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A Comparative Analysis of the Spatial Characteristic of Apartment Buildings in Gaziantep,Turkey

Yurdagül Görücü*
M.Serhat Yenice**

Abstract

This study aims to analyze the planning and design process, basic principles, and the change-transformation process of the apartment type residential buildings in Turkey, Gaziantep. The scope of the research consists of residential buildings built in the post-Republican period in Gaziantep. The basic materials of the research are zoning-city plans, plan explanation reports, plan diagrams of buildings and photographs based on field research. The method of the research is based on a comparative analysis of spatial changes in apartment buildings according to historical background. These changes evaluated from the analysis of a series of variables ranging from parcel-level to plan projects, access graphs to spatial size and ratios. As a result of the study, it is seen that the access graph and space sizes of the apartment-type residential buildings dating back to the 1960s, have significantly changed. However, differences and variations are mostly observed in the first plan typologies and it is noteworthy that this diversity has reduced, and similar plan schemes have been widely used in recent examples.

Keywords: *Housing, morphology, spatial analyses, Gaziantep.*

*Res. Asst. in Faculty of Fine Arts and Architecture in Hasan Kalyoncu University, Gaziantep, Turkey. ORCİD
E-mail: yurdagul.gorucu@hku.edu.tr

**Assoc. Prof. Dr. in Faculty of Fine Arts and Architecture in Hasan Kalyoncu University, Gaziantep, Turkey. ORCİD
E-mail: serhat.yenice@hku.edu.tr

INTRODUCTION

A house or apartment is the basic unit of society and the primary unit of human habitation. Having satisfactory accommodation is one of the most valuable aspects of people's lives. Therefore, housing is a significant element affecting people's material living standards. Housing costs have a large share of the household budget and constitute the main component of household welfare (Kurian and Thampuran, 2001; Streimikiene, 2015). Generally, housing and housing construction are the most critical components of a country's social and economic development (Franic et al., 2005).

This is an indication of a society's culture which exposes the features and meanings of the time. In other words, housing is the product primarily of socio-cultural factors of the community. A culture built into housing layouts and houses conveys culture through their configurations (Rapoport, 1969). In this respect, apartment buildings are no doubt, an exciting research topic. These buildings, which define the cultural identity and change of a period, also offer various clues about the structure of societies. Therefore, researches on spatial-functional analysis and configuration of apartment buildings have been increasing (Choi, 2013; Ju et al. 2014; Byun and Choi, 2015; Brkanić et al. 2018).

First apartment-style residential examples constructed dates back to the late 19th century in Turkey. These buildings were spatial reflections of Westernization Movements. While the industrial revolution was continuing in Europe, the Ottoman Empire was experiencing years of declining. However, the continuation of the relations with the western countries of the minorities living in the Ottoman Empire caused a cultural change (Görücü, 2018). This cultural interaction also changed the layout and façade of the traditional houses. It would be more accurate to interpret the apartment building movements in this context. Due to the capital, the first apartment buildings in Istanbul started to spread throughout the country, especially in big cities (Pamuk, 1996; Sey, 1998; Ulusoy, 2006; Öncel, 2010).

Turkey, along with Republican political regime, showed a rapid change with reforms that improve the economic and cultural areas. However, especially the physical structure of the Anatolian cities preserved itself.In Turkey, there has been many changes in the political and economic areas since the 1950s after World War II, as Turkey experienced rapid urbanization, and cities came to expand dramatically due to the population density. Rural depopulation became an important issue; many housing

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problems, including slums-called as 'gecekondu'- and insufficient housing, were confronted. Such problems were also seen in Gaziantep, the largest city of the south-east region of Anatolia, as well.

In the last three decades, the urban population increased 2.5 times. Undoubtedly, this affected the city of Gaziantep, the largest city in the south-eastern Anatolia region. Rapid population growth in cities led to housing problems (Yenice and Karadayi Yenice, 2018). In this period, both the housing needs of the increasing population and the changes in the economic, social, and cultural conditions were brought to the agenda. However, since the condominium act was not declared in these period, the construction of these apartment buildings under the ownership of one person remained limited due to the severe economic conditions. The Property Ownership Law introduced in 1965 was a turning point in apartment buildings construction. With this law, the housing presentation format in the cities has changed entirely and apartment buildings have increased with the sharing of economic costs in housing construction (Balamir, 1975; Gür, 1989; Keleş, 2000; Yenice 2014). Apartment buildings, a western housing typology with high population density, were imported and transformed to resolve these housing problems. Apartments were preferred by many people and became the most common housing type in a relatively short time in Turkey.

In the aftermath of the 1980s, while new residential areas spread, single houses those represent the vernacular heritage of the city were demolished to be replacaed by new apartment buildings. This ongoing transformation process had lead the disappearance of these buildings, which are the architectural documents reflecting the socio-economic and cultural characteristics of a period. The destruction of these buildings brought attention to the preserveation of the structures that are important architectural documents.

Thus, this research focuses on the apartment housing type and the spatial configurations of internal space. This research will display certain structural features of the spatial configurations of dominant apartment types in Gaziantep. It also aims at analyzing the planning and design process, basic principles, and the change-transformation process of the apartment type residential buildings in Gaziantep city based on historical background. Within the scope of the study, it is aimed to examine the change-transformation process of the apartment buildings according to a series of variables ranging from urban building island scale to

architectural plan and spatial organization, and to analyze them in detail within the framework of typological analyses.

SCOOPE and METHODOLOGY

The subject of this research is the apartment-type residential buildings in the city of Gaziantep, Turkey. The basic materials of the study consist of buildings-license and architectural projects of the apartments, and field surveys. Moreover; city maps, master plans, disclosure reports and photographs were also used. The methodology of this study based on a comparative analysis of the changes in the housing plan schemes, spatial usage, and the size of these areas. Quantitative analysis was used for the comparison of spatial configurations. The analysis was applied as a method to analyze unit plans of apartment buildings.

This methodology consists of two stages. In the first phase of the method; the growth directions and development periods of the city of Gaziantep determined according to urban development plans. In this context, the facade characteristics of the apartment buildings were determined and documented. License and architectural projects of 47 apartment-type houses have been reached from the relevant municipal archives and classified according to their license dates. Urban block, parcel information and the architectural plans of the determining apartments were researched in the archives of the Metropolitan Municipality Directorate of Zoning. The plans were separated into 20-year periods from 1960 to present day according to the license dates. The second phase of the research methodology is based on the preparation of detailed analysis tables for 47 apartment-type housings with architectural projects and periodically comparative analysis.

The second phase of the research methodology is the preparation of detailed analysis tables of the apartment buildings. These tables contains the essential characteristics of the apartment buildings such as parcel information, housing size, number of floors, independent sections, rooms, etc. (Table 1). The next stage of the research method is to explain the transition conditions of the spaces by using the access graph approach. Thus, access depths obtained by analyzing the access and length of the way to reach the areas.

Spatial analysis is a numerical technique that allows one to express and analyze the general characteristics of space. In this technique, the areas are divided according to human experience, and numerical analyzes can be made on these sections by means of maps and graphs. Besides, it creates a configurational theory in

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architecture by generating a theoretical understanding of how people plan and use spatial configurations. In other words, an attempt to identify how spatial configurations express a social or cultural meaning and how spatial configurations generate social interactions in built environments.

Table 1. List of apartment buildings examined in the scope of the study

Registred parcel	Built year	Parcel area (m^2)	Building floor area (m^2)	Number of stroey	Number of dwelling in a floor	Total dwelling	Number of rooms	Dwelling size (m^2)
1116/6	1968	600	296	5	2	12	3	142
1115/6	1969	600	324	5	3	14	3	95~105
506/68	1970	763	395	5	3	15	3	125~130
500/136	1970	563	268	5	2	10	3	135
499/154	1972	714	258	5	3	10	2	95~84
1115/1	1972	600	415	4	4	16	3	98
1120/2	1977	851	437	5	4	20	2 ~ 3	78~128
446/127	1977	382	206	3	2	6	3	97
386/148	1977	620	276	4	3	12	2	87
219/46	1978	513	284	4	2	8	3	129
1121/22	1978	533	255	5	3	14	2 ~ 3	75~86
499/174	1980	805	346	6	3	15	2 ~ 3	96~115
1122/77	1980	635	245	5	2	8	3	115
284/240	1982	972	334	5	3	12	2 ~ 3	79~123
1120/31	1983	720	358	4	3	12	2 ~ 3	86~129
387/139	1984	1322	335	5	3	15	3	106
388/153	1984	735	258	5	2	8	3	123
387/156	1984	1064	332	6	2	12	3	159
389/148	1984	1013	292	6	2	10	3	139
387/137	1984	596	330	5	3	15	3	106
388/155	1985	718	270	7	2	12	3	128
375/4	1985	928	268	5	2	8	3	129
488/6	1986	570	198	4	2	8	3	94
285/335	1986	1232	450	6	3	15	3	145
496/83	1986	653	276	4	2	8	3	132
397/22	1986	975	297	6	2	10	3	142
286/515	1986	733	268	4	2	6	3	128
1120/16	1987	704	370	4	3	12	3	116~125
386/160	1987	618	286	4	2	8	3	137
282/438	1987	977	332	6	3	15	3	105~108
381/165	1988	939	295	6	2	12	3	135
1122/78	1989	635	234	5	2	8	3	109
377/158	1991	1099	275	7	3	18	3	130
375/5	1991	770	284	6	2	10	3	130~139
286/515	1992	733	220	5	2	8	3	104
374/165	1993	818	275	6	2	10	3	131
376/1	1993	964	300	6	2	10	3	143
372/227	1994	981	360	5	2	8	3	172
392/115	1997	1100	273	6	2	10	3	129
398/173	1998	888	318	5	2	8	3	152
444/187	1998	412	267	5	2	8	3	127
2017/1	2002	1103	335	6	2	10	3	143
6918/3	2006	852	255	6	2	10	3	172
5127/1	2008	1603	478	8	2	28	5	129
3692/2	2009	1860	465	8	2	30	3-4	145~175
321/4	2012	1556	465	10	3	27	3-4	165~180
1357/1	2015	3000	840	14	2	52	4	198

Morphological studies are needed to understand the relational structures. Morphological characteristics of the plans are explained with the method developed by Hillier and Hanson (1984). This method has been used to compare plan typologies from different periods. In the access graph, the rooms at the depth equal to the starting point are positioned on the same horizontal line, and the depth values are numbered from zero. The access

graphs are named according to various parameters such as symmetric/asymmetric, distributed / non-distributed. If there is a symmetric feature in the access graph, there is equal access to many rooms from one room. Otherwise, the access graph is asymmetrical if it can access from one room to another, but from several rooms respectively. Besides, there is a cyclical feature if one room is accessed from one room to another with only one path instead of multiple paths. The cyclic feature is divided into two, with and without distribution. In distributed graphics, the paths to space are looped. In the non-distributed graphics, it is a single straight line.

In the study, tha analysis was done by grouping the the buildings under three time periods. The first period, characterized by the end of the Second World War, covers 1950s and 1980s. This period is defined as the period of rapid urbanization in Turkey. It is characterized by the rural depopulation and the desire to meet the increasing need for housing in the cities. Ownership of the Property and Gecekondu Law was declared in this period. These laws deeply affected the physical structure and transformation of the Turkish cities.

The second period covers 1980s and 2000. The main character of this period is that the level of urbanization reached a satisfactory level. Cities were transformed into significant capital accumulation as they were trying to adopt to both liberal economic development in the national economic structure and to the world economy of that period. Another essential feature of this period is the redefinition of the jurisdictions of central and local governments. Local dynamics came to the fore with various legal arrangements allowing cities to produce their own master-plans. Moreover, the Mass-Housing Development Administration was established to meet the housing needs of low-middle income families.

The third period starts 2000's and continues to the present. The neo-liberal economic development model was adopted in this period. Urban transformation and renewal actions have changed the physical structure of cities. Since the 2000's, the neo-liberal economy and the lifestyles directed by globalization have been influential in our country (Yenice, 2014). The meaning of the house for the people has changed. The houses became a social and economical indicator, that is, the houses with additional facilities became more popular, rather than the ones with good interior organization. In addition to this, they became an excellent investment tool for the future.

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FINDINGS AND DISCUSSION

Gaziantep, according to data from the 2017 Address Based Population Registration System (ABPRS) is Turkey's eighth and the largest city of the Southeast Anatolia Region with a population exceeding 2 million (Fig. 1). Gaziantep has a critical industrial infrastructure that is textile and machine-oriented. The city, with a rich cultural heritage, is one of Turkey's essential tourism centers which is also famous with vibrant culinary culture. In 2016, Gaziantep joined UNESCO in the Creative Cities Network in the field of Gastronomy. So, Gaziantep is an urban settlement area that needs to be addressed in different scales and accompanied by special planning activities.

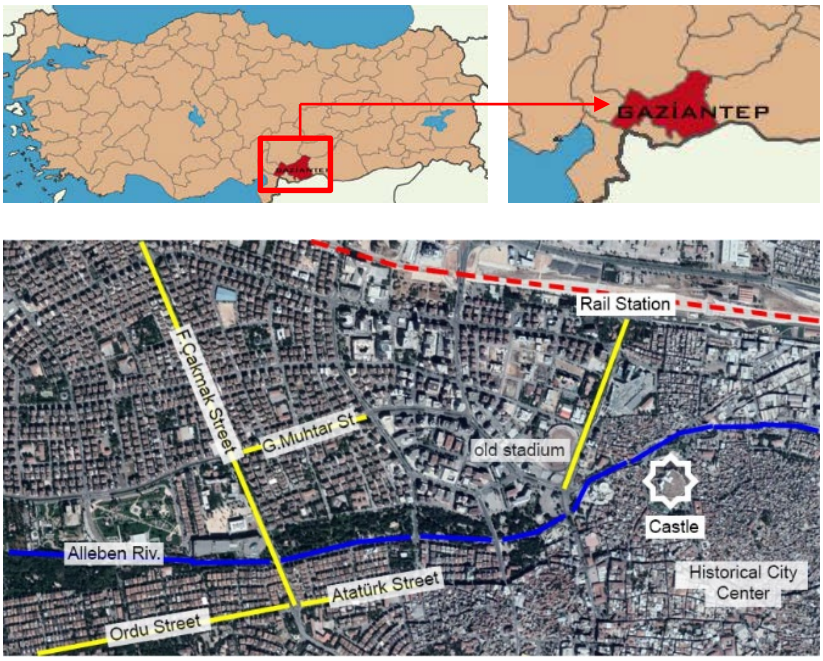

Figure 1: Location of the Gaziantep city and study areas of Gaziantep city center and its surroundings

In the study, six different urban areas were selected from the districts of Şehitkamil and Sahinbey in the city center of Gaziantep. The development of the city in the historical process was taken as the basis for the sampling area. Study Area 1 is located in the urban development area of the Gaziantep Development Plan of 1955. The fact that it is close to the railway and station areas built during this period is another factor affecting the choice of areas. Other regions identified as new residential development areas during the 1970s and 1990s were also selected as the study area. When deciding on the areas to analyze, the transportation axes such as the Station Street, Ordu Street, Maresal Fevzi Cakmak Street, were determined as the main variable and different apartments from each area were selected.

Spatial Analysis between 1960s and 1980s

General Characteristic

The apartment type housings, which were built between 1960s and 1980s, are generally built as a discrete structures. They were constructed in a single structure - parcel arrangement (Table 2). Structures usually occupy 51% of the floor area of the parcel. The buildings in this period are typically usually 4-5 floors. The spatial characteristics of apartment buildings are summarized in the table below (Table 2).

Figure 2. Examples of apartment's façade characters in 1960-1980 period

Table 2. Parcel characterizes of apartments in 1960-1980 period

	Min.	Max.	Avg.
Parcel Size (m^2)	382	851	613
Building Floor Area (m^2)	206	437	310
Base Area co-efficient	0,36	0,69	0,51
Total Floor Area co-efficient	1,61	2,76	2,29

Plan Scheme and Access Chart

The apartment type housings built between 1960s and 1980s are generally based on 3 types of plan typology and access graph. The first one is the planning scheme scattered from one room to another. In this scheme, which resembles the middle-hall type of house in a traditional Turkish residence, the sofa is used as a common living area. Day and night hall separation is not clear (Figure 3a). The second plan scheme has another circulation area separated from the entrance area of the residence. Generally, service spaces, wet areas, and bedrooms are connected to this circulation. There is a night and day hall separation. (Figure 3b). In the third plan scheme, it is directly connected to the living room from the entrance of the residence. There is a connection from the living room to the night hall (Figure 3c). As the access graphs checked according to the plan schemes, the value of the access depth was seen as 3 for single circulation plan schemes. It shows symmetrical features. Moreover, the value of privacy is low since it is directly proportional to the depth value (Figure 4a).

The depth of the access graph of the second plan type is 4. As the depth value increases, the value of privacy will increase, and this plan type has a higher privacy value than the first plan type. The

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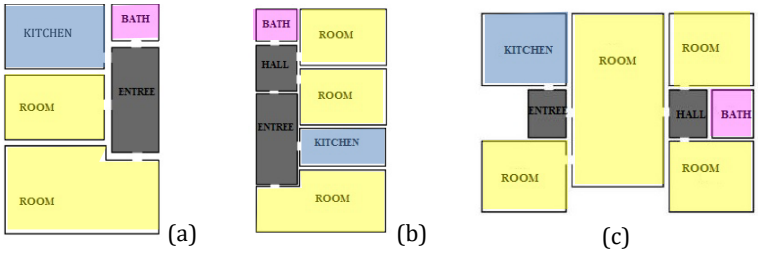
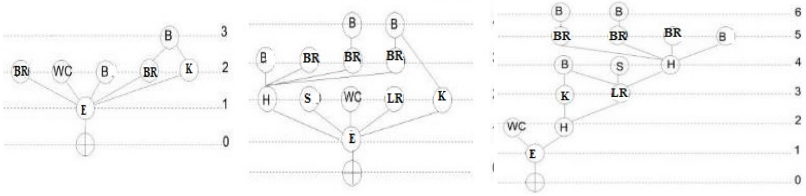
deepest places are bedrooms and balconies (Figure 4b). The plan of the third plan scheme, which is the scheme of the transition from the living space to the other rooms, has a depth value of 6. There is a conditional transition from the living room to the night hall. The kitchen is accessible by passing through the hall. These features indicate that the plan schema is asymmetric (Figure 4c).



Plan scheme with single circulation (a) and two circulation spaces(b)

(c) In addition to the two circulation spaces, the plan scheme of the living space is the transition space.

Figure 3. Typical plan schemes and spatial organizations of apartment buildings in 1960-1980 period



Access graph with single circulation (a) and two circulation spaces (b)

(c) In addition to the two circulation spaces, the access plan of the living space is the transition space.

Figure 4. Access graph between 1960s and 1980s

Spatial Usage Size and Ratio

When the apartment buildings, constructed from 1960 to 1980, are examined, it is seen that the kitchen usage area varies between 6m^2 and 10m^2. The average kitchen area is 8m^2. The kitchen occupying a small area was not large enough to accommodate the family. The dining area is designed to be separated from the living area in the houses built during this period. Besides, living room size differ between 26m^2 and 42m^2. The average living room area were 35m^2. The common usage areas account for 40% of the housing area (Table 3). In this period, the accommondation, dining, and daily living spaces of the apartments were designed separately, but were thought to be related to each other in a single area.

Table 3. Spatial distribution of apartments in the 1960s and 1980s period (%)

Criteria	Min.	Max.	Avg.
Common Area (%)	32	48	40
Kitchen (%)	5	7	6
Private Areas (%)	22	32	30
Service Areas (%)	4	14	12
Balcony (%)	10	14	12

When the apartment buildings of the 1960-1980 period are examined, it is seen that the usage of the shared space varies between 32% and 48%. The average percentage of common areas was 40%. The kitchen use area ranged from 5% to 7%, private area use was between 22% and 32%, and service area usage was between 4% and 14%, and balcony usage was 10% and 14%. The average kitchen area was 6%, the private area usage was 30%, the typical service area was 12%, and the average balcony was 12% (Table 15).

Spatial Analysis between 1980s and 2000s

General Characteristic

The apartments built between 1980s and 2000s years generally had the discrete and a single parcel structure. The structures were usually 5-6 floors (Fig. 5). However, at the end of the 1990s, 10-12-story buildings were built.

Figure 5. Examples of apartment façade characters in 1980-2000 period

Table 4. Spatial distribution of apartment buildings in 1980-2000 period (%)

	Min.	Max.	Avg.
Parcel Size (m^2)	570	1322	835
Building Floor Area (m^2)	198	450	303
Base Area co-efficient	0,25	0,55	0,36
Total Floor Area co-efficient	1,26	2,76	1,88

The features of the apartment buildings at the parcel level are summarized in Table 4. It is seen that the size of the apartment buildings, constructed between 1980s and 2000s, varied between 570m^2 and 1322m^2. The average parcel size is 835m^2. It is seen that the building base footprint ranged between 198m^2 and 450m^2. The average building floor area is 303m^2. The base area co-efficiency is between 0,25 and 0,55. Building footprint usually

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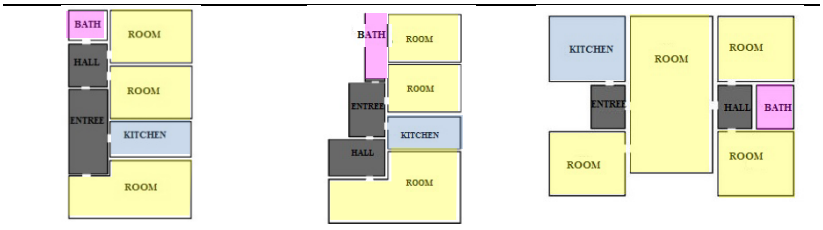
occupies 36% of the parcel. The floor area co-efficiency is between 1,26 and 2,76 and the average co-efficient value is 1,88 (Table 4).

Plan Scheme and Access Chart

The apartment buildings, built between 1980s and 2000s, are generally based on three plan typologies. The first is the plan schemes, which include a second circulation space after the entrance. Generally service areas, wet areas and bedrooms are connected to this circulation. There are night-hall and entrance (Fig. 6a). The other is the planning scheme, which has a circulation space other than the entrance, and night hall (Fig. 6b). Thirdly, there is a space connecting with the entrance and night-hall. This space, using as a living room, is a common area. The transition from the day hall to the night-hall provides from the living room (Fig. 6c).

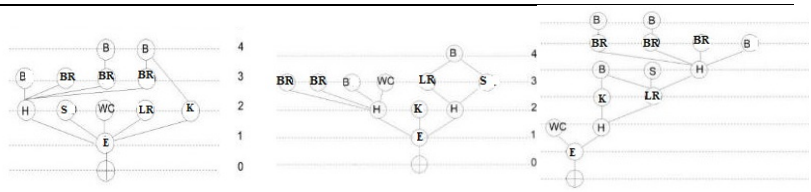


Plan scheme with two circulation (a) and three circulation spaces(b)

(c) In addition to the two circulation spaces, the plan scheme of the living space is the transition space.

Figure 6. Typical plan schemes and spatial organizations of apartment buildings in 1980-2000 period

The access plan for the first plan type has a depth value of 4. The access graph shows asymmetric properties. There is no equal access, because access to the rooms is provided through the night hall or other room (Figure 7a). The access depth value of the other plan type has 4. There is an asymmetric feature of this type (Fig. 7b). The access value of the third plan type is 6. The living room is the space providing the loop (Fig. 7c).



Access graph with two circulation (a) and three circulation spaces(b)

(c) In addition to the two circulation spaces, the access graph of the living space is the transition space.

Figure 7. Access graph between 1980s and 2000s

Spatial Usage Size and Ratio

When the apartment buildings, constructed in 1980-2000 period are examined, it is seen that the kitchen area usage is between 9m² and 24m². The average kitchen area is approximately 14m². The living room area varies between 24m² and 46m². The average living area is 36m². Common area usage varies between 27% and 45%. The average common area use was 41%; whereas, the average kitchen area is 9%. The use of private space ranged from 18% to 30%; service area utilization rate was between 6% and 7% and balcony was % 15 to 19% (Table 5).

Table 5. Spatial ratios of 1980-2000 period

Criteria	Min.	Max.	Avg.
Common Area (%)	27	45	41
Kitchen (%)	8	10	9
Private Areas (%)	18	30	26
Service Areas (%)	6	7	7
Balcony (%)	15	19	17

Spatial Analysis of the Apartments form 2000 to Present

General Characteristic

The apartment buildings, built between 2000s and the present period, generally have the characteristic of building in the discrete structure and single structure - parcel layout. The buildings were usually constructed 5-6 stories. However, the housing types produced over 10 storey and over are becoming widespread (Fig. 8). Buildings base area usually occupy 25%-30% of the parcel area. The characteristics of the apartment buildings at the parcel level are summarized in Table 6. It has been seen that the parcel size of the apartment type houses, which were built in 2000's, and has changed between 852m² - 3000m². The average parcel size is 1662m². It was seen that the building base area ranged between 255m² and 840m². The average building base footprint is 473m². The average building base area co-efficient value is 28%. The total floor area co-efficient is between 1,80 and 3,92. The average value is 2,48 (Table 6).

Figure 8. Examples of apartment's façade characters in 2000s

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Table 6. 2000 and later period parcel and location properties

	Min.	Max.	Avg.
Parcel Size (m^2)	852	3000	1662
Building Floor Area (m^2)	255	840	473
Base Area co-efficient	0,25	0,30	0,28
Total Floor Area co-efficient	1,80	3,92	2,48

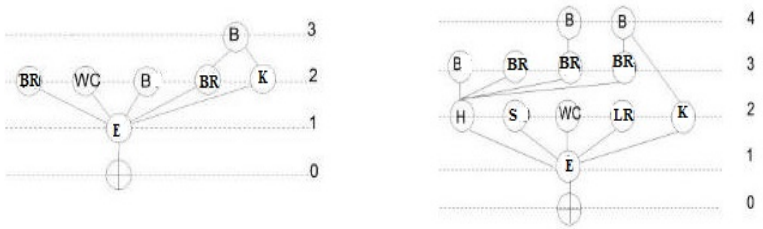
Plan Scheme and Access Chart

The apartment buildings, built in 2000's and later period, are based on two plan typologies. The first one is the planning scheme that scattered from the entering to the room. There is no discrimination between day and night usage areas (Fig. 9a). The second typology is the plan diagrams, which are the secondary circulation space after the entrance, usually service spaces, bath, wc, etc., and bedrooms connected to this circulation. The day and night usage areas are separated from each other by night-hall. (Fig. 9b).

Plan scheme with two circulation (a) and three circulation spaces (b)

Figure 9. Generally plan scheme and circulation connections of apartment buildings in 2000s

The access plan for the first plan type has a depth value of 3. The access graph shows asymmetric properties (Figure 10a). The access graph depth of the second plan is 4. This plan type also has an asymmetric feature (Figure 10b).



Access graph with two circulation (a) and three circulation spaces(b)

Figure 10. Access graphs from 2000's at present

Spatial Usage Size and Ratio

It has seen that the kitchen usage area varies between $6m^2$ and $24m^2$. The average kitchen area is $18m^2$; while, the living room is between $18m^2$ and $53m^2$. The average living room and living area is $38m^2$. It is also found that the use of common area varies between 25% and 49%. The average common area use was found

to be 40%. The usage area of the kitchen is between 5% and 20%, the use of private space is 19% and 31%, the service area is between 8% and 10%, and the use of balcony varies between 4% and 16%. The average use of these areas are as follows: kitchen 11%, private space 25%, service area 9%, and balcony 15% (Table 7).

Table 7. Spatial proportions in 2000 and later period

Criteria	Min.	Max.	Avg.
Common Area (%)	25	49	40
Kitchen (%)	5	20	11
Private Areas (%)	19	31	25
Service Areas (%)	8	10	9
Balcony (%)	8	24	15

CONCLUSION

The findings of the study showed that the average parcel size has increased gradually over the years. On the other hand, the ratio of the building base footprint area has decreased. The ratio was 0.50 in 1960-1980s, but it decreased to 0.30 (Table 8).When the ratios over the years are compared, it is possible to say that the provisions of the current legislation and regulations are effective. The maximum coefficient value of the building base area usage decreased to 0,40 in the 1980-2000 period, which was around 0.30 towards the end of the 1990's. After 2000, the maximum building base area coefficient value is between 0,30 and 0,25.

When the plan schemes of the apartment buildings were compared, 3 different plan schemes were observed in the 1960-1980 period. The first plan type is distribution to the rooms from the entrance. The second is the distribution of the hall to the rooms. In addition to the entrance hall and night hall, the living room became part of the circulation.

Table 8. Comparative analysis of changes at parcel level (average)

Average Values	Periods		
	1960-1980	1980-2000	2000s
Parcel Size (m^2)	613	835	1662
Building Floor Area (m^2)	310	303	473
Base Area co-efficient	0,51	0,36	0,28
Total Floor Area co-efficient	2,29	1,88	2,48

In other words, there is a direct connection from the living room to the night-hall. This spatial relationship is also found in traditional Antep houses. Therefore, it can be said that the traditional structure was maintained in this period. Day-night hall distinction in 1980-2000 period's houses is clearly seen compared to the previous 10 years. During the period of the 2000 and after, the flats in the apartment buildings in the 1980-2000 period have

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continued. Therefore, it can be said that the social structure has gradually changed from extended family to nuclear family structure.

In the 1960-1980 period, there were 3 different types of access graphs in the apartments. The first one is the form that is distributed from room to other rooms, with a depth value of 3. The second one is with subjects that are distributed in the type of access graph, entree, and hall. The depth value of this type is 4. Privacy value is directly related to the value of depth; that is to say, an increase in the degree of privacy can be seen over the years. Since two steps were built to reach the bedrooms and one step for the kitchen, these schemes show asymmetric properties and varied accessibility options. The third graphic shows the entrance and the living room as part of the circulation; that is, there is a direct connection from the living room to the night hall, with a depth value of 6. Unlike the apartments built in the 1980-2000 period, the day and night usage distinction is evident in this period. In the period from 2000 to present, the access graph of apartment buildings has not changed.

Surprising results are found when the space size of the apartments are compared, for example the size of the kitchen. The size of the kitchen areas increased from 6-9m^2 to 10-24m^2. Although not a big change is observed in the minimum kitchen area size, the maximum kitchen area size gradually increased until present (Table 9). The main reason for this difference is that Gaziantep has a different and rich culinary culture compared to other industrial cities. The kitchen has been gradually losing importance because of the changes seen in the family structure. As stated above, there is a shift from extended family structure to nuclear families. Also, women have been spending less time to cook because of the current working conditions. However, it is surprising that the importance and size of the kitchen continues to increase in Gaziantep.

Table 9. Comparative analysis of kitchen size (m^2)

Periods	**Min.**	**Max.**	**Avg.**
1960-1980	6	10	8
1980-2000	9	24	14
2000-Present	6	24	18

Income status should also be considered when interpreting the data. The size of the kitchen has increased with the size of the houses proportionally. This may offer interesting input for the studies related to sociology and culture. The sizes of the living room and family room should also be compared. Today, the size of

the living rooms vary between 18 and 26 m^2 minimum and 42 and 53 m^2 maximum. This is related to economic income; when the level of income increases, the size of the houses increase as well. However, it is surprising to see that although the size of the living rooms increae, the size of the daily (family) room decreases to approximately 12m^2.

All in all, the findings of the study provide some suggestions for the apartment-type housing designs. Different variables including social, economical, and cultural structures and regulations are effective in changing the layout of the apartment buildings. On the one hand, depending on the use of night and day space separations are separated from each other, while different typologies in the past period decreased by reducing the number of similar solutions. In other words, the alternatives or variety encountered in the housing plan solutions falls or even developed within the framework of the same spatial fiction. In terms of area size, the increase in the share of kitchen and balcony areas in the total building area indicates that the usage opportunities and the time spent in these areas have increased. Although the results are limited to the apartment buildings in Gaziantep, the results may provide some important evidence for the sectors that have a say in the design and production of housing.

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Resume

Yurdagül Görücü received her Bachelor Degree from İzmir Institute of Technology (Turkey), Department of Architecture in 2012. She began his academic career as a research assistant at Hasan Kalyoncu University. He completed his master's degree in 2017. She has been working at Hasan Kalyoncu University, Faculty of Fine Arts and Architecture, Department of Architecture as a Res. Asst. since 2014.

M.Serhat Yenice received her Bachelor Degree from Selçuk University (Konya, Turkey) in 2001. He began his academic career as a research assistant at Selçuk University. He got him Master

Degree with title "A Study on the Development of Urban Form in Planning Process, The Case of Konya" in Selçuk University, Natural and Applied Science Institution in 2005. He got his PhD degree with title "A Model for Sustainable Regeneration in Historıcal City Centers; The Case of Konya" in Selçuk University Natural and Applied Science Institution in 2011. He has publications in the fields of urban regenerations, cultural heritage management, and conservation-development in historical environment. Currently, he has been working at Hasan Kalyoncu University (Gaziantep, Turkey), Faculty of Fine Arts and Architecture as an Assoc. Prof. Dr. since 2012.

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