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Evaluation of Spatial Change in Cooperative Housing: The Case of Afyonkarahisar

Kooperatif Konutlarındaki Mekânsal Değişimin Değerlendirilmesi: Afyonkarahisar Örneği

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Abstract / Öz

Housing, which is affected and shaped by social, cultural, technological and political changes in societies, has become a problem from time to time, and different types of housing have emerged in different periods to solve this problem. Cooperative housing is one of the important solutions offered to this problem. In addition to being a solution to a problem, this type of housing constitutes an important sample in revealing the housing concept of the period. In this study, investigations were made on 20 cooperative houses built between 1970-2000 in Afyonkarahisar, an Anatolian city. In this study, in which the development of cooperative housing in Afyonkarahisar city is compared with other big cities in Türkiye and the concept of privacy under the title of culture is emphasised, the difference in plan typologies is examined with visibility graph analysis. In conclusion, it has been determined that housing cooperatives, which started as a solution to the housing problem, are followed in Afyonkarahisar city with a 20-year difference from Ankara but with similar periods. This study also investigated the concept of privacy through camekan doors and circulation diagrams by analysing the private/public distinction in the floor plans. As a result, it was observed that the use of camekan doors was less common in the housing cooperatives in Afyonkarahisar after 1980, and in the context of the circulation scheme, there was a privatisation not only for guests but also among the users of the house by ensuring the separation of common and private areas.

Toplumlardaki sosyal, kültürel, teknolojik ve politik değişimlerden etkilenen ve şekillenen konut, zaman zaman bir sorun haline gelmiş ve bu sorununun çözümü için farklı dönemlerde farklı konut türleri ortaya çıkmıştır. Kooperatif konutları bu soruna sunulan önemli çözümlerden biridir. Bu konut türü bir konut sorununa çözüm olmasının yanı sıra dönemin konut tasarım anlayışını ortaya çıkarmada da önemli bir örnek teşkil etmektedir. Bu çalışmada bir Anadolu kenti olan Afyonkarahisar'da 1970-2000 yılları arasında inşa edilen 20 kooperatif konutu üzerinde incelemeler yapılmıştır. Afyonkarahisar kentinde kooperatif konut gelişiminin Türkiye'deki diğer büyük kentlerle karşılaştırıldığı ve kültür başlığı altında mahremiyet kavramının vurgulandığı bu çalışmada, plan tipolojilerindeki farklılık görünürlük grafiği analizi ile incelenmektedir. Sonuç olarak konut sorununa çözüm olarak başlayan konut kooperatiflerinin Afyonkarahisar ilinde Ankara'dan 20 yıl farkla, ancak benzer dönemlerle takip edildiği tespit edilmiştir. Bu çalışmada ayrıca kat planlarındaki özel/kamusal ayrımı analiz edilerek, camekan kapıları ve sirkülasyon diyagramları üzerinden mahremiyet kavramı araştırılmıştır. Sonuç olarak seçilen örnekler kapsamında, Afyonkarahisar'daki konut kooperatiflerinde 1980 yılından sonra camekan kapı kullanımının daha az yaygınlaştığı, sirkülasyon şeması kapsamında ise ortak ve özel alanların ayrılması sağlanarak sadece misafirler için değil, evin kullanıcıları arasında da bir ayrıştırmanın yapıldığı görülmüştür.

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1. Introduction

Housing, which is the unit where the place-user interaction is felt most intimately, privately, and immediately, rather than being designed only by the preferences of its users, has been shaped by economic, social, cultural, technological and even political changes. It has become a problem under the influence of such changes, and different forms of housing have emerged in different periods to solve this problem. Cooperative housing, which constitutes a significant share of housing production in Türkiye, is one of the most important forms of solution. Because cooperative houses are built as a solution to the housing problem rather than purely architectural concerns, especially the first-period

[*] This study is based on the master's thesis titled 'Evaluation of Spatial Change on Housing through Housing Cooperative with Space Syntax: 1970-2000 Period Afyonkarahisar', completed in 2019 at Süleyman Demirel University, Graduate School of Natural and Applied Science, Department of Architecture.

examples have plan types with minimum dimensions and are reflected in the period's conditions. These houses are important for exploring the basic spatial interactions in the minimum space. The aim of this study is to learn about the relationship of different roles in housing space and the social context of the housing form under the main heading of housing and society. The following research questions were looked for answers to for this purpose. The first is to

determine how the plan typologies of cooperative houses whose production has increased since the 1970s have changed depending on which criteria. Besides that, it aims to understand what kind of process the cooperatives produced as a solution to the housing problem, the housing production method followed in an Anatolian city compared to the big cities, and what contributions they make to urban development. Finally, based on the idea that the socio-cultural structure of society is hidden in the houses, how the relationships between the residents of the house and the guests in daily life are obtained from the spatial configuration. Based on the basic theory of the space syntax method, which aims to determine the reasons behind the culture-space relationship, visual integration and connectivity analyses were carried out to reveal the effect of housing plans and physical components that demonstrate different usage scenarios for different users on the space-user relationship. In the literature, there are urban applications of space syntax (Asami et al., 2001; Hillier et al., 1976; Hillier et al., 1983; Hillier & Hanson, 1984; Hillier, 2007; Kubat, 1997; Kubat, 1999; Van Nes & Yamu, 2021). In addition, there are many studies examining housing at the building scale (Al-Mohannadi et al., 2023; Arslan & Ulusu-Uraz, 2017; Bellal, 2004; Çakmak, 2011; Gökçe & Kaya, 2020; Güney, 2007; Hanson, 1998; Ostwald, 2011; Ostwald & Dawes, 2018; Zolfagharkhani & Ostwald, 2021; Vialard & Bafna, 2009). As a result, the quantitative results of the functional areas and the effect of these components on the use of housing were examined.

In this sense, the scope of this research the city of Afyonkarahisar was chosen because it is one of the Anatolian cities where it was important to build according to modern standards during the Republican period. For these reasons, the main material for this study consists of 20 examples of buildings chosen from among the cooperative houses built in Afyonkarahisar between 1970 and 2000. In the selection of the buildings, provided that cooperatives produce them; their location in the city, the years of construction, the differences in the plan scale, and the fact that they were built in different forms such as garden houses, apartments and mass housing were taken into consideration.

2. Literature Review

The increase in migration from rural to urban areas due to industrialization affected population growth in cities and caused a housing crisis (Gür, 1993; Tekeli, 2010a; Tekeli, 2012). The emerging housing crisis has caused the need for housing, and various definitions have been made on this subject. Gür (1993) defined the housing need as the difference between the number and quality of housing required to meet the minimum housing requirements of people and the number and quality of existing housing at any period.

The solution to the housing problem that has arisen due to the increasing housing supply in our country has been realised through independent supply processes such as the build-sell style, cooperatives and even slums. These modes of production have solved the housing problem in terms of increasing the number of houses. However, the inadequate quality of the houses produced has become a new problem over time, causing the housing problem to change its dimension, and the new solutions themselves have become a new problem (Tekeli, 1994).

The housing problem was perceived as Ankara's problem between 1923 and 1950 and attempts were made towards it. During this period, similar problems to those in Ankara emerged in different ways, especially in big cities such as Istanbul and Izmir, due to the dynamics of the cities. The Bahçelievler Building Cooperative, founded in Ankara in 1935, was the first cooperative established in our country as a solution to the housing crisis (Sey, 1998; Tekeli, 2012). In addition, worker-cooperative housing is also one of the most important solutions to this problem (Cihangir-Çamur et al., 2023). Between 1950 and 1980, the housing problem encountered in this period is not only related to the lack of a sufficient number of houses but also the growth patterns of the cities (Tekeli, 2012).

The most critical issue of this period was to solve the housing needs of the middle-class of society. The middle class could own a home with the houses they built on a separate parcel in the previous period, but the increase in the value of the city land in this period made it difficult for them to solve their housing problem. The production of apartment-type housing has been an important development for the solution of the middle-class housing problem since the passage of the condominium legislation in 1965 and the increase in the credits offered for the building of apartment-type housing. In addition to the apartment building with the build-sell model, housing cooperatives, which have been on the government's plan since 1946 and offered as a solution, especially in the context of worker housing problems, have also become a significant production type (Sey, 1998; Tekeli, 2010b; Tekeli, 2012).

Besides, The Mass Housing Law, which came into force in 1981 and was re-arranged in 1984, has had a significant impact on housing production in the process that has survived to the present day (Sey, 1998). Moreover, with the

new constitution published at the beginning of this period, unlike the 1961 Constitution, the rule "The government supports mass housing initiatives" was established. Accordingly, mass housing production has become a key strategy for addressing the housing shortage (Çoban, 2012). According to the second mass housing law published in 1984, the maximum house size was increased from 100 m2 to 150 m2 to get a loan from the Mass Housing Fund. In addition, the condition of not having a second house to take advantage of the loan has been eliminated (Keleş, 2017). Therefore, it can be said that cooperatives, which have been producing for middle and low-income groups as well as high-income groups since they first emerged in our country, have become supportive of this situation in the law.

According to Keleş (1967), the concept of housing cooperatives refers to "all the strategies and methods that describe people voluntarily getting together as a group to satisfy their housing needs in a service understanding and by helping each other" (Keleş, 1967). The main meaning of this concept, it aims to resolve the expectations of its participants in a democratic way without any profit motive. These organisations are institutions between the government and the market, and in this sense, their proximity to the government or the market changes depending on the country (Özüekren, 1996). In this regard, the proximity of housing cooperatives to the government or the market in our country has changed depending on the changing circumstances, the perspectives in the laws and development plans, the meaning of the house in the country and its economic worth. It is seen that the role of housing, which is a large part of the urban building stock built by cooperatives, has a different meaning in terms of social, economic and social aspects and planning. Therefore, the solidarity of the cooperative participants is also important in terms of finding the common denominator.

Our country's housing cooperative practices are evaluated in different ways by dividing them into phases. Tekeli (2010b) examined the process that started in Ankara in the 1930s and continued until the 1960s and then the process that developed with the effect of the condominium law, with the transition to the planned period, as two different periods. Besides this, Özüekren (1996) analysed the housing cooperatives regarding the differences in the spatial organisation of houses and their enclosure and classified them into three periods. The first period contains detached garden houses, the second one has apartment blocks, and the third one has mass housing projects built with housing cooperatives. It can be said that these two classifications examine the changes in the form of the cooperative or the way it comes together depending on external factors.

Since there are no explicit requirements on how the housing cooperatives will be built in terms of their spatial dimensions and their environment thus, only the city's urban plan has been considered in practice. However, because the urban plan lacks a determination of an upper limit for construction conditions, such gaps were tried to be used, and most of the projects resulted in the emergence of undesirable environments (Aydemir et al., 1982). In this development process, the projects do not contain social spaces which can sustain communication facilities for inhabitants of the cooperative housing blocks, and it is seen that the quality of life in cities has decreased (Özüekren, 1996). In addition, after completing the construction of the buildings, the cooperatives transferred the ownership of the condominium to the individuals and did not continue their existence as an association during this time (Tekeli, 2012).

Cooperatives have undoubtedly been one of the most prominent actors in producing housing solutions since the Republic's declaration. Although this housing production type is sometimes unsuccessful due to changing conditions, they constitute a significant majority of the housing production in our country in many respects in the context of fundamental principles. This has been the topic of legislation and development plans with the intention of finding a solution to the problems of the middle and lower-income groups. The fact that cooperative housing has become an investment tool for high-income people has not been directly supported, and this situation has been criticised. However, after the economic troubles experienced towards the end of the 20th century, housing, as an investment instrument for the upper-income group, was considered as a means of reviving the economy. This shows that housing cooperatives were not just a method of building and were directly related to the changes occurring in the country. In this regard, it is essential to evaluate these changes experienced in our country from the past to the present in terms of residences, which are at the forefront of architectural production forms and also constitute the largest part of the building stock in our cities, and it is valuable in terms of guiding future changes. Cooperative housings are significant in terms of reflecting the changes experienced in the historical process and investigating how these changes are reflected in the housing plans. Examining the space-user relationship through housing plan typologies is crucial in analysing the effects of socio-cultural changes in societies.

3. Case Study: Afyonkarahisar

Afyonkarahisar Province is one of the principal cities affected by the renewal movement that started out based in Ankara and spread to the whole country with the proclamation of the Republic in 1923. The first one was the railway networks passing through the city, located at a convenient point for transportation due to its geographical location.

Moreover, then the Minister of Public Works Ali Çetinkaya was from Afyonkarahisar, and he has supported the city's development (Daşdemir, 2004). When the settlement texture of the city throughout history is investigated, it can be observed that Afyonkarahisar has grown from the outskirts of the castle to the plains of the city, with new buildings also built in these areas. New neighbourhoods were established in the lowland area of the city in the 1950s, and settlement shifted towards the Konya Plain and the Afyonkarahisar-Ankara-Istanbul-Izmir routes in the 1990s (Yılmaz, 2004). After the proclamation of the Turkish Republic, the master plan of Afyonkarahisar, which primarily followed the modernisation movements taking place in large cities, was prepared based on the Ankara model (Cengizkan, 2002). When the development trends of the city are considered, it can be said that Afyonkarahisar's spatial growth occurs mainly along the highways. Reviewing the housing pattern of the whole city (Figure 1), it appears that quality areas concentrate on Konya Road and its surroundings (Oruç, 1996).

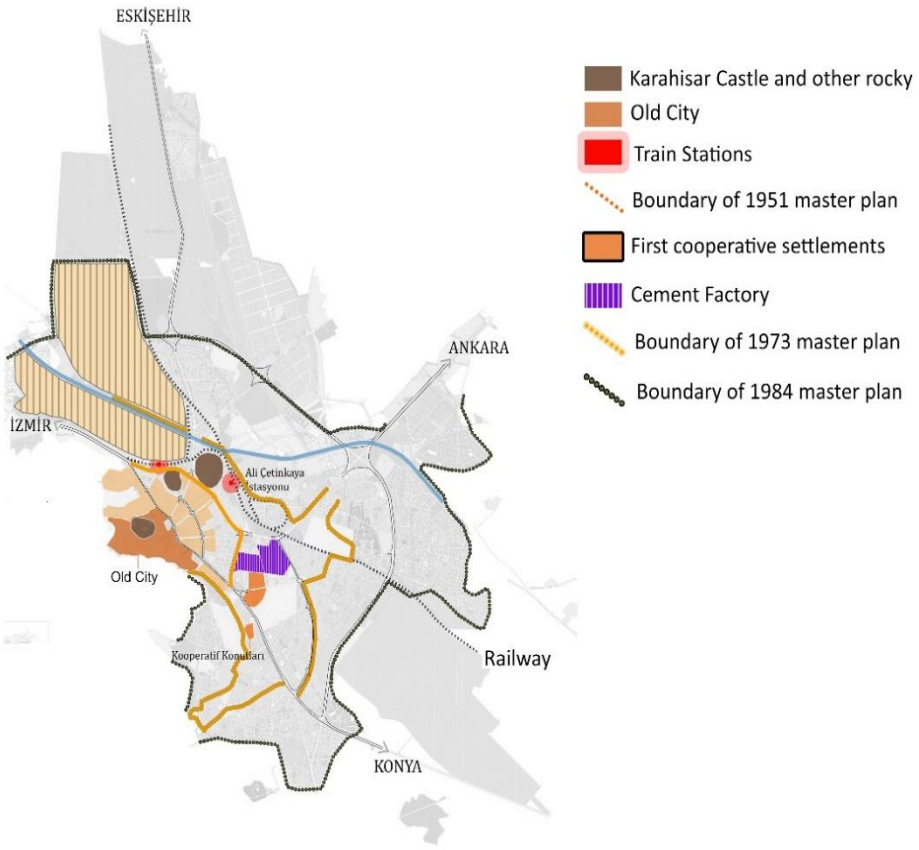


Figure 1. *Urban expansion of Afyonkarahisar (visualised by author)*

As of the 1950s, there was an increase in the number of employees working in the industrial branches of the city with the big factories that started to be established in the city. Establishments such as The Sugar Factory, the concrete sleeper factory of the Turkish State Railways and The Cement Factory, which offer new job opportunities to city residents, also enabled those working in the same line of work to organise themselves and acquire housing through cooperatives. The report prepared by Yetman (1971) underlined that the expansion of the city borders in the southern direction was inevitable. The negative impact of the cement factory built in the eastern parts of the city in 1954 and the increase of the settlements belonging to the Örnekevler, and Güvenevler Cooperatives built in accordance with the house-with-garden concept in the direction of the South were proposed as the two most substantial reasons for this (Yetman, 1971). The search for cheap land for cooperative housing construction was also the beginning of the development of city areas newly zoned for construction. Therefore, it can be said that cooperative housing was crucial for the city's spatial development and determined the direction of development in the city.

4. Methodological Framework

This research first emphasised the significance of housing cooperatives in the history of housing in Türkiye and then mentioned their period-related characteristics. However, the main objective was to investigate the spatial features of cooperatives, which define the social and cultural subsystem (Bilgin, 1998), rather than to address its economic and political aspects. It is an attempt to discern the importance of cooperatives that offer solutions by bringing together an audience of users with a certain socio-cultural background in the context of housing with quantitative measurements. It also seeks to explain the concepts such as privacy, flexibility, hierarchy, and depth in the literature

to understand the change and transformation taking place in the plans. Ultimately, it is a discussion about when and under which circumstances the process, which took place in large cities emerged in the Anatolian city of Afyonkarahisar and how this process was reflected in housing interior plans. For this purpose, 20 samples selected from cooperative housing built-in Afyonkarahisar between 1970 and 2000 were examined in the study. In the selection of the buildings, if they were obtained through cooperatives, their features, such as their location in the city, construction year, differences in planning scale, and construction forms, such as a garden house, apartment and mass housing, were taken into consideration. While the spatial variation of the sample houses discussed within the scope of the study is investigated using the space syntax method, a nod was also made to how much the selected samples coincided with the principles of cooperatives regarding the acquisition method.

The space syntax method is based on the connections of spaces, which are designed in accordance with the function of the building, with one another and with the whole building form. According to the space syntax theory, there is a relationship between external factors that give shape the forms and social factors. It is argued that the spatial development of structures and settlements quite overlaps with the economic, social, and ideological relations of their users (Hillier & Hanson, 1984). The most notable feature of the space syntax method is that it is a technique that can provide, for the first time, the concrete expression and analysis of the abstract characteristics of space, which have an important role in the formation of knowledge based on experiences and can be called the reflection of space in the mind. The general idea of this method is to divide the spaces into parts that are the outlet for human experiences, translate these parts into maps or graphs and allow the numerical analysis of them (Hillier & Hanson, 1984). Unlike architectural form and typological analyses, the space syntax method enables us to read the relationships of space and the social life that is made up of them, as well as the organisation of space on a topological rather than the geometric one. It deals with social logic, which forms the spatial texture behind the form. The spatial dynamics have the potential to bring people together or create isolation, depending on the patterns of movement within the space (Çil, 2006). Regarding perceiving space, the whole of a space or structure cannot be seen and experienced from where a person stands; to obtain the whole picture, the individual must act within the system and connect the parts (Hillier & Hanson, 1984). Movement and visibility reveal which and how much access the space configuration offers to the individual, depending on the movement within the space. These parameters provide insight into whether we see things before we approach them, and when we associate them with spatial composition and functions, they allow interpretations to be made with concrete data about the social hierarchy of the space (Çil, 2006). According to Hanson (1998), houses are not only spaces where rooms are combined; they are also models of spaces organised in more complex ways, and all houses are structures in which housing, cooking, eating, bathing, sleeping, entertainment, and various other service spaces are provided (Hanson,1998). However, the ways the spaces that house these activities coalesce vary greatly depending on historical periods and cultures. Thus, it is not the list of rooms in a house that matters but how and which areas are connected to one another (Hanson, 1998). Houses in our country have undergone distinctive transformations according to the dynamics of the respective periods. During the transition from the traditional Turkish house to the modern apartment flat, some design elements in housing planning were lost, and modern spaces replaced some. In this sense, it is critical to investigate the inter-space relations via the cooperative residences selected within the scope of the study.

The measurements of the space syntax method enable quantitative modelling by conducting assessments at both the building and city levels. In housing studies, VGA analyses are one of the most suitable measures for assessing the relationship between culture and home (AL-Mohannadi et al.,2020; Al-Mohannadi et al.,, 2023; Bellal, 2004; Güney, 2007; Tahar & Brown, 2003). Analyses of visual integration and connectivity were carried out separately for each of the 20 selected houses using the DepthmapX program (Turner, 2001), and the results were interpreted by comparison. As a separating element that can be defined as an element that determines the hierarchy in the use of space, the door is also evaluated to understand spatial organisations. In this context, the change was exhibited by analysing the open-closed doors on the house plans where glass doors separating the hall and the living room and doors between the entrance and the hall, separating the private and public spheres for house users, are observed.

5. Spatial Analyses of Houses and Discussion

First, the characteristics of the 20 cooperative houses examined in the context of the cooperative system, such as their location in the city, building type, total size, and the number of independent sections, were discussed for the years 1970-1980, 1980-1990 and 1990-2000 and compared with one another (Figure 2). Secondly, the numerical and visual results of the analyses made using the space syntax method at the planning level were evaluated in the context of privacy as a cultural subheading in terms of the method used to provide outcomes for understanding the relationship between space and culture.

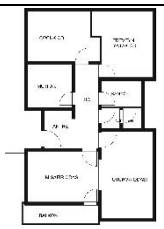
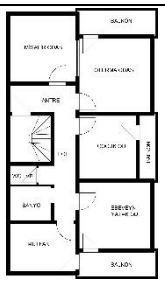
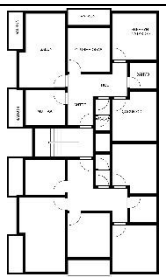
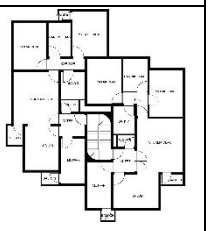
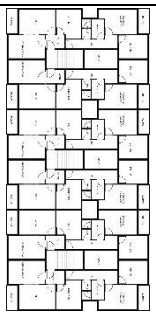
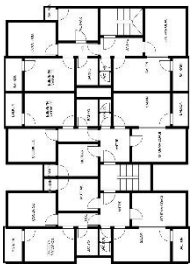
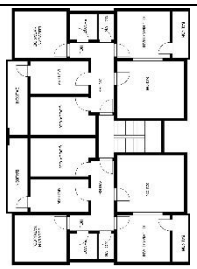
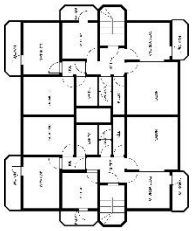
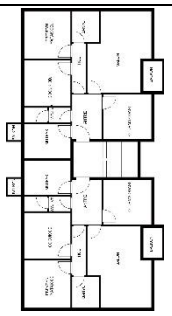
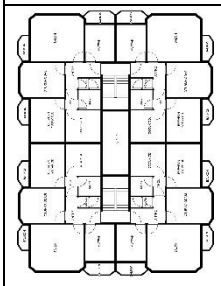
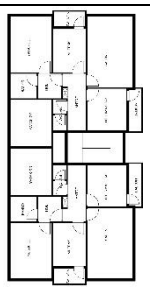
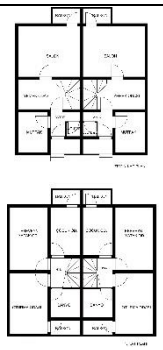
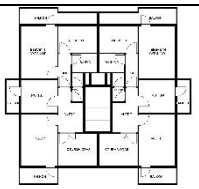
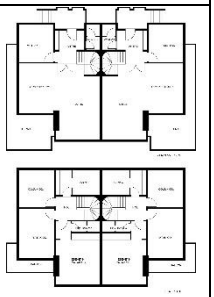
1970-1980	House No:1	House No:2	House No:3	House No:4	House No:5
					
					
1980-1990	House No:6	House No:7	House No:8	House No:9	House No:10
					
					
	House No:11	House No:12	House No:13	House No:14	House No:15
					
					

Figure 2. *The photos and floor plans of selected houses*

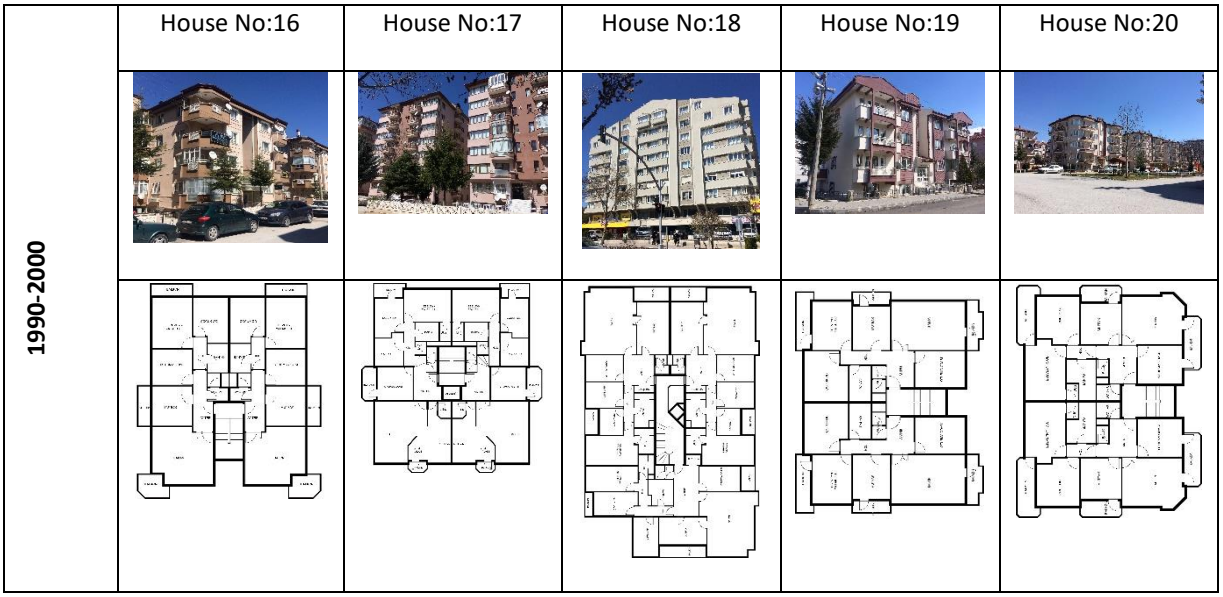


Figure 2. *The photos and floor plans of selected houses(continues)*
Source: All photographs were taken by the author, and the floor plans were redrawn based on the original plans received from Afyonkarahisar Municipality Archive

5.1. Findings and Discussion Obtained in the Context of Cooperatives

Twenty cooperative houses were constructed mostly in areas far away from the city centre, according to an examination of their locations. It can be stated that such settlements occurred as a result of the demand by cooperatives for cheap land. As a result of the regulations have gradually been made regarding the size of houses built through cooperatives in our country, when the net area sizes of the houses probed in the study, it can be observed that, until 1990, residences with an area of less than 100 m^2 were constructed in accordance with the law. The No. 2985 mass housing law has raised the maximum size of residences eligible for financing under social housing from 100 square metres to 150 square metres (Keleş, 2017). Consequently, the area of cooperative houses increased. As a result of this change, it is seen that the total construction area of some of the chosen housing, such as No:15, No:17 and No:18, have increased to 186 m^2, 152 m^2, and 174 m^2, respectively (Table 1).

Table 1. *The locations, building types and areas of the selected housing*

Period	Year	Building No	Location			Area	Type of Building		
			City centre	Close to the centre	Far from the centre		Garden House	Apartment	Mass Housing
1970-1980	1973	NO:1			x	96 m2	x		
	1979	NO:2			x	92 m2	x		
	1979	NO:3			x	95 m2		x	
	1979	NO:4			x	98 m2	x		
	1979	NO:5			x	98 m2		x	
1980-1990	1981	NO:6		x		96 m2		x	
	1981	NO:7			x	92 m2		x	
	1982	NO:8			x	93 m2		x	
	1983	NO:9			x	100m2		x	
	1984	NO:10			x	98 m2		x	
	1985	NO:11			x	93 m2		x	
	1987	NO:12			x	98 m2			x
	1987	NO:13			x	95 m2	x		
	1988	NO:14		x		83 m2		x	
	1988	NO:15			x	186m2	x		
1990-2000	1990	NO:16		x		108m2			x
	1991	NO:17	x			152m2		x	
	1991	NO:18	x			174m2		x	
	1994	NO:19			x	121m2			x
	1995	NO:20			x	113m2			x

Source: Kurtuluş,Ö., 2019

Examining the configuration of the selected residences, construction forms belonging to the three periods proposed by Özüekren (1996) were also found to be present. However, residential settlements, described as mass housing, were not defined as complexes with security and social areas such as a market and sports area but as compounds where two or more residential blocks are bordered with garden walls, including arrangements such as parking lots, playgrounds, and green areas. Consequently, although the construction format is mostly found in the apartment typology, it is observed that the settlements described as mass housing emerged in 1987. On the other hand, settlements constructed in accordance with the concept of detached garden houses were found to be more common between 1970 and 1980.

It is known that the sizes of the houses produced through cooperatives have been determined by laws over time and some restrictions have been introduced from time to time. In general, it appears that the 100 m^2 limit has been maintained despite the changes it has undergone. When the building types of the selected houses are examined, the most common form of construction appears to be apartment buildings. When considered according to ten-year periods, while there was no production in the form of mass housing between 1970 and 1980, it was observed that the settlements produced in such manner increased over time. It can be noted that residential buildings made in the style of garden houses gradually decreased and were not built after 1990.

5.2. Findings Obtained as a Result of Visual Integration Analysis of Floor Plans

One way to understand the social reasons behind the design of houses is to examine the relations of visibility inside the house. According to the results of the visual integration analysis of the 20 selected houses, it is seen that the spaces with the highest visual integration value on average are the entrance and hall spaces that provide circulation (Figure 3). However, in some examples (House No: 5, 16, 17), the most integrated areas were outside the entrance or hall due to the differentiation of interior design. In No:5 house, the integration values of the living rooms are higher than the entrance and hall. Unlike other examples, living rooms in No:5 house can be interpreted as transitional spaces rather than gathering spaces. This formation is similar to the transformation of living rooms, which lost their boundaries in apartment plans in Ankara in the late 1980s, into a hall between bedrooms (Güney, 2009). Similarly, in this example, the living room became an intermediate space between the entrance hall and the night hall that opens to the bedrooms. The most integrated area in the NO:16 house has shifted to the living room due to the living room and bedroom doors being opposite each other at the beginning and end of the linearly organised circulation. In House No: 17, the dividing wall between the living room and the kitchen, directly connected to the entrance, also provides the passage, causing the integrated area to shift from the entrance hall to this space. Looking at the most segregated areas of the plans in the results, it emerged in spaces such as the bathroom WC, as well as in places such as the en-suite bathroom, which are deeper and where we pass another room instead of being directly accessible from the entrance or hall. In addition to these spaces, the walk-in closet areas in the bedroom of houses NO:1,17,18 and 20, are the most segregated spaces.

Figure 3. *Visual integration analysis results*

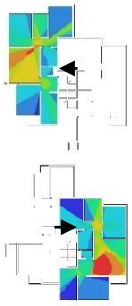
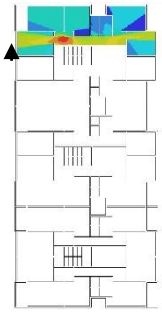
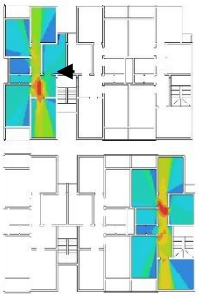
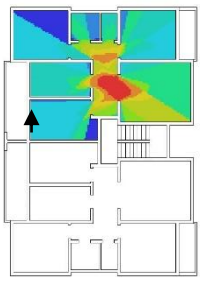
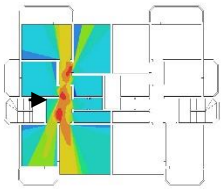
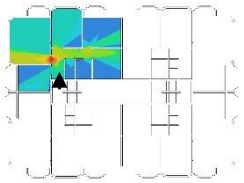
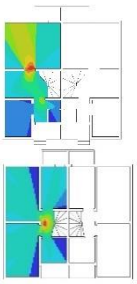
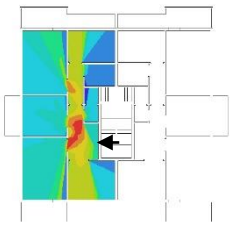
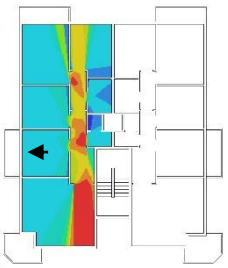
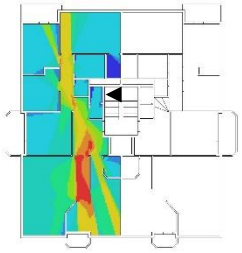
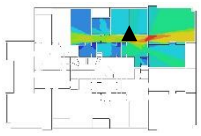
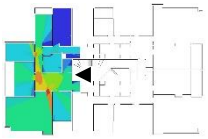
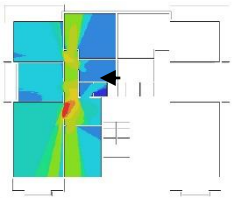
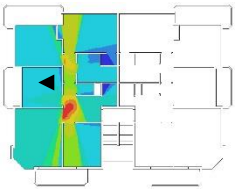
House No:5	House No:6	House No:7	House No:8
			
House No:9	**House No:10**	**House No:11**	**House No:12**
			
House No:13	**House No:14**	**House No:15**	**House No:16**
			
House No:17	**House No:18**	**House No:19**	**House No:20**
	 F1  F2		

Figure 3. *Visual integration analysis results (continues)*
Source: Kurtuluş,Ö., 2019

When the values obtained in the analysis results of houses NO:4, 13 and 15, which were built as duplexes, are examined, it is seen that the values are higher than the other examples. The visual integration value of the ground floor, where public spaces are located, is higher than the average value of the first floor. However, while no significant difference was observed in houses NO:4 and NO:13, a significant difference was observed between the ground and first-floor average integration values of the house NO:15. The ground-floor value of house NO:15 also has the highest integration value among the selected examples. When the ground floor plan of this example is examined, it is seen that it was designed as an open plan. In addition, when we look at the visual integration analysis, it is seen that the integration core emerges as a point. Therefore, it is observed that the highest visual information about the house can be obtained from a minimal area.

When the plan diagram of house NO:8, which has the highest integration value, and the visual map obtained as a result of the analysis are examined, it is seen that the point connected with the hall door in the entrance hall has a high integration value. In this house, which has the maximum integration value with the circulation planned in the 'L' form, the location of the room doors relative to each other can be shown, unlike other similarly designed houses. Therefore, it can be concluded that opposing doors increase the integration value. The most segregated plan is the NO:18/2 flat (Rort18=7.99). When we look at the shaping of the indoor circulation, it is seen that it is shaped in a 'U' shape with many turns. According to the mean value of visual integration and connectivity results (Table 2), in two separate flats (Rort5/1=8.59 and Rort5/2=8.41) in house NO:5, which has the second-lowest visual integration value, access to the rooms is provided by passing through each other instead of designing the spaces around a hall.

Another analysis made at the plan level within the scope of the study is the connectivity analysis. The plan type that has the highest average connectivity value with Rmean15=4234.98 is the ground floor of house NO:15 (Table 2). It is possible to say that the transition between the spaces is not only provided with standard door openings but also with the absence of dividing walls or wide door openings, and therefore a high connection value is seen. The lowest connectivity value was obtained from the first-floor plan analysis (Rmean=1326.40) of house NO:13, which was designed as a duplex.

Table 2. *Mean value of visual integration and connectivity*

Time Period	Year of Built	House No	Visual Integration Mean Value	Connectivity Mean Value
1970-1980	1973	1	9.92	1607.83
	1979	2	9.71	1555.52
	1979	3	10.35	1743.73
	1979	*4-ground floor* *4-first floor*	*13.46* *12.44*	*1518.32* *1339.39*
	1979	5/1 5/2	8.59 8.41	1599.37 1805.35
1980-1990	1981	6	9.22	1647.00
	1981	7/1 7/2	10.43 10.09	1712.98 1619.89
	1982	8	**10.71**	2055.76
	1983	9	10.19	1674.50
	1984	10	9.44	1807.52
	1985	11	9.86	1753.33
	1987	12	10.36	1848.47
	1987	*13- ground floor* *13- first floor*	*14.85* *12.67*	*1542.48* *1326.40*
	1988	14	10.39	**1577.87**
	1988	*15- ground floor* *15- first floor*	*25.57* *10.81*	*4234.98* *1966.49*
1990-2000	1990	16	10.30	2083.44
	1991	17	9.97	2644.00
	1991	18/1 18/2	10.02 **7.99**	**3273.45** 2898.55
	1994	19	10.41	2274.50
	1995	20	9.88	1996.50

Source: Kurtuluş,Ö., 2019

According to the connectivity analysis results of all buildings, it is seen that the entrance and hall have the highest connectivity (Figure 4). In some examples, the integration core has shifted from the circulation area to the inside of the guest room. Especially in house NO:16, a linear hall and the doors positioned mutually at the beginning and end of this hall caused the area with high connectivity value to slide into the guest room. When we look at the values of the non-duplex houses, the house with the highest connectivity value belongs to house NO:18/1 with Rmean18/1=3273.45. Following this value, the house with the second-highest connectivity value in flat NO:18/2 with Rmean18/2=2898.55. The fact that this flat has the lowest visual integration value compared to other examples shows that its intelligibility is very low. The intelligibility value of this house, which showed a significant difference between the two analysis results, was also calculated and R2=0.42. As a result of these data, it is possible to say that the "U" shape of the circulation space in the house reduces its legibility of the house.

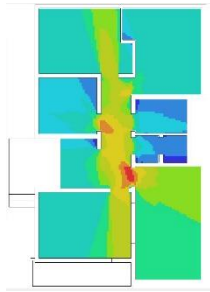
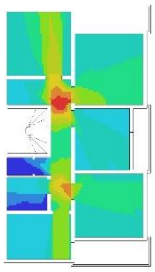
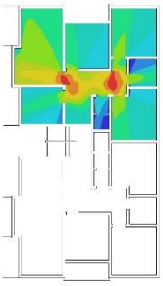
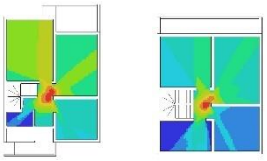
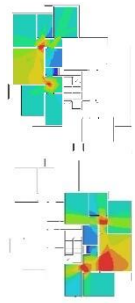
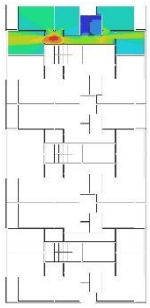
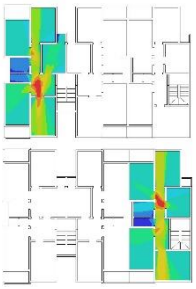
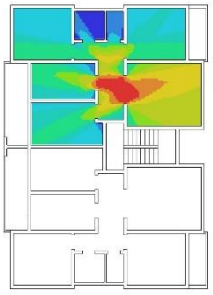
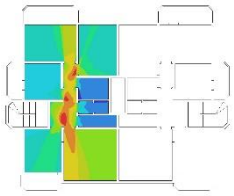
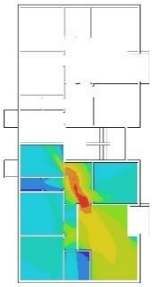
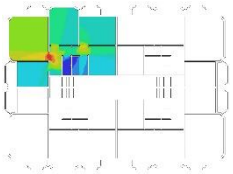
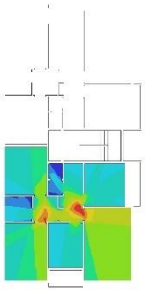
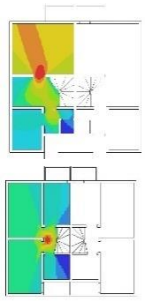
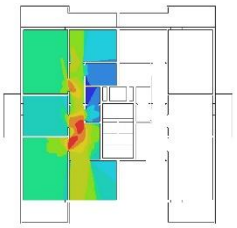
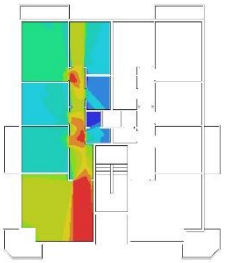
House No:1	House No:2	House No:3	House No:4
			
House No:5	House No:6	House No:7	House No:8
			
House No:9	House No:10	House No:11	House No:12
			
House No:13	House No:14	House No:15	House No:16
			

Figure 4. *Connectivity analysis results*

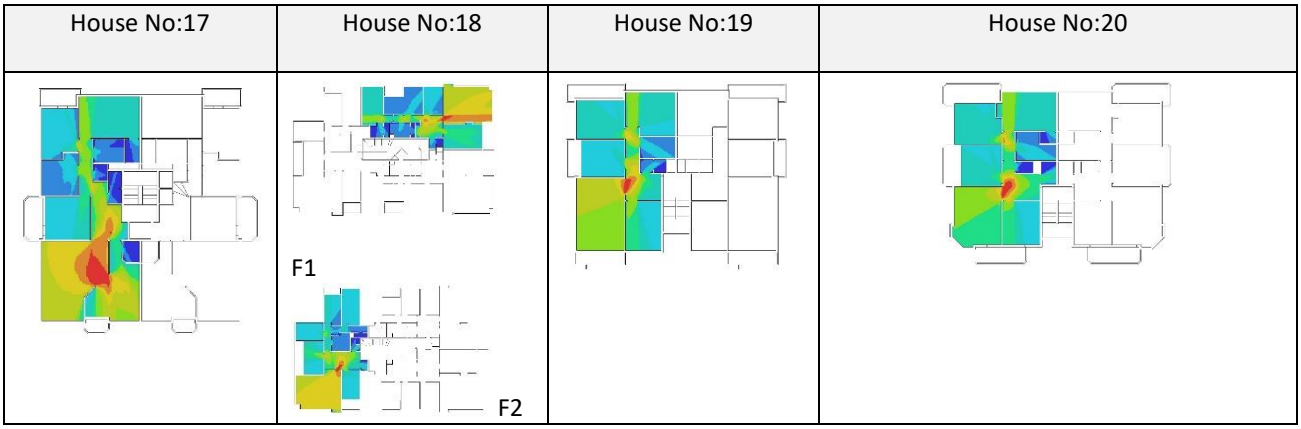


Figure 4. *Connectivity analysis results (continues)*
Source: Kurtuluş, Ö., 2019

Although the differences between plans did not significantly affect the visual integration value, it was seen that they affected the connectivity value. As a result, it can be concluded that only the visual integration value is not sufficient in determining the differences and similarities between plan schemes and should be evaluated together with the connectivity value. In all the examples analysed, the spatial classification according to the function was made. In all houses, the living room, which is used by the residents in their daily life, and the guest rooms, which are open for short-term use by the visitors, are positioned in a way that is directly connected to the entrance. Considering the studies on the spatial characteristics of the houses, as Sungur (2020) reveals, while the most integrated space in traditional houses is the courtyard, it is the guest room space where flexible use is possible with a camekan/accordion door in the apartment building process. A flexible space concept was introduced in the housings by controlling the openings with the doors and weakening the boundaries of the space. (Güney, 2009).

Spaces are classified into "front regions" and "back regions" by Goffman (1956). The living room and dining room are the front areas where social activities in the form of 'performances' take place, while the bathroom and bedroom are the backstage areas where preparations are made for these performances (Goffman, 1956). In a similar way, the term "facade" was applied to the more public and official sections of house. In other parts of the house, personal and private life is maintained (Korosec-Serfaty, 1984). Based on these definitions, although the entrance, which can be defined as the front stage of the house, is little depth, it does not have the highest value in the visual integration and connectivity analysis results made on the selected samples. In this respect, it can be concluded that there is not enough information about the house from the entrance halls, which are the welcoming place of the house. When looking at the maps obtained in the analysis results in general, it is seen that visually integrated spaces and spaces with high connectivity overlap each other. However, it is seen that this situation reveals different maps in case of open or closed camekan door seen in some plans and the doors between the entrance and the hall. These findings point to the conclusion that these elements, which define the borders at the plan layout and provide controlled access, are critical for the visibility and accessibility of the residence.

5.3. Discussion of the Door between Entrance and Hall, and Camekan Door

Hillier and Hanson conceptually define structures as regulating different categories of people by a control mechanism. According to this definition, houses are designed in a way that regulates the internal relations of the household and the relations between the household and guests (Hillier & Hanson, 1984). Based on this information, the door located between the entrance and the hall, which is located in the house and provides the separation of the spaces, is an element that limits the use between the owners of the house and their guests. The boundaries that define spaces can be dynamic (mobile doors), static (walls), transparent (glass windows), or opaque (brick walls) (Güney, 2007). In their study, Sungur and Aydın mention that the camekan/accordion door observed in the apartments in Konya from 1950 to 1965, located between the sofa and the room next to it, offered a flexible solution by enabling separate hosting of male and female guests coming to the house (Sungur & Aydın, 2021). Besides that, according to the studies of Vural and Demirci, build-sell housing production started in Türkiye with the Condominium Law in 1965, and the prominent architectural element in the houses was the guest rooms called salon salamanje. Guest rooms became the exhibition area of housing production, and in the plan schemes of the period, living rooms and guest rooms, where daily life takes place, were planned as separate but related rooms (Vural & Sağıroğlu-Demirci, 2022). Some research has shown that similar spatial designs exist in the apartments built in Ankara in the 1940s (Altınay & Nalçakan, 2021), in the apartments built in Antalya in the early 1960s (Nebioğlu & Kara Yüksel, 2023), and in the cooperative apartments built in Konya in the 1970s (Hatipoğlu-Şahin & Dağ-Gürcan, 2021). In this context, the term "camekan door" was defined as the dynamic

separation architectural element that allows the use of the salon salamanje room, and this term is used in this way in the continuation of the study. In five of the samples examined, there are both a camekan door in salon salamanje space and a door between the entrance and the hall. The intelligibility of the house was evaluated in case the camekan door is open and the door between the entry hall is closed by examining the house plans in which these two features exist at the same time (Figure 5).

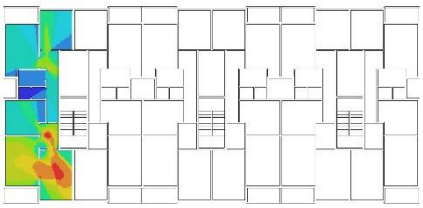
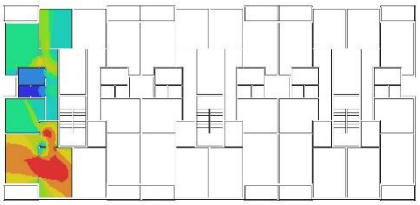
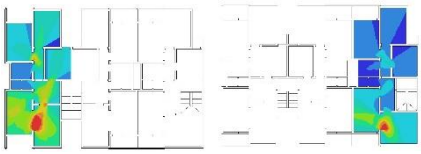
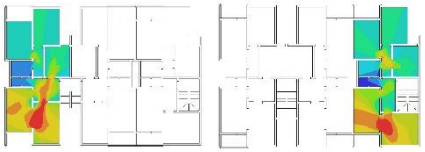
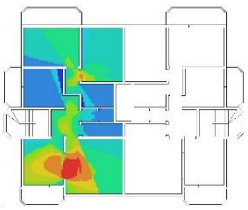
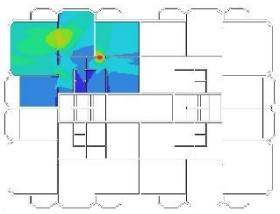
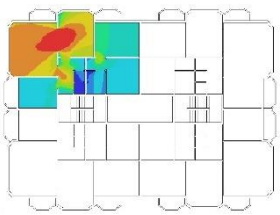
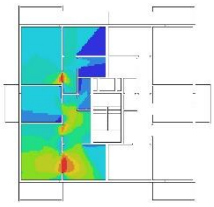
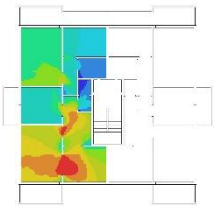
	Visual Integration	**Connectivity**
House NO:6 (R^2=0.91) (intelligibility value)		
House NO:7 (R^2=0.85-0.81)		
House NO:9 (R^2=0.71)		
House NO:11 (R^2=0.69)		
House NO:14 (R^2=0.81)		

Figure 5. *Visual integration and connectivity analysis result of selected five housing*
Source: Kurtuluş, Ö., 2019

It has been investigated how the intelligibility of the house is for people who come from outside in this situation, which is thought to be possible if guests come to the house. For this reason, the R2 value obtained from the correlation of these two analysis results and used to measure the intelligibility of the system of the houses for which visual integration and connectivity analyses were made were examined. According to these results, the house with the lowest intelligibility is house NO:11 with R2=0.69, while house NO:6 has the highest intelligibility value with R2=0.91. When these two results are compared with each other, it can be said that the intelligibility has decreased due to the circulation area designed in the "L" shape of house NO:11 and the relationship between the camekan door and this area in a different direction. In house NO:6, a linear circulation and the position of the camekan door in a direct relationship in the same direction with the linear line did not reduce the intelligibility at the expected level. Consequently, the camekan door in these research-examined houses could not be considered an architectural element that provides the expected level of privacy.

6. Conclusion

While the pioneer example of cooperatives was built in Ankara in 1935, the first housing cooperative in Afyonkarahisar, an Anatolian city, was 75 single-story buildings with a private garden constructed in 1955 in the district of Örnekevler. Therefore, it can be concluded that the city of Afyonkarahisar followed this process, which started with Ankara the pioneer, in a similar way, although not in the same period as Ankara but with a difference of 20 years.

The results of the spatial analyses were discussed in the context of the concept of privacy under the heading of culture. This study has determined how the concept of privacy is ensured with which elements in the housing plans and how these elements have changed over time. The open or closed condition of the camekan door between the guest room and the living room, as well as the open or closed condition of the door used to divide the entry and hall, were examined in this context based on the usage habits of the owner and the visitor.

Different scenarios have emerged regarding the various uses of the components in the planning scheme, especially regarding the concept of privacy in the space-user relations in the house. In this context, the arrangements made to separate the private and the public, or control this uncertainty with controlled transitions, when necessary, are the elements that contribute to the spatial reading of the house. The location of these items and their differentiated situations with the phenomenon of privacy were associated and evaluated by considering the construction years of the houses. In this context, it has been determined that the camekan door was an element that was frequently used between 1970-1980, but the usage that started to decrease in 1980-1990 was no longer used after 1990.

The guest room, which is generally referred to as the most public space of the house in the literature (Attfield, 2007; Ayata, 1988; Bryson, 2010; Gürel, 2007), is used as a place where the homeowners' social, cultural, and economic status are displayed to visitors spatialised as a field in our country. The changes brought about by changing social paradigms in the housing typology were examined in the context of spatial privacy through residences in Konya, and it was discovered that the traces of traditional life culture began to disappear gradually between 1950 and 1980, and housing plan schemes shaped in accordance with modern nuclear family living conditions began to appear (Sungur, 2020). Similarly, considering the selected periods within the scope of this study, it is seen that modern house plan types are dominant instead of traditional.

Another finding is that the separation between the entrance and hall, which serves as a spatial threshold, is provided in different types in all residences. The circulation scheme, which is the sign of privacy in the house, was the "I" type in Ankara apartments in the 1920s, where all the rooms were opened to a common space, and visual privacy was insufficient in the house, while the "L" type was the circulation patterns in the 1970s, where visual control was provided by changing direction instead of physical definitions (Güney, 2009). According to analysis in this examination, three different circulation areas were formed, which were differentiated as “L”, “I”, and “U” in terms of breaking the relationship between these two spaces with 90-degree turns. In addition to making a distinction with turns, there are examples where the relationship is separated with the design of the door as another element between two spaces. Accordingly, it is possible to say that the spaces that provide access to the common and private areas throughout the circulation area in all residences are separated from each other. In this sense, houses are designed with a design approach in accordance with the concept of privacy. While the door element, which provides a clear separation of the relationship between spaces, was not encountered between 1970-1980, it was seen that it was used intensively after 1980.

As a result, it has been seen that similar problems and solutions in the context of the housing problem are experienced throughout the country and the solutions produced after it has been experienced in Afyonkarahisar in different periods. The spatial analysis results revealed the changes caused by the basic parameters affecting housing planning, such as daily life rituals, the understanding of guest hospitality, and the privacy phenomenon, with the effect of the changes in society. Accordingly, the spatial analyses of the apartment houses, described as type projects using space syntax, have provided different results. It is thought that it is important to investigate these houses, which are examples of a period's civil architecture, to understand the period's life; therefore, their conditions should be improved and continued to be used.

Etik Kurul İzni/Ethics Committee Permission:

Bu çalışma 2019 yılında Süleyman Demirel Üniversitesi, Fen Bilimleri Enstitüsü Mimarlık Anabilim Dalında tamamlanan yüksek lisans tezine dayanmakta olup, etik kurul izninden muaf tutulmuştur.

This study is based on the master's thesis completed in 2019 at Süleyman Demirel University, Institute of Science and Technology, Department of Architecture, and was exempt from ethics committee permission.

Çıkar Çatışması/Conflict of Interest:

Yazarlar, kendileri ve/veya diğer üçüncü kişi ve kurumlarla çıkar çatışmasının olmadığını beyan eder.

The authors declare that they have no conflicting interest.

Yazar Katkısı/Authors' Contribution:

Fikir/Kavram - Ö.K,B.G.; Tasarım ve Dizayn - Ö.K,B.G.; Denetleme/Danışmanlık - Ö.K,B.G.; Kaynaklar - Ö.K,B.G.; Veri Toplama ve/veya İşleme - Ö.K,B.G.; Analiz ve/veya Yorum - Ö.K,B.G.; Literatür Taraması - Ö.K,B.G.; Yazı Yazan - Ö.K,B.G.; Eleştirel İnceleme - Ö.K,B.G.

Idea/Concept - S.A.,M.E.; Design and Design - Ö.K,B.G.; Auditing/Consultancy - Ö.K,B.G.; Sources - Ö.K,B.G.; Data Collection and/or Processing - Ö.K,B.G.; Analysis and/or Interpretation - Ö.K,B.G.; Literature Review Ö.K,B.G.; Writing - Ö.K,B.G.; Critical Review - Ö.K,B.G.

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