



Analysis of Urban Morphology in Urban Settlement (Kuzguncuk Neighborhood)

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ABSTRACT

The study of urban morphology between concept and application has an important role in the formation and knowledge of the development of cities and the stages of change that the city has undergone through different periods and the application of theoretical concepts that are interested in studying the urban morphology of the city, that urban morphology focuses on the studying of the processes of formation and transformation of the urban form based on its historical development, that is, different time stages will be chosen to study the region. With its contents of concepts such as urban form and theories of place, and thus aims to study the region and the factors that affected its urban form over different periods.

This study sheds light on the site area (Kuzguncuk) to study and analyze the urban form of the neighborhood, historical core through four different time stages (1922, 1982, 2005, 2021), and the information collected by the researcher on the study area as a result of visits, field surveys, and information available in Uskudar Municipality was used, produced, and arranged. Within the maps that facilitate understanding and study and the use of geographic information systems in the production of maps, where in the end, the study came out with the development of the most important conclusions and discussions about the urban form of the time zone during the elected periods. Interest in such studies to know the variables that occur in the city and the factors that affected it, to the reality of the case of the elected study area in the reasons for changing historical neighborhoods over time.

Keywords:

Urban Morphology, Urban Fabric, Historical Settlement, Urban Form, Kuzguncuk, Uskudar

Problem Definition

For the purpose of understanding the historical city's evolution over time, examining its physical elements that support its buildings and activities, and explicating its identity and affiliation, it is important to examine historical

neighborhoods and their architectural heritage through the different morphological periods.

The Aim of the Study

In order to study and analyze the Particular phasis on the historical analysis of the evolution and transformation of urban forms.

The research aims to answer the following questions:

1. **What types of land uses have a long service life and why?**
2. **How flexible is the existing form to adapt to new needs?**
3. **Are the features of the existing form also a standard for new buildings and activities?**
4. **What are the uses of the land and the type of activities? As well as a few aspects that urban morphologists deal with**

The study aims to focus on the study of Kuzguncuk in different periods (four periods) 1922, 1982, 2005, and 2021, it achieves the research tools and answers the questions posed by the research. The reason for selecting four different time periods, which are 1922, 1982, 2005, and 2021, is to provide data and information about the study area for those years and to study the urban form and analyze the morphological stages of the city during those periods.

Urban Morphology

It can be defined as studying the spatial structure and physical elements of neighborhoods or cities, also villages by analysis of the patterns of their element's anthers development processes one of the topics in urban morphology is research and literature on the phrase "urban form." Social, economic, and political linkages all have an impact on city creation, but there is a cyclical relationship. Social, economic, and political concerns may all be influenced by urban form. There is a plethora of material on urban morphology and planning theory in architectural literature. The initial debate was sparked by urban utopias, which also developed as answers to urban social and economic issues. The Garden Cities of Howard in 1898 were the ideal cities of urban utopias (Le Corbusier Ville Radieuse, 1929, Wrights Broadacres 1945).

Urban Form

A city's physical characteristics, such as its natural features, transit corridors, open space, public amenities, activity centers, and other focal points, are referred to as its "urban form,"

which is defined as the patterns of building height and development intensity. Cities may emerge spontaneously from villages, just like trees do. Non-geometric forms are the consequence of gradual modifications that occur in tandem with life in general (Kostof, 1991:44). Medieval and Islamic towns in the same time period are characterized by non-geometric organic shapes and patterns. Kostof defines an unplanned city as one that has "grown," "produced," or "geomorphic" characteristics. The general layout is created without the involvement of designers, but rather by the consequences of inhabitants' daily lives. The following are the basic properties of irregular, non-geometric, and organic structures (Curved roads, Various open spaces, and Unpredictable or random angles). Lynch offers a normative model in categorizing the shape of cities normative models are defined as (Cosmic Model, Practical Model, and Organic Model). The cosmic model has a sacred significance since it dictates how the universe and gods are interpreted. A monumental axis, enclosure, protected gates, conspicuous landmarks, and a regular grid characterize the cosmic city. (Lynch, 1984:66).

Urban Fabric

A city's urban fabric is made up of all the built-up areas we generate for habitation, employment, and leisure. It consists of buildings, public spaces, and infrastructure. The opportunities for transportation that are available in a city tend to affect urban fabric, and these can be explained in terms of the Theory of Urban fabric (Newman et al. 2016).

Case Study (Kuzguncuk)

Settlement History

Kuzguncuk is a quarter connected to the neighborhood of Uskudar, a district with rich historical background on the Anatolian side of Istanbul. It is situated on the slopes of Bosphorus, the area is a valley and has an important connection line, Icadiye Street that passed through the district in the middle. With 20th-century apartments and terraces with old wooden houses mixed in the area, Icadiye Street reaches to the seaside, where "yalis" - traditional Ottoman mansions - are present. Kuzguncuk is one of the oldest quarters in

Istanbul, and it was the first Jewish settlement area on the Anatolian side. The site was considered sacred by the religious community, as after European grounds, Kuzguncuk was the last place with a land connection to Jerusalem. The religious importance of the quarter was one of the main reasons for immigration to the site, and in 1618, due to a plague outbreak in Galata, people started to move to further neighborhoods around, Kuzguncuk being one of them. In writing "1794" it is written that Kuzguncuk not only had a Jewish community but it had different minorities living together such as Armenians, Greek and Rumi's. In this era, the population consists of mostly Jewish merchants, businessmen that work for the government's people, and "pashas". The community was in peace, and it consists of different minorities living together. In the archive "Esâmi-i Mahâllat"(1876-77) it is written that in Kuzguncuk there were 203 units in the neighborhood, and in 1914, the residents of the district were documented as 70 Muslims, 250 Rumi, 1600 Armenian (including the neighborhood İcadiye), 400 Jew and four foreigners. 91 After the Turkish Republic had been formed, the structure of the region changed as the minorities started to leave the neighborhood. The out-migration began in a small scale at the end of the First World War. Considering the struggles of the country with the establishment of the Turkish Republic and the Second World War providing a suitable environment for the formation of the State of Israel, most of the foreign families left the quarter. (Akin, 1999). In 1933 the population of the neighborhood was 4000, and 90% of it was non-Muslim. These Jewish, Rumi, and Armenian

families went abroad or decided to get closer to the city center, so they left Kuzguncuk. The immigration of minorities was considered as an opportunity for people from the Black Sea region, as the neighborhood was not occupant anymore and thus Kuzguncuk started to have high migration rates. Recent settlers mostly bought houses from the minorities that left the zone, and some of the families moved into abandoned buildings (Sezer, 2008). In 2004, from the population of 5940, only 1% of them were Christians, and 0,5% of them were Jewish. The neighborhood is well-known for its diverse background and mixture of cultures. Minorities used to live in peace with each other without any judgment on religion or race. (Mills, 2004)

Site Location

At the beginning, we define the location of the city in which (Kuzguncuk) neighborhood is located, that we will apply the research methodology. Üsküdar is one of Istanbul cities located in the central parts, the latitude of Üsküdar, Istanbul is 41.032921, and the longitude is 29.032669 and its geographic coordinates system are 41° 1' 58.5156" N and 29° 1' 57.6084" E. Üsküdar is located on Asian side of Istanbul and the Bosphorus Strait see figure (1), It also is an ancient Greek settlement known as Skutari, There is a diversity of land uses and activities such as Residential , many parks, commercial , gardens and green area, in addition religion (mosques and event churches), as well as other attractions in Üsküdar. The district is well connected with other parts of the city by buses, minibuses, ferry, and metro. There is a large Armenian community living in Üsküdar, including the artists and some cultural activists.

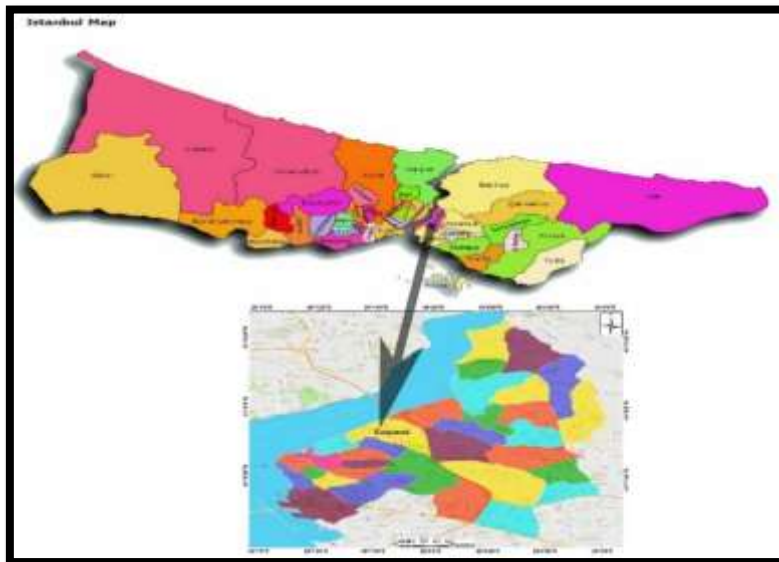


Fig 1 Map Shown Uskudar Location According to Istanbul
Source By ALLAMI Create by Paintmap.Com

Kuzguncuk is one of the neighborhoods of Uskudar Municipality, it is considered one of the coastal neighborhoods located extend on the side of the Bosphorus, the latitude of Kuzguncuk,

is 41, and the longitude is 29 and its geographic coordinates system 41° 2' 12" N and 29° 1' 47" E. See figure 2



Fig 2 Map Shown Kuzguncuk Neighborhood Boundary
Source: Prepared by GIS 10.7 Based on Uskudar Municipality Data

Physical Analyses / The Morphology of Kuzguncuk

The physical elements of the neighborhood, are described in this section elaborating on the urban fabric and urban form, and according to

the information we obtained and organized in maps and as follows:

Lands Use Analysis of Kuzguncuk

Under this subject, we can find descriptions of the physical characteristics or elements of urban areas that is the neighborhood. This

includes the lands use variety, area of land uses, and activities. This topic includes a study of existing land uses in the study area in 2021, and through the data reached by the researcher

from the Municipality of Uskudar and survey collect data, the researcher was able to prepare a map based on geographic information systems, which are explained as follows:

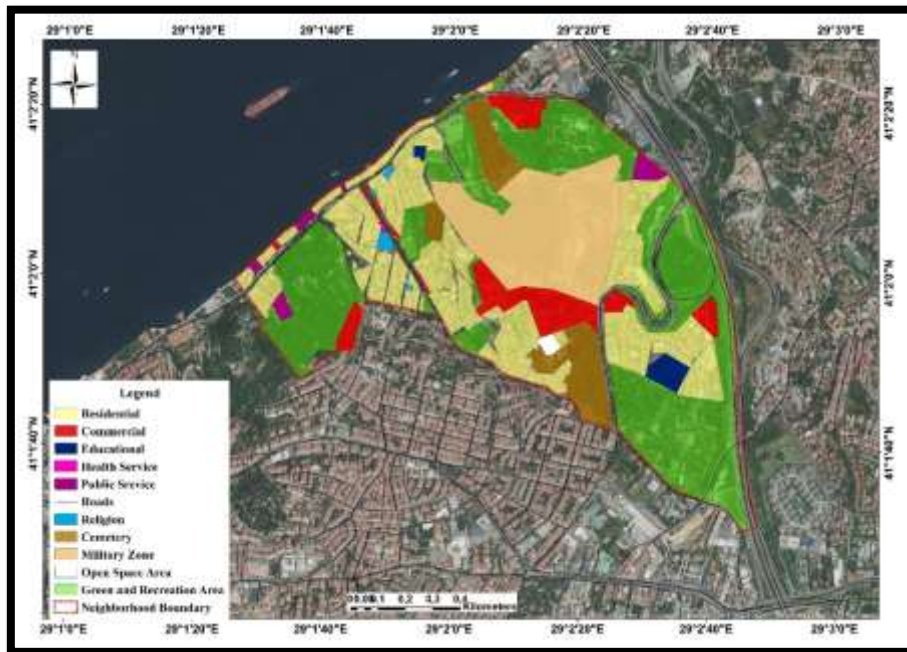


Fig 3 Map Shown Kuzguncuk Existing Lands Use 2022

Source: Prepared by GIS 10.7 Based on Uskudar Municipality Data

In Figure (3) we can focus on the land use classification shown in the map legend there is a variety of activities and land use types (residential, commercial, religious, educational,

and public service such as municipality service and roads...etc.), through geographic information system we can calculate land use area as the following table:

Figure 4 Kuzguncuk lands use area calculated in hectares

| no | Land use | Area (hectare) | Percentage % |
|----|-----------------------------------|----------------|--------------|
| 1 | Residential | 35.18 | 23.3 |
| 2 | Commercial | 11.24 | 7.5 |
| 3 | Educational | 1.55 | 1.03 |
| 4 | Green and recreation area | 56.21 | 37.3 |
| 5 | Religion | 0.51 | 1 |
| 6 | Cemetery | 9.52 | 6.30 |
| 7 | Open space area | 0.4 | 0.24 |
| 8 | Military zone | 23.44 | 15 |
| 9 | Health service | 0.03 | 0.02 |
| 10 | Public service | 1.67 | 1.11 |
| 11 | Roads | 10.85 | 7.20 |
| 12 | Site area (neighborhood boundary) | 150.60 | 100 |

Source by Author created by GIS 10.7 Based on Uskudar Municipality data

Through the table showing the areas and percentages of land uses within the boundaries

of the neighborhood, we note that the highest percentage in the table is for land use allocated

for green and recreational areas, reaching 37.3%. It is the residential use, where it reached 23.3%, followed by the 15% allocated to military areas, out of the total area of the neighborhood of 150.60 hectares. The study area, through analysis, is characterized by the fact that it includes large green spaces, which are divided into recreational areas and other, gardens, in addition to spaces, where the neighborhood is distinguished by its natural characteristics and is one of the preserved areas, so the residential use comes in the second place. Through the following figure (5),

we can notice the historical core of the neighborhood on the upper part of Kuzguncuk neighborhood we can notice Nakkas cemetery which was founded in 1973, Along that extends on both sides of Icadye Street, we notice the historical core of the neighborhood, In the lower part of the neighborhood we notice the cemetery of the Jews, as it was mentioned in this research that the neighborhood included a mixed number of Jews and Muslims, and due to the immigration of Jews, the area retained the ancient historical places. See Figure (5)

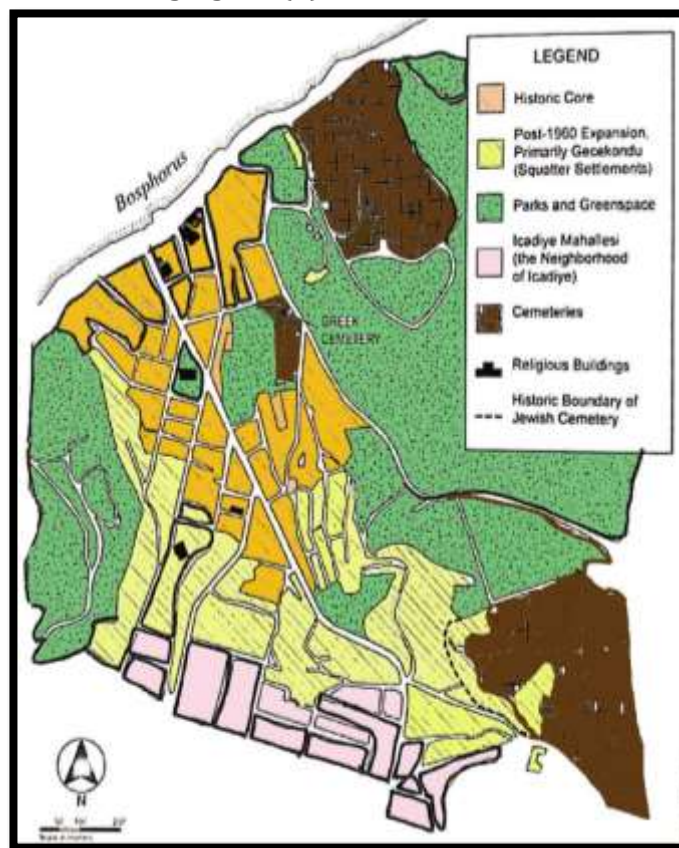


Figure 5 shown Kuzguncuk historical core and settlement

Source: Prepared Based on (Amy,2004: 31)

From figure (5), it is possible to analyze the dominant use of the rest of the land uses and activities in the area, which are the recreational and green areas(parks). As for the historical area, it extends along both sides of Icadye Street, and this area is still in reality within the preservation.

Urban Form Analysis of The Site Area

1- Time period 1922:

In this period of time 1922, a map of the study area was used in order to study the urban

form of the study area in that period, and a geographic information system program (GIS) was used in order to prepare the map. As shown in the following map:



Fig 6 Map shows Kuzguncuk neighborhood in 1922
 Source: Istanbul, Turkey, 1922 (Raster Image) review on <https://maps.princeton.edu/catalog/harvard-g7434-i8-1922-s6>

Through the map, we can observe the study area in the period 1922 Where this stage includes movement paths, urban blocks, and spaces

within the urban fabric of the city and using it as a source, the solid and void of the study area were drawn, as shown in the following map:

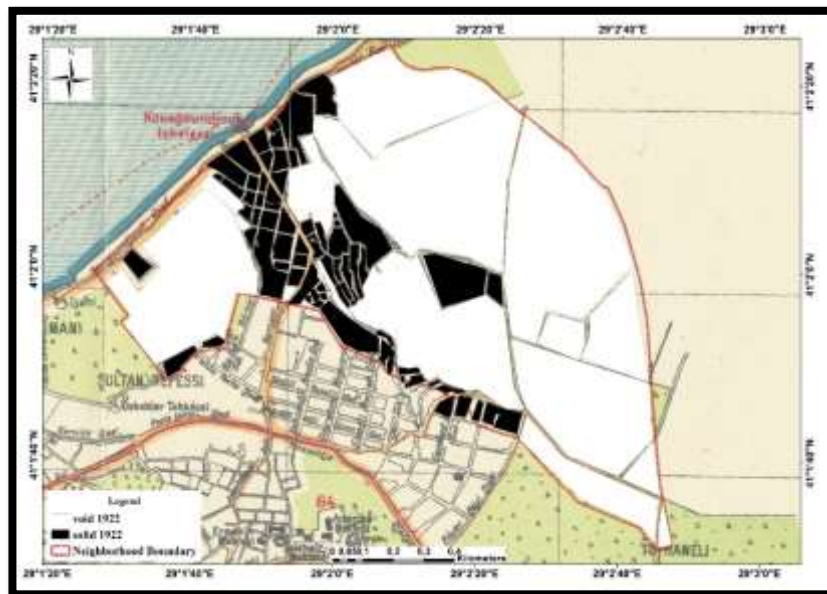


Fig 7 Map shows Kuzguncuk neighborhood (Solid and Void) in 1922
 Source: Author depends on Arc map 10.7 to create data

Through the urban form shown in the map (6,7), we can analyze the physical elements of the study area, where we notice that the solid blocks are large and interconnected and approach regular shapes, while we find that the spaces (voids) are wide where these branches

represent cemeteries and green and open areas. The reasons for this are due to the fact that the region in an early period of time preserved the basic physical elements in a simplified form away from complexity. The urban blocks (solid) at this stage are large

blocks represented by buildings (Monolithic style), sites, churches, and shops, and these buildings permeate the paths that connect the parts of the neighborhood and facilitate movement and movement. The nature of the neighborhood during that time period and information and data about 1922 show that the neighborhood is several blocks of clear architecture and large spaces that represent green and open areas. This is due to the number

of residents of the neighborhood and their lifestyle.

2- Time period 1982:

In this period of time 1982, a map of the study area was used in order to study the urban form of the study area in that period, and a geographic information system program (GIS) was used in order to prepare the map. As shown in the following map:



Fig 8 Map shows Kuzguncuk neighborhood in 1982

Source: <http://www.istanbulurbandatabase.com> 1982 satellite map

Through figure (8), we can observe the study area in the period 1922 and using it as a source, the solid and void of the study area were drawn, as shown in the following map:

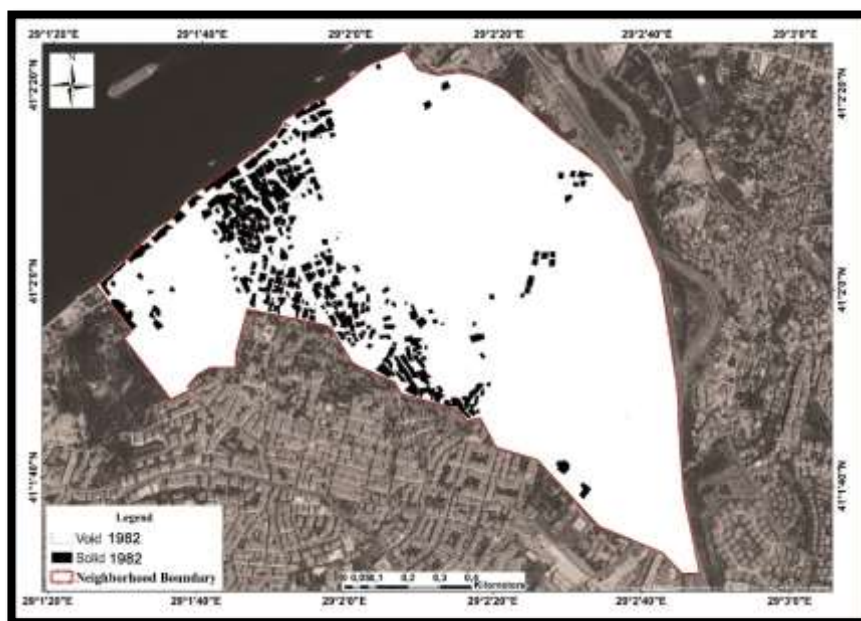


Fig 9 Map shows Kuzguncuk neighborhood (Solid and Void) in 1982

Source: Author depends on Arc map 10.7 to create data

The map in Figure (9) shows the urban form of the period 1982 the physical elements of the study area took shapes of smaller blocks as a result of the development and change that the city has undergone through time and the formation of movement paths and sub-streets that led to an increase in spaces and smallness in the building blocks in addition to the requirements of the population from the activities in The city as a result of the development of life and the increase in people's awareness and the development of buildings and the shape of the elements in the city led to the emergence of blocks in this way, where the empty space increased more than the previous period in 1922. During this morphological period in 1982, the urban form was evaluated according to the urban blocks distributed within

the urban fabric of the neighborhood in the form of smaller blocks than it was in the past. Preserving the old monuments, and in addition to the movement paths that connect the parts of the neighborhood and facilitate movement, the void remains the largest part of the neighborhood's spaces, which is represented by the cemetery, along with green areas and recreational places.

3- Time period 2005:

In this period of time 2005, a map of the study area was used in order to study the urban form of the study area in that period, and a geographic information system program (GIS) was used in order to prepare the map. As shown in the following map:



Fig 10 Map shows Kuzguncuk neighborhood in 2005

Source: <http://www.istanbulurbandatabase.com/> 2005 satellite map

Through figure (10), we can observe the study area in the period 2005 and using it as a source, the solid and void of the study area were drawn, as shown in the following map:

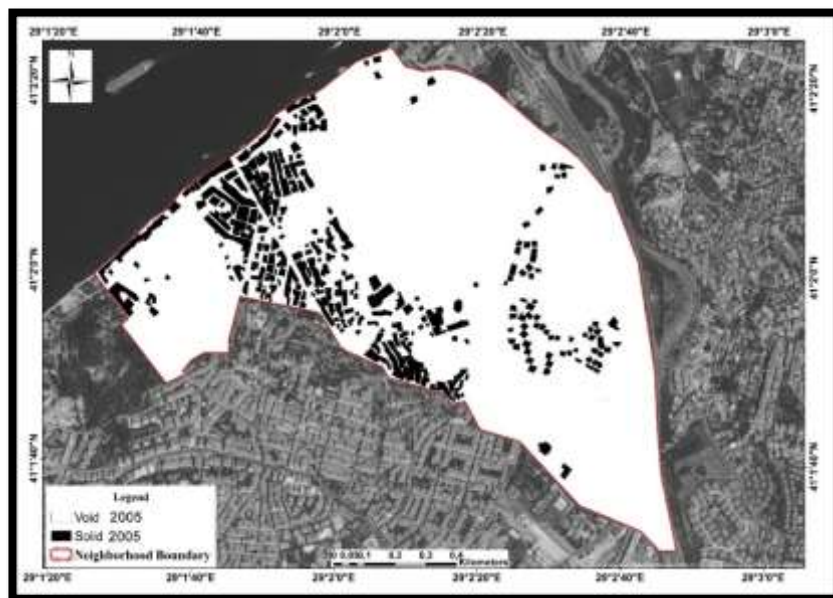


Figure 11 Map shows Kuzguncuk neighborhood in 2005
 Source: Prepared by Arc map 10.7 to create data

Through the map shown in Figure (11), we note that the urban form of the city in 2005 changed and developed more than in previous years, where we note that the urban blocks appeared in a smaller, more detailed, and diverse form due to the development of the city and the technology factor and the population’s demand for various activities and the diversity of those activities. The area in its urban form and the spaces were clarified more appropriately for the

study area, as it included places of recreation and open areas, as well as cemeteries and empty areas.

4- Time period 2021

In this period of time 2021, a map of the study area was used in order to study the urban form of the study area in that period, and a geographic information system program (GIS) was used in order to prepare the map. As shown in the following map:



Figure 12 Map shows Kuzguncuk neighborhood in 2021

Source: <http://www.istanbulurbandatabase.com> 2021 satellite map

Through Figure (12), we can observe the study area in the period 2021, and using it as a source, the solid and void of the study area were drawn, as shown in the following map:

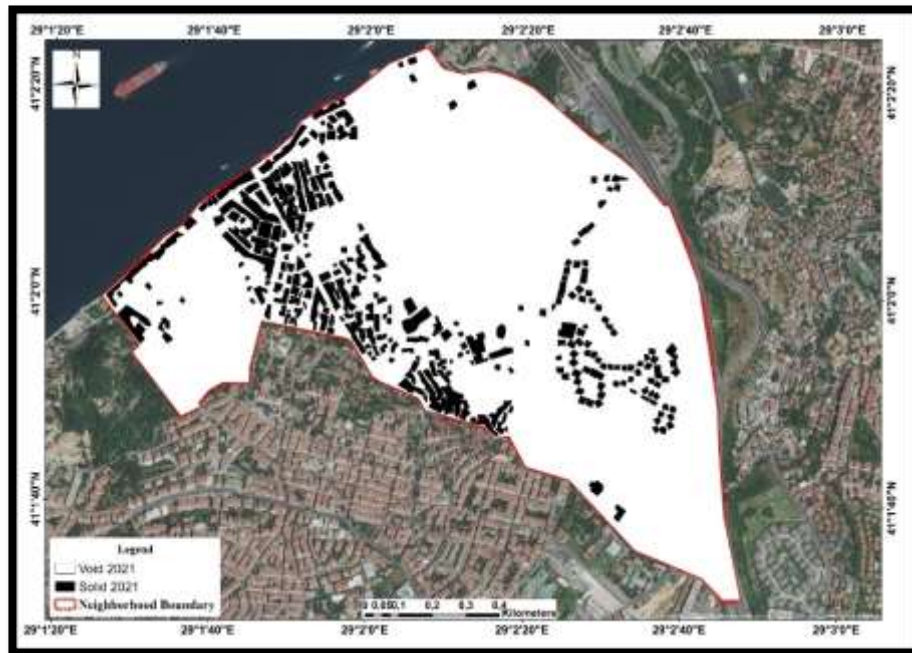


Fig 13 Map shows Kuzguncuk neighborhood in 2021

Source: Author depends on Arc map 10.7 to create data

At this point in time, we can observe the urban form and physical characteristics of the study area, where we note that the urban blocks were taken with small areas and with narrow details, especially on the side of (Icadye Street), which is the main street that extends in the neighborhood and the activities are distributed on its sides. We also note the urban morphology of the sub-streets in a narrow stripe that extends from both sides of the main street (Icadye Street) we notice the urban blocks within the green and open areas. The reason for this is to raise awareness to provide places for sitting and resting within the entertainment activities and green areas. By comparing the four morphological stages, we can notice how the neighborhood evolved over time and how the

physical shape of the urban blocks and the urban shape of the streets evolved over time due to the development and diversity of activities in the neighborhood and the fact that the study area is one of the conservation areas that contain old colorful buildings that attract people to it and is considered a point of attractiveness as a result of the locational characteristics as it is located on the edge of the Bosphorus, in addition to the fact that the neighborhood contains green and recreational areas, which is a point of attraction for people and provides an enjoyable scene overlooking the city. We can note the four morphological stages of the study area in terms of urban form over time, and compare the different stages through the following figure.

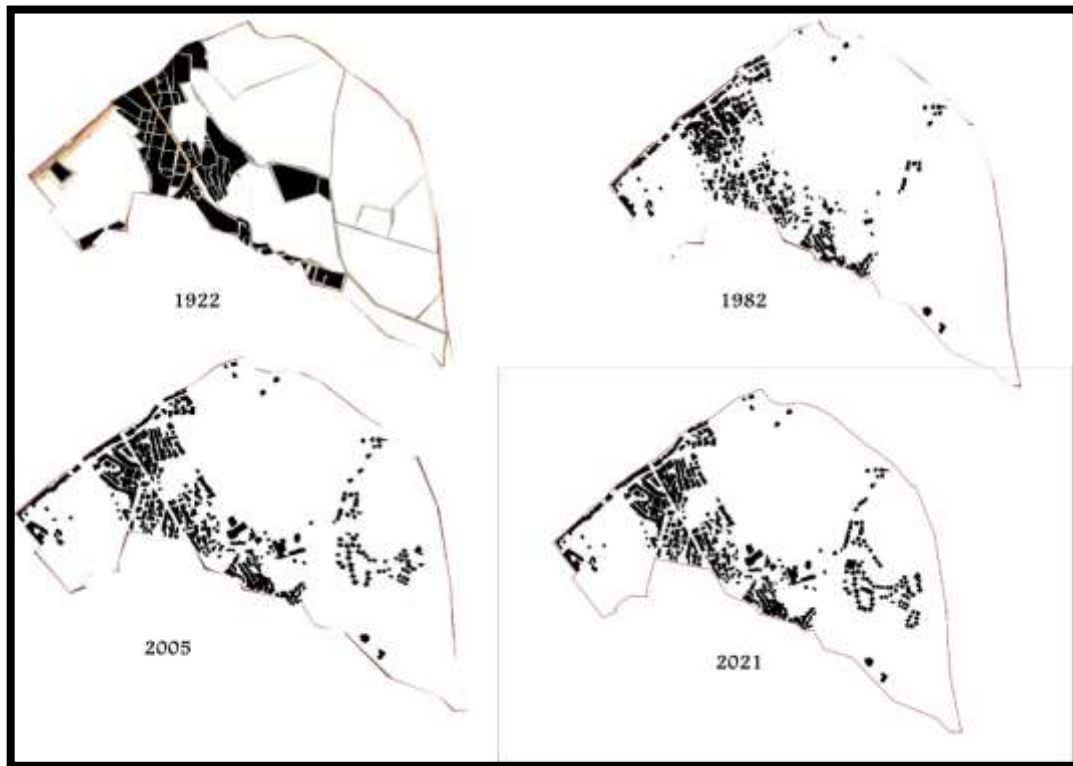


Figure 14 Urban Morphological stage through four periods in Kuzguncuk neighborhood
Source: Author

Through figure (14), we notice the urban form of the neighborhood over time and the development and change in the physical and material characteristics of the neighborhood in terms of urban blocks, spaces, the shape of the streets, and the development that takes place in them.

Evaluation and Conclusion

Through the analysis phase that was applied to the study area and the outputs of the results represented by maps, the practical study can be evaluated on the Kuzguncuk neighborhood, which is one of the historical areas that people have inhabited since ancient times and witnessed the process of migration of the Jewish population and was characterized by the large as for the borders, the neighborhood is surrounded by natural borders represented by the river from the northern side, and from the southern, eastern and western sides, the borders of the residential neighborhood that separate it from the rest of the neighborhoods. With its distinctive heritage character, the buildings of architectural value were painted and considered as one of the buildings to

preserve that for their characteristics that go back to the style of the old buildings, and some of them were converted into distinctive places such as cafes, libraries, houses, and restaurants. In the urban structure at the level of the urban fabric of the city over time, the urban form was analyzed for four different periods and according to the nature of the information available from municipal departments and field visits, where information was available for the periods 1922, 1982, 2005, 2021 through maps of the urban form and according to Rogers theories in clarifying the features – ground theory It was concluded that the physical elements, which are solid blocks, are large and compact and gather around (Icadiye) street, and the urban spaces between them are few, and the pattern of blocks is the compact pattern, with large areas, and these blocks represent land uses, buildings, and various activities during that stage 1922, with the presence of urban spaces with large areas as well Due to the fact that the neighborhood contains green areas, cemeteries, and open lands, then the urban form of the city's structure was taken, which is represented by the blocks that are the physical

elements during the period 1982. Their size began to decrease in terms of area and spacing between one block and another, and the spaces are proportional to the style and lifestyle, the nature of activities and events, and the preservation processes that the neighborhood witnessed through preservation. On buildings of architectural value and removing or changing the worn-out fabric from them and renovating them into smaller housing units while remaining urban spaces with large areas and including green and recreational areas and cemeteries, but during the two periods 2005 and 2021, the building blocks or the so-called physical elements became spread at the level of the urban fabric of the neighborhood borders and in the form of blocks with smaller areas, and the paths of movement became more clear during these two phases, with the preservation and heritage buildings distinguished for their architectural value, and the urban spaces that extend over a wide range of the neighborhood. 1922 gathered in a compact manner around the street and in large areas, and then changes to smaller blocks, and they began to spread within the urban fabric of the neighborhood to the current periods, with the survival of buildings of architectural value and the processes of preserving heritage buildings, which are the identity of the neighborhood through time.

In summary, and according to the importance of urban morphology studying to the neighborhood, and from the entirety of the foregoing in this research, the following questions will be answered.

"What types of land uses have a long service life and why?" or "How flexible is the existing form to adapt to new needs?" and "Are the features of the existing form also a standard for new buildings and activates?" What are the uses of the land and the type of activities? As well as a few aspects that urban morphologists deal with.?

According to studies and literary resources contained in this research, **Kuzguncuk** neighborhood is considered one of the historical neighborhoods, in the city of Istanbul within the municipality of **Uskudar**, which is characterized by several characteristics, including the spatial location on the side of the

Bosphorus River, and it is considered one of the old urban settlements that people have inhabited since 1878. For the Jews, according to what is mentioned in the historical resources, and through field surveys, maps and data reached by the researcher, in which he relied on two descriptive, analytical and quantitative approaches, which included analyzing the data of the study collected about the region and producing maps of land uses and ratios. In addition to producing urban form maps and applying spatial analysis tools appropriate to the situation, to calculate the areas of the physical blocks (Solid) through the different morphological stages, we conclude that **Kuzguncuk** neighborhood is one of the neighborhoods that is characterized by the presence of **Icadiye** Street, which penetrates the neighborhood and is considered the main street. It is distinguished by the style of its distinctive buildings, with colors and preservation that reflect the identity and affiliation of the city. The historical site and the activities and land uses, to the presence of ancient monuments that remain to this day, represented by churches, and cemeteries, in addition to recreational places and green space on large areas, such as **(Nakkastepe Millet Bahçesi)** which attract visitors and provide an urban landscape and a wonderful view of the neighborhood.

The study of the current land uses and the calculation of areas and percentages aims to know the dominant use over the rest of the other land uses, where it occupied the highest percentage of recreational places and green areas within (37.3 %) from the total area of the neighborhood, followed by residential use within (23.3%) from the total area of the neighborhood, religious cemeteries (mezarliklar), gardens, and recreational places are considered ancient protected areas in the neighborhood and have been developed over time by adding recreational activities, environmentally, playing areas, and landscapes, because they attract residents and visitors, and the location of the neighborhood overlooking the Bosphorus River helps in considering them as distinguished recreational places. As for the

residential use, which extends on both sides of İcadiye Street, it was treated in conservation because it represents the architectural heritage and identity of the city.

From the analysis of the urban form represented by designating (solid) blocks and voids within the fabric The urbanization of the neighborhood and during the different morphological stages, and then applying the calculation of areas through the different morphological stages, and the analytical tool that was applied in 1922 on the physical elements indicates that there is a convergence between the blocks and when applying the analysis to the year 2021 we notice the spread between the blocks and in the form of smaller blocks and occupy a large From the neighborhood while preserving the basic features of the city over time, and the most important conclusion from this study is that the neighborhood was subjected to preservation operations in order to preserve the urban buildings that reflect the identity of the city through the different historical stages, and to make the preservation buildings perform as guest commercial activities such as cafes and restaurants in order to preserve the distinctive symbols of the neighborhood through time. Among the applications of geographic information systems GIS with quantitative analysis tools to calculate the areas of the blocks (solid) in the urban form, we note that the areas of the blocks (solid) in the morphological stage 1922 seemed to be larger, compared to the other morphological stages until the current stage 2021, where the areas of the urban form became smaller parts, and the appropriate analysis for this as a result of urban transformations through The time when some of the blocks were transformed into open spaces as cemeteries and integrated with recreational areas and others turned into housing units as needed, although the neighborhood did not change much and according to historical sources, but the preservation operations included buildings of architectural value. As there is flexibility in the urban form to changes over different periods and the preservation of buildings of architectural value

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