patterns (Samples I and II) (Figures 7 and 8), but it is obvious that the organic/cul-de-sac pattern (Sample III) (Figure 9) turned into a loose grid pattern, especially after the 1980s. Based on the literature review, the reason why the gridiron pattern in Sample I and loose grid pattern in Sample II did not change over time is that they were the very first settlement locations in Kadıköy's historical city centre, and so they did not undergo a dramatic change because they were intentionally planned in the 1800s, and they kept the same characteristics from that time onwards. It is also not surprising to find out that these areas were adopted by the same socio-cultural groups for several decades until the period of population exchange, and so they did not change much either in their physical or social context. However, similar to other parts of Kadıköy, changes in the urban pattern that came after the 1960s were merely related to the increasing population, and in terms of housing typologies, based on the socio-economic structure of the inhabitants, and their income-based demands for housing, or the affordability of housing stock. Since then, the social diversity in terms of ethnicity and religion has become almost homogeneous, and divergence has been in the form of subcultures based on economic, educational, political, and social backgrounds.

From figure-ground schemes, it can easily be observed that the inner courtyards of building blocks have been decreasing over time. Gardens and orchards are being replaced by new buildings, parking lots or hard surfaces for the leisure facilities of gated communities and similar uses (especially in the case of Sample I and Sample III), because of the demand for housing, the increasing number of people and the changing way of living.
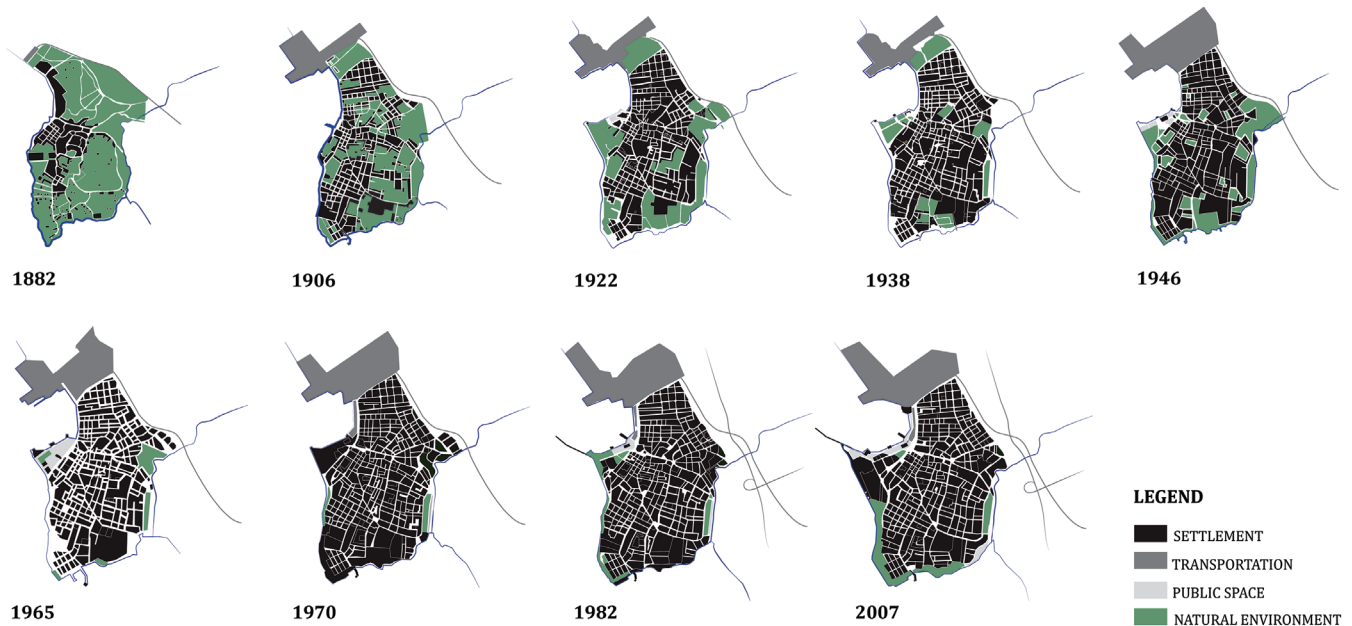


**1882**   **1906**   **1922**   **1938**   **1946**

**1965**   **1970**   **1982**   **2007**

**LEGEND**

■ SETTLEMENT
■ TRANSPORTATION
□ PUBLIC SPACE
■ NATURAL ENVIRONMENT

*Figure 5. Change in the urban pattern in Kadıköy between 1882 and 2007*

| | | | 1850s | 1920s | 1950s | 1980s | 2000s |
|---|---|---|---|---|---|---|---|
| **SOCIAL STRUCTURE** | **SOCIAL DIVERSITY** | | GREEKS TURKS | ARMENIANS GERMANS GREEKS JEWS LEVANTINES TURKS | ARMENIANS BULGARIANS CATHOLIC LATIN AND PROTESTANTS GERMANS GREEKS JEWS LEVANTINES TURKS | ARMENIANS BULGARIANS CATHOLIC LATIN AND PROTESTANTS GREEKS JEWS LEVANTINES TURKS | ARMENIANS BULGARIANS CATHOLIC LATIN AND PROTESTANTS GREEKS JEWS LEVANTINES TURKS |
| | **INCOME GROUP** | | LOW MIDDLE HIGH | LOW MIDDLE HIGH | LOW MIDDLE HIGH | LOW MIDDLE HIGH | LOW MIDDLE HIGH |
| **MORPHOLOGICAL DEVELOPMENT** | **URBAN PATTERN** | **BUILDINGS** | HOUSING | HOUSING COMMERCIAL | HOUSING COMMERCIAL PUBLIC | HOUSING COMMERCIAL PUBLIC | HOUSING COMMERCIAL PUBLIC |
| | | **PLOTS** | UNCLEAR | DEFINED | DEFINED | WELL-DEFINED | WELL-DEFINED |
| | | **STREETS** | ORGANIC | ORGANIC LOOSE GRID GRIDIRON | ORGANIC LOOSE GRID GRIDIRON | ORGANIC LOOSE GRID GRIDIRON | LOOSE GRID GRIDIRON |
| | **HOUSING TYPOLOGY** | | SINGLE FAMILY HOUSES KONAKS MANSIONS PALACES | SINGLE FAMILY HOUSES KONAKS MANSIONS PALACES YAHUDHANE | SINGLE FAMILY HOUSES KONAKS MANSIONS YAHUDHANE APARTMENTS | SINGLE FAMILY HOUSES KONAKS MANSIONS YAHUDHANE APARTMENTS | SINGLE FAMILY HOUSES KONAKS MANSIONS YAHUDHANE APARTMENTS |

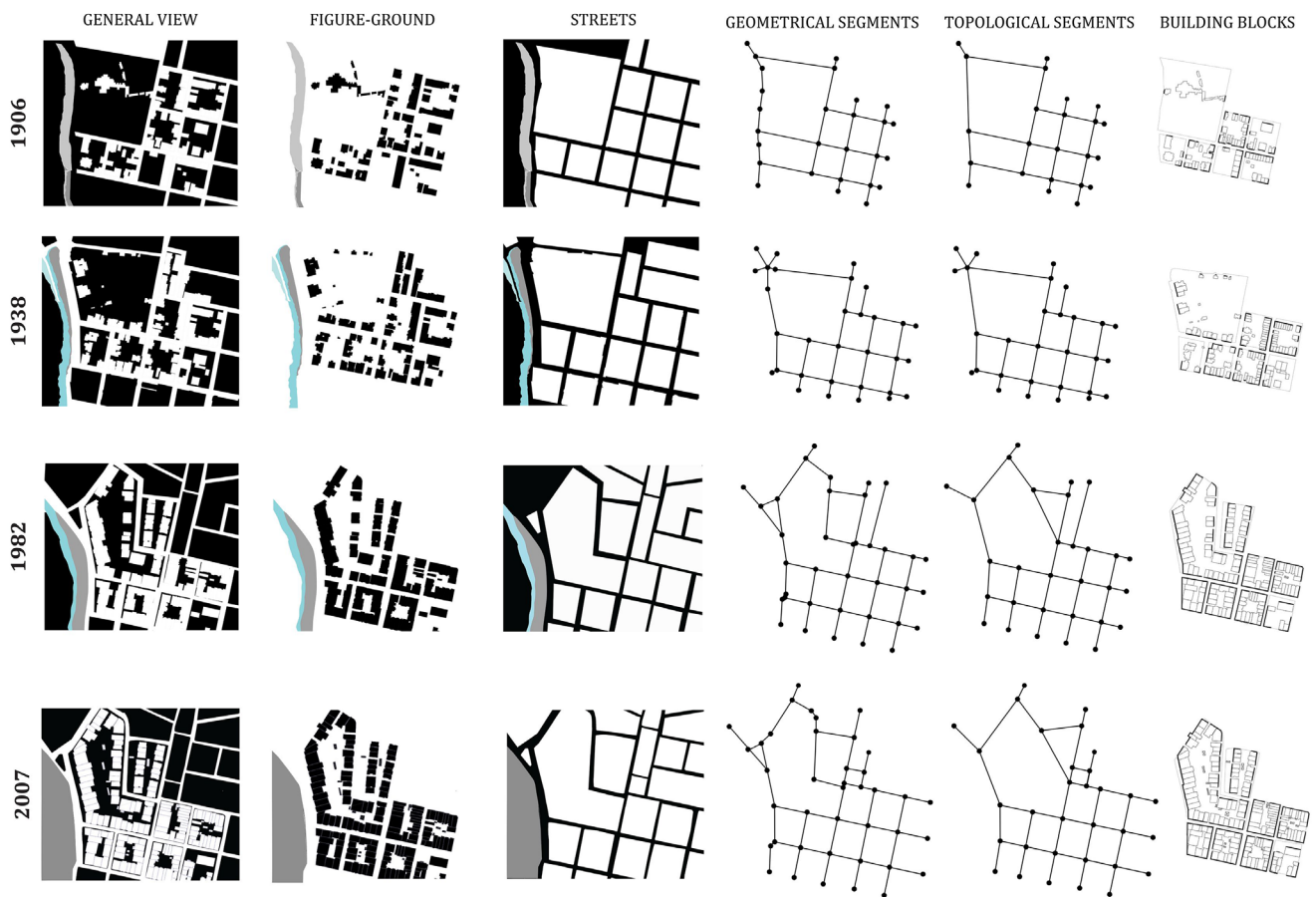*Figure 6. Summary of socio-spatial change in the historical core of Kadıköy*



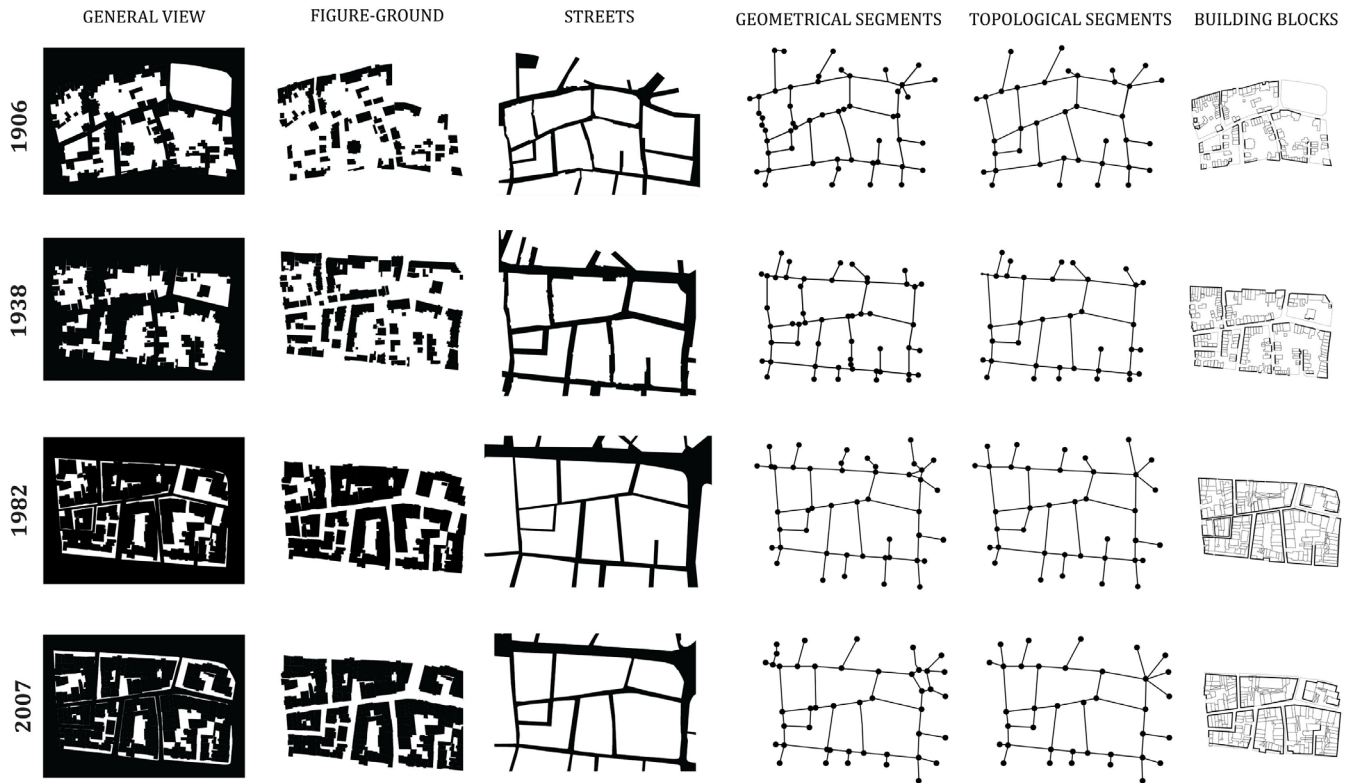*Figure 7. Sample I/ Mühürdar - Change in the urban pattern over a hundred years*

*Figure 8. Sample II/ Osmanağa-Altıyol Bazaar - Change in the urban pattern over a hundred years*

In detail, it was calculated that, in 1938, the number of buildings in Sample I increased by 57.1%, however, this rate decreased suddenly to 13.2% in 1982 and then rose to 15.3% in 2007. As can be observed from Figure 7, the plot in the upper north-west side of the area was dominated by a group of buildings in 1906. By 1938, this group of buildings had disappeared, and the plot started to be filled by new attached housing units, which defined its outline because they were aligned with the plot's border, similar to the rest of the area. In 1982, this plot was divided into two by the construction of a new road and was filled up with new buildings following the same pattern of attached housing typology. However, as the borders of the existing plots were already well-defined, there was little space left for construction, explaining the sudden decrease after 1938.

Similarly in Sample III, the rate of increase in the number of buildings between 1906 and 1938 was 253.5% followed by an abrupt decrease to 6.8% for 1982 and then 11.4% for 2007. When examined in detail, in 1906, the area was dominated by scattered self-standing buildings. The borders of the plots were not defined by the buildings, but rather by the road network. In 1938, the plots in the north and south-western parts of the area started to be defined by the newly constructed buildings (both attached and detached) and the road network started to become apparent in these areas. In 1982, although the increase in the number of buildings was 6.8%, most of the area was filled with attached buildings, revealing the road network and the plot geometries of the whole area. However, in contrast to Sample I, the reason behind this was related to the building floor ratios. Although the number of buildings did not increase dramatically, the

floor ratios of the buildings increased, and the plots were being filled. In 2007, most of the vacant land in private property was filled with new buildings.

In Sample II, the number of buildings increased by 59.7% between 1906 and 1938, but decreased by 62.6% by 1982 and only increased by 13.4% by 2007. The main reason behind this was similar to the case in Sample II, since between 1906 and 1938, plots were rapidly being filled with new buildings, though by 1982 the floor ratios of these buildings were getting larger and they were replacing the previous buildings. The pattern was almost the same until 2007, but new buildings had been added by this time. It can also be seen that the dominant housing typology was again attached buildings. In the case of Sample II, the distinguishing ratios of the floor areas of the buildings were related to the land use, as these buildings were used for commercial and service activities.

In general, it can be inferred that in residential areas like Sample I and Sample III, the plot sizes became smaller and the number of buildings per plot kept increasing. However, in commercial areas like in Sample II, the trend was the opposite. When compared in terms of the change in social structure, in Sample I, where the relatives of the former residents continue living, it is possible to follow the same pattern of building blocks, because mansions, palaces and *konak*s were directly replaced by apartment blocks. On the other hand, for Sample III, the case is quite different. This area is more of an example of rural-to-urban transformation because of the need for new housing stock. Finally, in the case of Sample II, it can be easily concluded that the main reason behind the change in building blocks
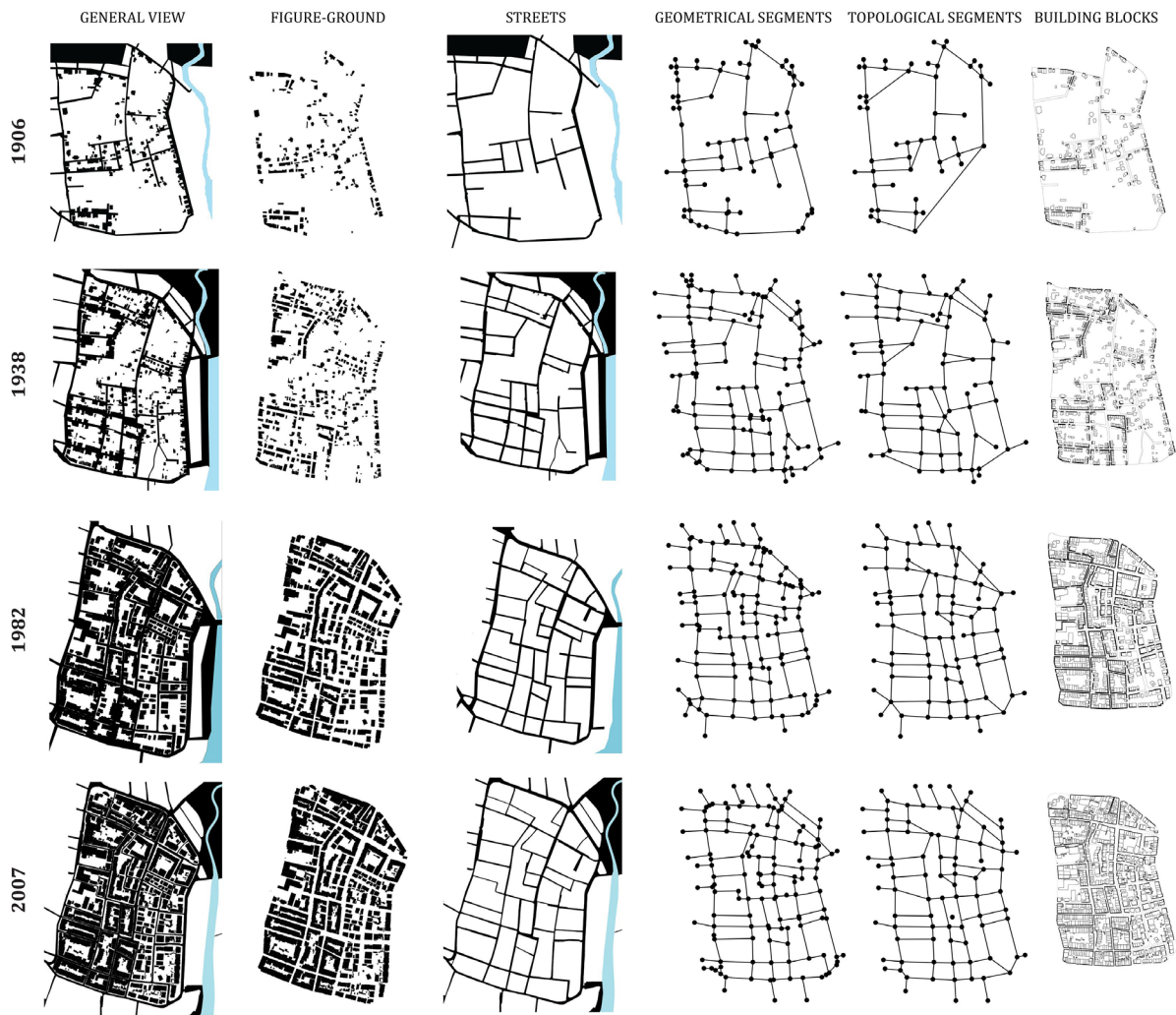
*Figure 9. Sample III/Bahariye-Kuşdili-Cevizlik - Change in the urban pattern over a hundred years*

is its location being close to the historical bazaar, and the influx of commercial activities replacing housing – and the social structure – in this transitionary place. Thus, in terms of change in the variation of land use, it can be concluded that Sample I and Sample III show a consistent character of being a residential area dominated by housing units from the 1900s to the present. However, it is also possible to see mixed land use (working areas mainly commercial areas and service sector) in these areas as a result of the increasing population. In contrast to Sample I and Sample III, Sample II represents a different process of change in the variation of land use. The area was first a residential area then it became a mixed-use area with the development and the dominance of the commercial centre (Çarşı). And finally, it turned into a commercial area as a part of the sprawl of the commercial centre into adjacent areas.

In terms of street pattern, it can be seen that the road network in Sample I and Sample II did not change dramatically, but in Sample III cul-de-sacs merged with the main roads and new roads were added to the existing road network. The street pattern became more orthogonal, enabling certain speed levels for motorized transport within the neighbourhoods. It is obvious that this was the start of a new period.

In general, in Sample I, almost no change in the general layout of the street pattern can be observed. The differences between the number of geometrical and topological segments, and geometrical and topological nodes are very low for all time periods. In 1938, this difference decreased by 50% (for both), and surprisingly, it multiplied by three in 1982. As seen in Figure 7 in detail, the road on the western outskirts of the area in a north-south direction was developed to make it straighter. Apart from this, the general layout of the area was kept constant. However, in 1982, a sudden change in the layout of the road network can be observed. New road segments were added to the upper north-western plot and the geometry of the roads changed, explaining the increase by 300% for 1982. In 2007, the difference between the geometrical and topological segments increased by only a third, which represents the street pattern in its most recent form. In general, the number of geometrical nodes increased by thirteen units between 1906 and 2007, and the number of topological nodes increased by nine units, parallel with the development of road geometry and additional roads. The difference between geometrical and topological nodes – which is equal to four units – also shows a slight change in street pattern from 1906 to 2007.
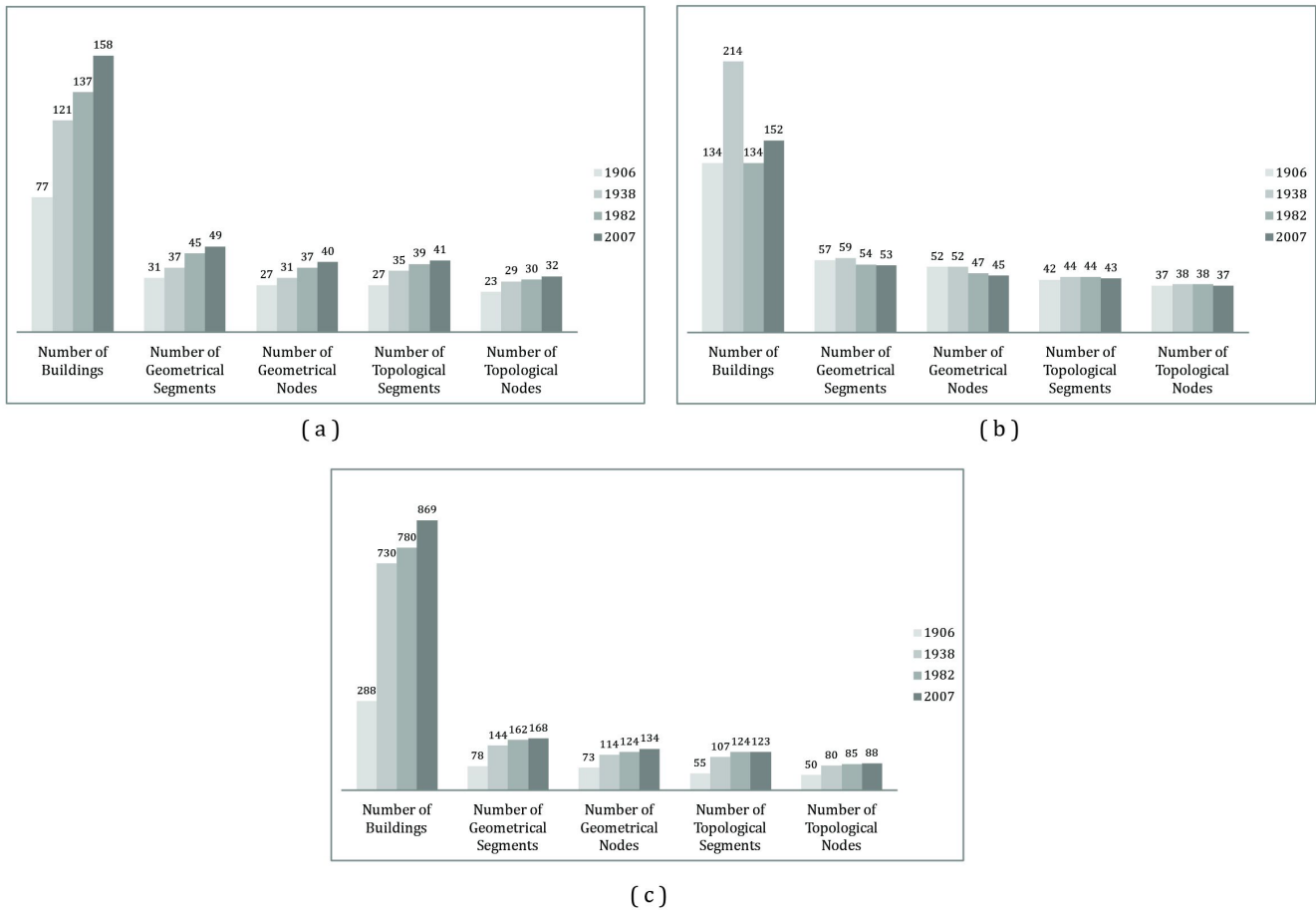
( a )



( b )



( c )

*Figure 10. Comparison of the changes in the parameters of selected urban patterns ((a) Sample I; (b) Sample II; (c) Sample III)*

For Sample II, the scheme for developing a street pattern is different to that of Sample I. By looking at Figure 8, it can be seen that the area did not undergo a dramatic change in terms of the general layout of the street pattern. However, a detailed examination shows that the road geometries and the connections with the surrounding areas changed from 1906 to 2007. For 1906 and 1938, the difference between the number of geometrical and topological segments was fifteen units, though the increase in the number of geometrical and topological segments was only two units. In 1982, the number of geometrical segments decreased by five units, but the number of topological segments was the same as in 1938. Finally, in 2007, both the number of geometrical and topological segments decreased by one unit, and the difference between them was ten units. On the other hand, the number of geometrical nodes decreased by thirteen units though the number of topological nodes in 1906 and 2007 was the same. This shows that the junctions were kept constant, but instead the road geometries were developed.

Lastly, in the case of Sample III, following the development of the area, the street pattern also changed dramatically between the years 1906 and 1938. The number of geometrical segments increased by 84.6%, and the difference between the geometrical and topological segments increased from twenty-three to thirty-seven. Although the general layout of the road network changed, the number of geometrical segments only increased by 12.5%

between 1938 and 1982, and 3.7% from 1982 to 2007. However, when the difference between the geometrical and topological segments is examined, the results show that the difference between them is forty-five units in 2007, which is the highest number reached. In terms of the number of geometrical nodes, it can be concluded that the number almost doubled from 1906 to 2007, but the number of topological nodes increased by 76%.

All in all, the results show that the difference between geometrical and topological segments also indicates a difference between the street patterns, in other words the spatial typologies. In the case of Sample I, which is a typical gridiron pattern, the difference is very small, however, when it becomes a loose grid pattern, as in Sample II, this difference starts to increase and it reaches its peak when the area shows a development from an organic/cul-de-sac pattern to a loose grid, like in Sample III.

**DISCUSSION AND CONCLUSION**

Changing socio-spatialities and understanding the circumstances behind them reveal important aspects of urban development. Hence, it is quintessential to look for the relationship between social structure and morphology. To do so, an evaluation of socio-spatial changes in the selected site was made by giving references to these two aspects. A critical research limitation was that specific information about ethnicity or religion along with the socio-economic

structure was not available as statistical records or kept as systematic data recordings. Therefore, this problem had to be remedied to a great extent using primary and secondary sources.

The research findings show a direct relationship between social structure and morphology as supposed by the socio-spatial dialectic. It can be easily seen that each socio-cultural group brought their own culture and adapted their physical environment according to their basic needs. When observed in detail, Levantines and Jews in particular created their own visually and physically distinguishable territories as a part of a concentration and separation model. On the other hand, Turks, Greeks and Armenians were living together without showing any specific concentration and separation patterns. Levantine and Jewish settlements were also distinct with their gridiron plan. Armenians, Greeks, and Turks lived in a more organically developed physical environment. However, in terms of the architectural style of buildings and housing, each group did carry its own unique style that made it easy to distinguish between them.

Population growth can be taken as another important factor with regard to changes in the urban pattern. With the increase in population, urban plots got denser, losing green areas to high-rise apartment blocks that hosted more and more people. Modernism, motorization, and the emergence of new areas of work can also be listed as major external factors of change in urban patterns. The variation of land use diverged because of new working spaces for the commercial and service sectors. Parallel to these, road geometries changed explicitly, especially from an organic to a loose grid pattern, enabling more access and connection in-between urban areas.

This overall change resulted in the need to adapt the manner of the society to the new circumstances. High-income groups were among those who could adapt to these changes much more quickly and easily and continue holding the place they owned within the urban space. However, for low-income groups, this process was not that easy, so they tried to adapt their living culture to the area. Therefore, they were regarded as a factor of change in the selected site as both a social and physical entity.

Discussions on the definition of space made in recent years reveals the fact that the issue of culture has become increasingly prominent. It is believed that culture has a great influence on the (re)formation and characterization of space. Depending on the values of the people, culture plays a critical role in the change of space and it has a restrictive and explanatory effect on the formation of space. As seen from the case study, change in the socio-demographic and cultural structure is the dominant reason for the change in a neighbourhood's character, spatial features and morphological structure. Though the cultural structure changes, it continues to be *space-forming* and *space-contingent*.

The interaction of individuals with each other, the periodic features in the historical process and their interaction with space have highlighted the socio-spatiality concept, which underlines the importance of space that is developed through the actions of individuals and communities. Factors such as meaning, mobility and the need for space that individuals place on the space are important in terms of understanding the concept of socio-spatiality. These elements are closely related to social, economic, demographic, and cultural change, which are important indicators of social change and which deeply affect the urban space and urban pattern. Although it has not been tested in this study, new generations' changing *values*, *lifestyles,* and *individual preferences to communicate with each other* will be increasingly effective in changing the urban space and urban pattern in the near future.

According to the socio-spatial dialectic, a social entity creates its own physical entity, and in return, the created physical entity influences the social entity, constructing a two-sided pendulum. The dominating character of social structure upon (urban) space is inevitable, as space is nothing without the meaning, or role, assigned to it by people. On the other hand, (urban) space is regarded as a *modifier* of one's social entity in return. Though the socio-cultural background is changing, space is still being reused and refunctioned according to new social systems. This variety nourishes the socio-spatial dialectic and makes it valuable to investigate.

### *ORCID*

Aslı Ulubaş Hamurcu https://orcid.org/0000-0003-3043-5091

Fatih Terzi https://orcid.org/0000-0002-1292-576X

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