Discussion on Typo Morphological Approach and Baykal Neighborhood in Famagusta

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ABSTRACT

Generally, the architecture of iconic buildings because of their unique characteristics has attracted much attention. Specially with the start of modernist era, design of individual iconic buildings gained more importance which is the product of certain famous architects that reveals some clues about these unconventional typologies. It should be noted that being unconventional is not only limited to iconic buildings with famous architects but it can also be found among the normal and ordinary buildings that form the majority of the structures in cities. In general, building typologies change over time influenced by the factors like socio-economic issues and needs of the users. These changes have not always taken place slightly and gradually, but sometimes are mutated under special circumstances such as irregular contextual issue and have caused the appearance of new typologies called mutated type.

This thesis attempts to study and review unconventional apartment building typologies based on cooperative houses constructed in Baykal neighborhood in Famagusta city in the 60's. To achieve this aim, by scanning and reviewing the development of typo morphological studies based on survey of the previous researches on this subject, the study will proceed to comprehend different typologies in terms of architectural characteristics and important components of morphology science in the field of urban issue.

Therefore, the applied methodology in this thesis is adapted from the background information coming from synthesizing the methods of Caniggia and Conzen (famous theoreticians of typo morphology science) to review the evolution of unconventional

apartment typology which are created by the added floors on the single storey cooperative houses over time, in terms of façade characteristics and urban factors, in addition, interior space organization and the changes that occurred in space arrangement are taken into consideration as well.

Keywords: Typo-Morphology, Unconventional Typology, Mutated Type, Apartment Building, Famagusta

ÖZ

Özgün mimari karakterleri nedeniyle iconic binalar her zaman daha çok dikkat çeker. modernist çağın başında özellikle ünlü mimarlar tarafından tasarlanan bu tür binalar sıradışı tipolojik özellikleri nedeniyle araştırmacıların dikkatlerini çekmişlerdir. Ne var ki, sıradışı olmanın sadece iconic özellikleri ağır basan bu binalara ait bir özellik olmadığı daha sonraları farkedilmiş, artık kentlerin büyük bir kısmını olusturan sıradan binalarında bu özellikleri farklı düzeylerde taşıyabileceği anlaşılmıştır. Bina tipolojilerinde zamanla ortaya çıkan sosyo-ekonomik ve kullanıcı gereksinmelerine bağlı yavaş ve sürekli değişimlere karşılık; bazen de ani etkilerle ortaya çıkan ve diğerine kıyasla daha belirgin ve sıradışı değişimler gösteren yeni ve dönüşmüş tiplerin ortaya çıkmasının kaçınılmaz olduğu öne sürülmektedir.

Bu çalışma, Mağusa kentindeki Baykal bölgesinde 60'lı yıllarda inşaa edilen tek katlı ikiz bina tipolojisindeki kooperatif konutlarının sıradışı apartman tipololojilerine dönüşmesini araştırmayı amaçlar. Bu bağlamda, konuyla ilgili daha önce yapılmış teorik çalışmaları ve bunların üzerine temellenen typo morphologic çalışmaların gelişimini gözden geçirir. Bu yolla, biçim bilimde önemli bileşenler olan mimari karakterlere bağlı olarak ortaya çıkan farklı tipolojileri ve gelişimlerini kavramayı dener.

Dolayısıyle bu tezde kullanılan yöntemin saptanmasında, iki ünlü kuramcı Caniggia ve Conzen'in yöntemlerinin sentezinden yararlanıldı. Tek katlı cooperative evlerine zaman içinde kat ilavesiyle olusan sıra dışı apartman tiplerinin gelişimi, sadece cephe karakterleri ve kentsel çevreye bağlı özellikler olarak değil; daha da ötesinde iç mekan

organizasyonlarında zemin kattan farklı olarak ortaya çıkan değişiklikler ve bu bağlamda binalar arasında gözlenen çeşitlilikler üzerinden incelendi.

Anahtar kelimeler: Typo-Morphology, Sıradışı Tipoloji, Dönüşmüş Tip, Apatman, Mağusa.

To My Inspiring and Beloved Parents

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Chapter 1

INTRODUCTION

Housing topic has been investigated for many years. In addition, from architectural research point of view it is still one of the most significant subjects because in the cities mainly it is the architecture for citizens and creates a public pattern. It consists of many issues regarding to many different parts for architectural theory, practice and education. One of the most important investigations regarding to analysis of housing as a product simply consists of shared architectural characteristics of planned mass and surface is researching on housing typologies. This will even open the way to understand urban issues in a more comprehensive way because conventionally housing as a most common and basic urban element gives the form to the various urban tissues and characteristics of urban environment.

1.1 Research Field

Housing as an architectural design product could be planned or unplanned which reflects the role and requirements of the users and its contextual characteristics affects the context more seriously than any other building types or vice versa.

One of the most significant samples amongst house types which has very strong contextual references, contrary to vernacular houses, is urban house that their emergence is dated back to the late 18th century in Britain. Effective factors such as number of floors, functional characteristics, standards and regulations, aesthetic aspects, relation with surrounding environment, cultural values, social and economic conditions had great role in forming (Schittich, 2012) the variety of urban houses and

altering of them accordingly. Obviously, it should be noted that complexity of the housing design does not only depend on the planning of individual houses, but it lies in the way that they interact with their man made nearby environment specifically with other buildings as well (Towers, 2013). In fact, this is the interaction that defines different forms of urbanity.

Besides, cities are formed by a set of settlements comprising of the buildings with different typologies, open spaces and networks (Tsai, 2005). In other words, characters of urban form are defined by different urban patterns and districts which have their specific morphological aspects and building characteristics within its geometry. The morphological variety of towns and cities reflects the time base developments of the area. Generally, cities have been established through the ancient times, medieval Ages, early modern stages, industrial and our recent time requirements. Sun, (2013) underlines the original patterns and structures of cities in the world regarding to their urban history should have the peculiarity in urban morphologies and relevant building typologies regarding to various geographical, contextual and cultural issues. Mainly, Medieval cities in the world demonstrate very strong relation between the urban form and building typologies. In these environments the buildings typology is defined by their locations in the urban form and their contribution to it in terms of interactive relations between solid and void parts.

By commencing of modernity the characteristics of urban form in many places damaged. Modernist movement ignored all factors which were related to history (Heynen, 1999). In this regards, for many cities new city planning and building typologies were proposed and executed (Broadbent, 2003). In terms of building typology as Aymonino (1976) stated, in the cities of the modernist era the buildings

were treated individually and surrounding environment were less important. By becoming building as an individual character, the typologies of previous buildings which were shaped in terms of strong connection with urban environment were not effective any longer. Therefore, functional topologies like hotels, hospitals, schools and etc.... which were independently expressing the function of each building were brought up. The new city planning and over standardized building types in modernist era led to the appearance of different zones like industrial, educational, intuitional zones and etc… which resulted fragmented modern cities with totally new urban textures (Heynen, 1999).

Besides, in the cities of today with extensive standardization and harsh principles in connection with the size of lots, building regulations and planning decisions, it is very difficult for a design tendency to suggest any new building types for breaking existing monotony. Only some expert architects by their iconic design approaches which propose unconventional building typologies amongst usual ones, help to break monotony and give identity to the modern urban form (Towers, 2013). Moreover, product of some Avant-garde architects reveals some clues and information about unconventional typologies (Heynen, 1999). On the other hand, it needs to be mentioned that unconventional typologies are not resulting only from the design of famous architects. Apparently, the cities gain their identities not only by the buildings which present a monumental or iconic characteristic but the buildings which are the products of rather modest designers. These are the buildings for majority of people to dwell. However, study on morphology of the cities and investigation on the citizens' daily environment demonstrates the fact that majority of building products which are mostly planned and designed by the local professionals are not found enough

interesting to be documented in the professional resources. Although, the planned urban houses have been formed according to the building regulations of city planning which usually impose a certain formal characteristic that only permit slight modifications, but these houses are somehow expressing their own identity in architecture and urban form (Oliviera, 2016). Furthermore, other types of the buildings which were not initially planned, shape the urban form at the edge of cities as well. These types of houses are entitled as squatter settlements. Mostly, these types are observed in outer fringe belt of many big cities that they gradually develop according to the new citizens' demands. This is not always the case, on the contrary these unconventional building typologies are influenced by user tendency which is attempting to find a solution to adapt existing types according to users' expectations, changing conditions of the society and building regulations. As a result, this time-based building development process could end up with unusual or unconventional building types which are usually underestimated by the researchers and should draw more attention. This could be important to understand the potential of the types regarding to changing conditions of the planning plus professional and living trends.

1.2 Research Interest and Significance of the Context

The thesis attempts to investigate unconventional typologies that changed according to the user's needs and their lifestyles throughout years, although some of which are not initiated at the beginning. From this point of view, like many countries, North Cyprus inhabits some interesting examples regarding to its peculiarities which are not only supported by the socio cultural, political and economic issues but they are the consequences of local urban history and development throughout almost the last century.

Among many others, urban house typologies particularly in Baykal region of the Famagusta city show remarkable characteristics. However, in contradiction with huge cities, in some small towns understanding the structure and diversity of the urban form is easier regarding to their remarkable different building typologies. Baykal region that was selected as our research context shows quite interesting features which are expected to support our research interest successfully.

In general, Cyprus has been under several dominations throughout history. Famagusta city in the east part of Cyprus during the rule of British period (1878–1960) faced growth of population and lack of sufficient space in Walled city. Accordingly, the British colony established the administrative zones towards the south outside the Walled city. Therefore, Maraş, Aşağı Maraş and Baykal developments started outside the wall because of colonial attempt for modernization around late 1950's (Keshishian,1985). Interview with the local intellectual Dr. Okan Dağlı from Baykal region assisted the progress of this research greatly. He stated that the original name of this area was 'Ayluka' and later was called Baykal by Turkish people. The area is situated between Larnaka and Lefkosa roads, extended to Canakkale districts and all Cypriots either Turks or Greeks were living in different region of it. It is to be said that before 1958 this area was used by the British military camp and was evacuated in 1958 (they moved to the area at the end of Larnaka street, called as 2.5 Miles). Afterwards the Turkish doctor of the camp bought the whole region and in 1960 the area was planned and divided into similar plots in terms of size and shape and each plot sold to Turkish families. Therefore, housing construction in Baykal region regarding to the modernist urban planning which were showing grid street organization with the green area and children playground within it started to develop. Baykal was one of the most

significant Turkish housing regions outside the Walled city which was established almost in parallel with Aşağı Maraş (with Greek residents). Both districts had similar housing typologies that could be named as modern single story urban houses.

After war in 1974 Maraş and Aşağı Maraş because of their Greek ownership and uncertain future stopped further development. On the contrary, some tendencies toward developments and growth, was noted in Baykal. Generally, before 1980's housing development in the town was growing mainly horizontally in one or two storey, but the matter of provisional accommodation for students and staff, also the Mediterranean lifestyle created new growth and development trends in housing typology (Doratlı et al., 1999). This led to transformation of single storey houses into multi storey buildings in an unusual way.

Basically, housing typologies in Baykal are categorized in four groups:

1- Early modern single storey family houses.
2- Modern single storey or two storey family houses.
3- Apartmanization.
    a) By addition of other floors (process based) (developed through time).
    b) Modern apartment typologies (started from 1980's)
4- Contemporary mass production.

Baykal neighborhood where inhabits diverse housing typologies and shows quite rich potentials, attracts the researchers who are interested to discover more about the housing types and typologies.

1.3 Research Objectives

In the thesis, it has been attempted to make a comprehensive scan and review about development on typo morphological studies. In this respect, by utilizing the survey of

previous researches, the study will proceed to review different building typologies in terms of architectural characteristics and important components of morphology science in the field of urban issues.

Therefore, the main objective of the study is exemplifying of the mentioned studies and discovering unconventional apartment typologies based on the cooperative houses which are selected from Baykal region. Moreover, this research will investigate that how the changes which took place over time in interior space organizations and façade characteristics of the houses led to the development of single storey cooperative houses into apartments?

Baykal region demonstrates different variety of housing typologies and unconventional tendencies. Therefore, the region because of its exclusive characteristics is selected to look at its variation of housing typologies in general and to focus on unconventional typologies of cooperative houses in particular.

1.4 Research Methodology

In this thesis, the methodology is on the basis of two main phases; theoretical background information and case study. Moreover, data collection is based on qualitative method.

In the phase of theoretical background information of this study, by using a comprehensive scan in the field of development in typo morphological studies, it has been tried to investigate and analyze the unconventional apartment typology based on cooperative houses in Baykal neighborhood. It should be noted that for a comprehensive study on the evolution of building typologies in specific tissue, an investigation on the building typologies together with a survey on morphological

aspects of the region in terms of façade characteristics and urban issues are necessary. As a result, typo morphological studies which are the combination of typology and morphology, due to revealed physical characteristics, spatial aspects of the buildings and surrounding environments are crucial. In this connection, the study will proceed to analyze different building typologies in terms of architectural characteristics and important components of urban morphology at architectural level through revision on different approaches of typo morphological studies. Plot typology and ratio, pertinent strip, façade characteristics, townscape (consisting of building pattern, land utilization and plan unit analysis) and eventually typology of buildings in terms of indoor organization and space characteristics are of the important components which are analyzed. The derived primary sources in this phase are Moudon (1994), Petruccioli (1998), Oliveria (2016), Caniggia and Maffei (2001), Heynen (1999) and Conzen (1960).

The second phase of the thesis is related to case study analysis. This phase is comprised of two parts; literature review and site survey for evaluating the cases. At first part the thesis by supporting literature reviews attempted to understand and analyze the historical developments of Famagusta and also evolution of housing typologies in Famagusta city in general and Baykal region in particular. In the site survey part, the applied methodology by integrating typological process of Caniggia's method (one of the most important followers of Muratori in Italian school) and Conzen's method (pioneer of British school) deals with the examination on evolution of unconventional apartment typologies based on cooperative houses in Samsun street located at Baykal neighborhood. Moreover, methodology of the thesis is mainly concentrated on typo-morphological analysis in relation to architectural characteristics of the buildings.

For investigating on typo morphological characteristics of the cooperative houses, apart from recorded documents and local interviews particularly for the support of analysis in visual form other tools like photography, map survey, drawings and tables are required. For analyzing the position of buildings in each plot and relation with the surrounding buildings a map survey is fulfilled. In addition, drawings related to the plan of buildings retrieved either from Municipality of Famagusta or by the observation technique of outdoor and indoor spaces during the site survey is taken into consideration. The other important tool in this study for a better understanding of façade characteristics and external attributes of the buildings is photography. Finally, different types are categorized in various groups for analyzing and better understanding, which will be shown by the tables.

1.5 Research Structure

This thesis includes four main chapters. The first chapter is an introduction of research interest, pointing out the importance of housing typology and variety of different typologies such as unconventional building typologies also in general, the changes that occurred on typology of buildings over time. Furthermore, introduces the unique particularity of Baykal region (the concerned area in this thesis). Research objectives section describes the main aim of the thesis which is attempting to study and review unconventional apartment building typologies in Baykal region that will be achieved by exemplifying the reviewed literatures on the development of typo morphological studies based on survey of the previous researches on this subject. Methodology part introduces the obtained approach coming from integrating of Caniggia's and Conzen's methods for reviewing unconventional apartment typology based on cooperative houses in Baykal neighborhood.

Chapter two includes the discussion on development of typo morphology from the research point of view. The chapter by reviewing and synthesizing of different theories of well-known researchers refers to the importance of building in distinguishing between different urban tissues. Furthermore, chapter two scans through history of development on typo morphological analysis. The chapter by describing theories and discourses on type and typology attempts to review development process and changes of type concept that was strongly brought up at the beginning of the enlightenment period. Type theories during rationalist era and modern movement mainly remained at discourse level. Since modernist era was emphasizing on the individuality of buildings independent from their context, consequently link between architecture of buildings and urban form disturbed. Therefore, in 'neo rationalistic view point' part, the main aim of theoreticians which was reconstruction of the fragmentation resulted from modern architectures between buildings and urban form is presented which was the ground for an essential rethinking in typo morphological studies specifically after establishment of three schools of Italian, British and French. In continue, the approach of the schools and space syntax method in the field of typo morphology were discussed. At the end of the chapter, the obtained outcomes from the theoretical background information of chapter two are indicated.

Chapter three deals with typological developments of Famagusta in general and Baykal neighborhood in particular with the aim of more acquaintance with the concerned area. In addition, historical developments and urban form of Famagusta are reviewed. In connection with the review of different neighborhoods of Famagusta that Baykal region is one of those well-known neighborhoods, the thesis in general reviewed variety of districts and housing typologies in Famagusta city. Besides,

development of Baykal region and variety of housing typologies in this neighborhood are reviewed. Then the methodology of the thesis which is obtained from theoretical reviews, for examining and reviewing of unconventional apartment typology based on cooperative houses in Samsun street is discussed.

Therefore, in the section of analyzing cooperative houses by applying the integrated methodology in addition to important components like plot typology, pertinent strip and plan unit the typology of cooperative houses are reviewed in detail within three stages. The first one is mainly about morphological point of view. In the second part, changes of cooperative houses in terms of interior plan organization throughout the time are reviewed and consequently classified in different groups. The third one has investigated facade characteristics of the buildings. Eventually, in the outcome of chapter three the main characters of cooperative houses are brought up. It also points out to the analysis that how addition or subtraction of a space or an element can completely change the interior space organization and lead to the creation of mutated (unconventional) types.

At the end in chapter four, the important information obtained in the thesis is declared. Also some suggestions are offered for further research attempts in the field of investigation on different typologies.

Chapter 2

THEORETICAL BACKGROUND: DISCUSSIONS ON DEVELOPMENT OF TYPO MORPHOLOGY FROM THE RESEARCH INTEREST POINT OF VIEW

This chapter is focused on the history of development on typo morphological analysis that will be supported by basic literatures. Accordingly, this chapter has turned out to be a very detailed literature review part for the thesis.

In this chapter by reviewing and also synthesizing the theories of different researchers, the attention will be paid to the importance of building typology which has a main role in distinguishing between different urban tissues in a city. Besides, in respect to the appearance of mutated type which is an important subject in this thesis, it will be attempted to review different building typologies and their classification. As far as, the thesis is not only concentrated on typo morphological analysis of Baykal (a well-known neighborhood in Famagusta located in North Cyprus), but also scans through the theoretical efforts that have been taken place in this field through books, articles and extensive conferences by well-known researchers who have strongly contributed to the subject. This chapter is attempting to review the development processes and changes of the concept of type which is extensively discussed from the beginning of the enlightenment period as well.

2.1 Definition of Urban Tissue

It would be considered that the main and developed concept of urban tissue belonged to the period that an essential rethinking was taken place in the study and review of the development process of urban form and building typologies after 1959 by establishment of three schools (Italian, British and French schools) in terms of typology and morphological studies under the topic of typo morphology (Moudon, 1994; Petruccioli, 1998 and D'Amato and Petruccioli, 2015). This concept was very influential in understanding of physical structures of the cities, process of historical development in urban areas and their relation with urban environment and individual buildings (Moudon, 1997). The structure of cities is so complicated; they are consisting of different parts and objects which form different sets of settlements and various urban tissues (Tsai, 2005). In each city, different elements of the city under influence of some factors like cultural and social aspects also natural and contextual conditions form different urban tissues and the strong interrelations between them. Some of these tissues are well identifiable and give the cities unique characters (Malfroy, 1998 and Oliveria et al., 2015). As an example, figure 1 shows four cities with almost same scales in different parts of the world which are clearly distinguishable by their own urban tissues. Figure 1A, is related to Brasilia that has very wide urban spaces in comparison to build areas. On the contrary, figure 1B, is related to Venice that the city with its own unique natural context (near the sea) is developed and has got very compact urban tissues. Figure 1C, belongs to New York that with its regular grid pattern of streets and plots which are clearly recognizable. In the end, figure 1D, shows the city of Sana' in Yemen which is influenced by Islamic culture; its percentage of open spaces compared with its built form is so little. Each of these cities were developed and formed over time under influence of different factors (Oliveria, 2016).

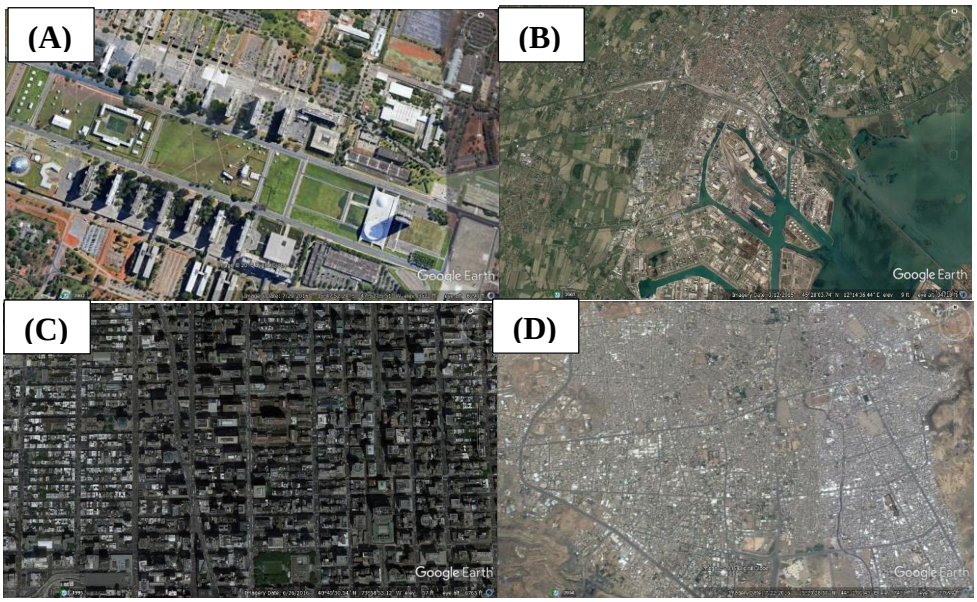


Figure 1. Variation of urban tissues, (A) Brasilia, (B) Venice, (C) New York, (D) Sana' (URL1)

Conzen (1960), Caniggia and Maffei (2001) have described the most developed concept in the field of urban tissue. Both of them notified it as a base for understanding of dynamics of urban environment and a framework for designing of either new buildings or restoration in the old towns. Later, Kropf (1996) synthesized the belief of Conzen and Caniggia in terms of urban tissue. In 1996, from hierarchy point of view he states in his paper under the title of 'urban tissue and the character of towns':

> Urban tissue is, in effect, a synthesis of all the components. It is an organic whole that can be seen at distinct levels of resolution. The different levels correspond to the different primary elements; the higher the resolution, the more detail is shown. A low level includes only street and blocks and a high level includes buildings materials (Page, 252).

Besides, Kropf (1998) described more precisely the primary element with the combination of concept of urban tissue from Conzen's and Caniggia's point of views. In general, urban tissue is originated from street arrangement and blocks (plot series) that every block itself is made up of plots, open spaces and the buildings with various typologies (Malfroy, 1998 and Oliveria, 2016). Finally, all these elements are connected with each other in a hierarchy as a framework (Kropf, 1998; Malfroy,1998

and Oliveria, 2016) (Figure 2). Therefore, even different urban tissues can be found inside a city that are clearly distinguishable from each other. Since buildings have decisive role in distinguishing between different tissues, because they are much more visible than streets, blocks and plots, therefore a deep review on their typologies is necessary.

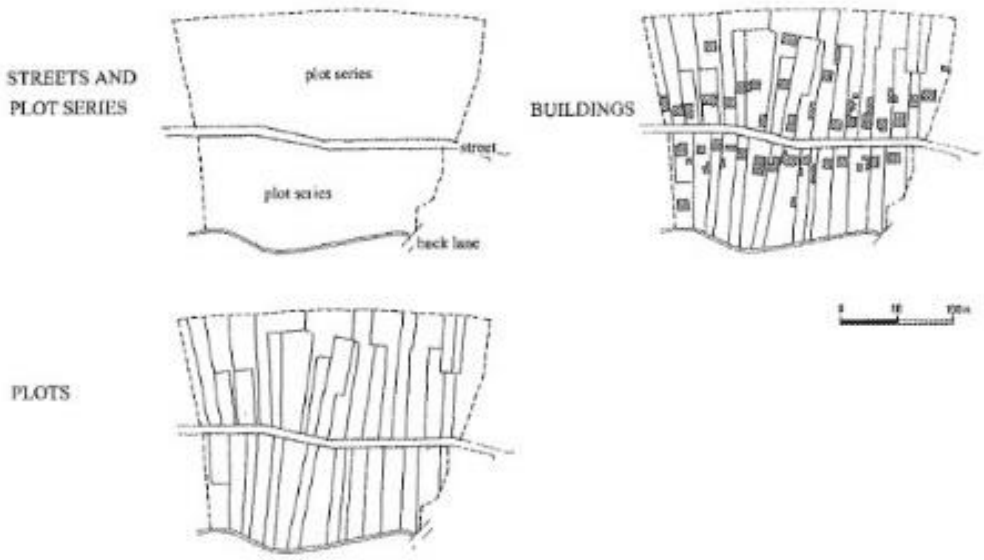


Figure 2. An urban tissue displayed in terms of level of resolution (Kropf, 1998)

2.2 Building Typologies

Building type is a term that has been used from the past to present. This definition is used when a group of buildings have got common characteristics regarding to some feature or a series of features (Caniggia and Maffei, 2001 and Petruccioli, 1998). Type is created by the fact that a series of buildings share clear formal and functional analogy with each other. In this procedure the identifying characters of the buildings are disregarded and only their common elements are remained which in all cases these common characters are visible. Petruccioli (1998) described the type as a scheme of a

summarizing process for achieving a basic form or a common form. He also stated, the type as a common organic whole of characteristics of buildings that are presenter of their own society's culture within a specified period (Petruccioli, 2009).

Typological process in terms of analyzing building typologies is an important concept that confirms progress of type and means reconstruction of the changes of a type through time which is named ‘phase’ (Caniggia and Maffei, 2001; Cavallo et al., 2014 and Petruccioli, 1998). In other words, the period of time which is needed for considerable changes between two continuous forms of a type is called phase (D'Amato and Petruccioli, 2015 and Petruccioli, 2014). Whereas typological process is so complicated and is outcome of interaction of various processes therefore separating and specifying the border between residential buildings and special buildings is imperative (Caniggia and Maffei, 2001 and Petruccioli, 1998).

2.2.1 Special Building

Special building or according to Oliveria, (2016) iconic building that was entitled for the buildings that are not designed and built for residence of majority of people like; mosques, monasteries, conference halls, Monumental buildings and even old palaces are listed in this group (Caniggia and Maffei, 2001; Petruccioli, 1998, 2014). Iconic building is an idiom mostly derived from the designs of famous architects of that time and used for symbolic demonstration. Usually throughout the history because of their peculiarity, people found them interesting enough to be documented in the professional resources (D'Amato and Petruccioli, 2015; Oliveria, 2016 and Petruccioli, 1998). Mostly special or iconic buildings because of their unique and controversial characteristics are considered unconventional in terms of building typology. Some special buildings can be even inspired by a house and originate from the procedure of

progressive specialization of their components. Therefore, it is always possible for a special building to be created by a new process from a principal one. As an example, the Roman palace of Renaissance era is a synthesis of real and virtual processes originated from discourse of architects in the field of typology. That on one hand is the result of joining a series of row houses in a central space and on the other hand is a reinterpretation of classical atrium house which is formed from discourses of Vitruvius or archeological evidences (Petruccioli, 1998).

2.2.2 Base Type and Leading Type

According to Caniggia and Maffei, (2001), typological process of the house or residence is so tied up to time and the culture of its own area, consequently it has got a deep root in society and their main principles in societies cannot be changed easily. On the contrary, in special buildings among various cultures, exchange happens and as a result different shapes and textures are created.

Base type is considered as a room with an area of 25 – 36 square meters which has only one entrance door that is not only used as an entrance but is also considered as a surface for penetration of light and air. Base type can be considered as a beginning point of typological process that all other building types are originated from it (Caniggia and Maffei, 2001; D'Amato and Petruccioli, 2015 and Petruccioli, 1998, 2014). Caniggia for analyzing Italian cities considered the primitive Roman house (Domos) as a base type which later on respectively, changed to court yard houses, row houses and lastly linear houses (Figure 3) (Caniggia and Maffei, 2001 and Moudon, 1994).

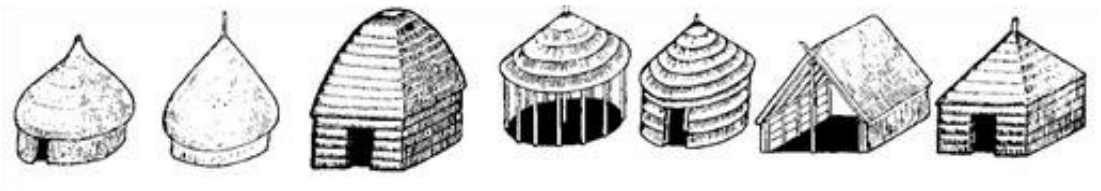


Figure 3. Examples of base types (Caniggia and Maffei, 2001)

But leading type is the result of moderate changes on base type within the time and under influence of cultural and economic issues also changes in social structures, needs and expectation of users (Orbasli, 2002). Petruccioli descriptively states, “A type that is an expression of all society in a given moment is called a leading type, since it is the ideal to which everyone refers when building a house”. (1998, p. 62). All residential houses are leading type except minority base types that are found at the edge of the cities (Butina-Watson and Bentley, 2007 and Petruccioli, 1998).

Evidently, basic leading types could be consisting of three basic categories; context base, formal and functional typology.

2.2.2.1 Context Base Typology

This typology is originated from a strong relation between urban form and building typologies. Context base typologies are defined by their locations in urban form and their contribution with it, in terms of interactive relations between solid and void areas. So that it seems the buildings are melted in their own urban texture and eventually form a continuous whole. This typology is so influenced by geographical, cultural and contextual issues (Sun, 2013). In fact, the buildings gain their form based on texture of the city. Amongst types of this category can point out to courtyard houses, corner buildings, under passing building, water front and bridged building (Uraz and Balamir, 2006).

2.2.2.2 Formal Typology

Formal and urban typologies are so connected to each other and both are directly in relation with context. Formal typologies are defined in terms of their location and their relation with the surrounding environment, but like urban typologies are not melted in the urban context and mostly the buildings saved their own independency. Formal typologies directly in terms of physical and formal appearances of buildings and also regarding to their relation with neighboring building can be generally categorized as follows:

- **Urban Villa**

This term in discourses of Vitruvius is codified as profit making of agricultural properties which were running by slaves during the Roman times. Later, in renaissance era, villas that were located at rural and suburban areas were used as farm and also holiday purposes. Afterwards they appeared in urban environments and accordingly they brought some rural characteristics alongside. Urban villa was associated with luxury and related to upper class of the society (McGeough 2004). Before modernism, urban villas used to accommodate extended families but during enlightenment period, gradually by modernism movement urban villas were used as a dwelling for single families (Gobbi Sica, 2007). In general, urban villas are larger and more luxurious than single detached family houses.

- **Single Detached Family Houses**

These types of houses are free standing without any shared walls with surrounding buildings. It needs to be considered that a single detached family house can undertake any style, material and structure. They are consisting of one dwelling unit which is completely separated from other structures by its own open spaces. Generally, due to their location in large lots, they are consisting of yard and garden (Pfeifer and

Brauneck, 2010). In fact, privacy is the most advantage of detached houses but cost of maintenance for the owners is problematic.

- **Semidetached Houses**

This applies to a single building that its ground floor is consisting of two attached houses which are connected to each other by a sharing wall (Pfeifer and Brauneck, 2010). This typology can be considered as an 'in between typology' from single detached houses to row houses. Semidetached houses were first introduced to cities as Georgian villas. Then Louden (1838) published his designs of semidetached houses in 'The Suburban Gardener and Villa Companion' spread the idea that suggested making two modest houses to appear as a one whole. It was in 19th century and in the age of railways that this type was widespread and adopted for lower middle class of the societies specifically in Britain and Ireland. These types with their large bay windows, their repeatability for mass construction and relatively lower costs yet their individual looking types had been developed as a form of mass housing that directly served the needs of the new middle and lower middle classes. Even the strictest modernists of the time like Le Corbusier, Walter Gropius and Frank Lloyd Wright regarded the semidetached house as a valid typology with their own contributions. The semidetached houses are still appealing to constructors and more importantly to users that many of them do not have the ability to purchase a single detached house but still want the advantages of them. The semidetached houses provide access to the back garden without passing through the house. They also provide sunlight from three sides of the building, they can be modified and changed easily and therefore they can provide the satisfaction of a single self-owned house and provide the sense of individualism (Wilkinson, 2015). On the other hand, one of the disadvantages of this

typology is limiting the owners for addition and renovation of the houses because in general they must be similar in terms of external attributes with their twin houses.

- **Row Houses**

Row houses or terraced houses are a series of buildings that are attached to each other by bearing wall. This typology of housing is formed around the concept of repetition and is consist of family house units which are connected to each other by common walls. Consequently, they create a continues façade along the street. These houses are originally associated with working class that rapidly emerged in Europe at the beginning of 17th century. Their ground floors are generally dedicated to commercial activities and the upper floors are residential. Row houses are either from one side open to the street or from two sides are opened with very little privacy (Pfeifer and Brauneck, 2007). Row house type has been altered frequently throughout time. For instance, in medieval districts in Tiber in Rome a sluggish process has occurred in row houses that resulted in separation of the houses in horizontal layers and eventually each of them formed a small apartment. For creating more privacy, the location of staircases changed over time. This process has created a new leading type that is formed by connecting row houses to each other and constructing horizontal houses also has led to creation of in-line typology in 19th century which is an important reference for the European tradition of habitation (Figure 4) (Petruccioli, 1998).

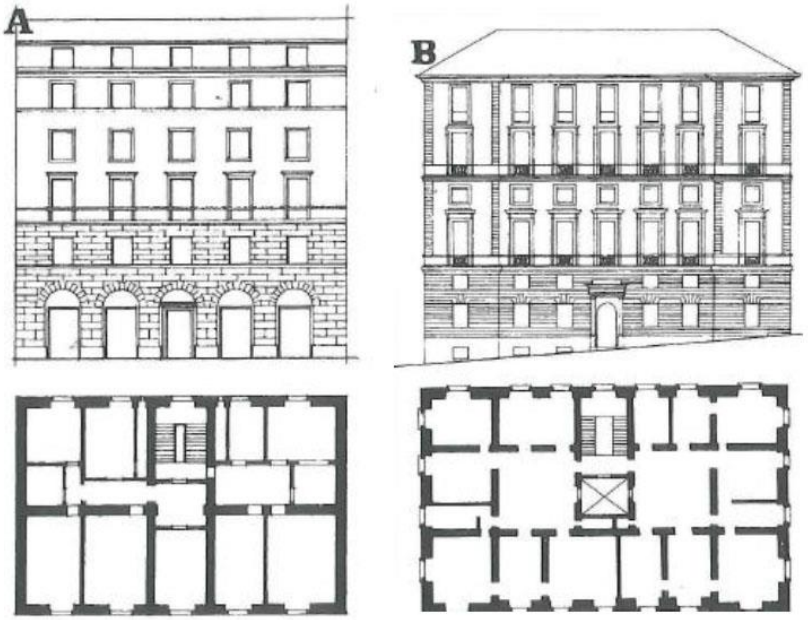


Figure 4. (A) Roman in-line house, late 19th century, (B) Roman in-line house, mid-19th century (Caniggia and Maffei, 2001)

Number of floors is another factor that has led to create single, bungalow (It is a single family house. Usually they are common in some features such as: being detached, having verandas, pitched roof and being low rise within one and two stories), duplex (It consists of two separated floors and each floor belongs to one dwelling which they are connected to each other through staircase), triplex (same as duplex just three units spread out within three floors) and multiplex houses (Jakle, 1989).

As pointed out before, leading types of formal and context base typologies were much influenced by their surrounding environment, climate conditions, some strong geographical conditions like contextual characteristics and step topographies (Sun, 2013). Therefore, these leading types "under the less optimal conditions or synchronic variation" (Petruccioli, 1998, p. 62) like sloppy lands, placement problems in a block, placement in an incongruous tissue, irregular contextual characteristics and etc… adapt themselves with these conditions and became mutated (Butina - Watson and Bentley, 2007; Caniggia and Maffei, 2001; Cataldi, 2003; D'Amato and Petruccioli,

2015 and Petruccioli, 1998, 2014). The totality of these variants is a synchronic variant that are established on leading types in unusual conditions. In other words, the term of ‘synchronic variant’ is used for all modifications made on building type in order to fit in an irregular tissue (Caniggia and Maffei, 2001 and Petruccioli, 1998, 2014). These building types called Mutated types by Butina – Watson and Bentley (2007) which adapted themselves with unusual conditions are gradually imitated by the neighbors. By passing time, all these processes led these typologies to become more developed (Caniggia and Maffei, 2001, and Petruccioli, 2014). As an example, court yard houses are a very well-known typology in eastern cultures. In addition to some basic cultural characteristics which are common in many court yard houses in eastern countries, the factor of topography (sloppy land) and climate conditions have led to the mutation on this typology and created more privacy for their users in Mardin city which is located in Turkey (Figure 5 and 6) (Uraz, 2005). In this city urban section appears with the repetition of the single buildings (Figure 7). In fact, the building typology directly relates to the morphological structures of the cities.

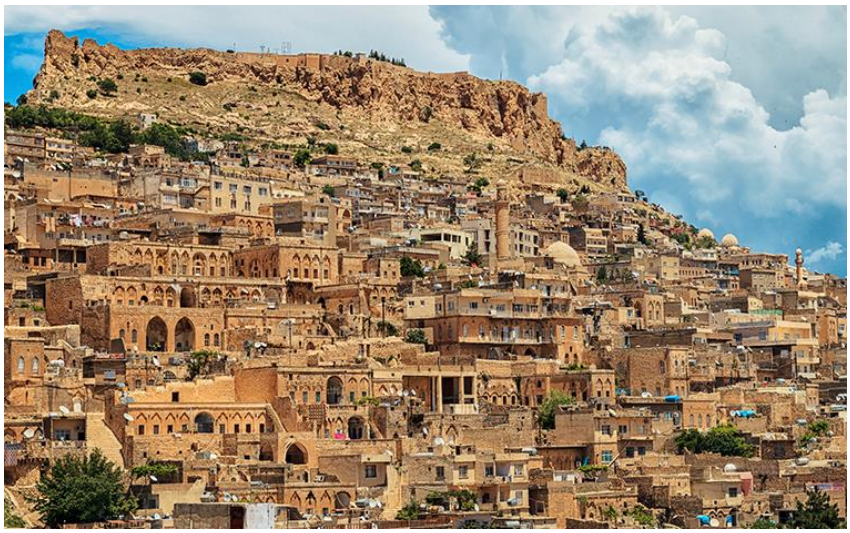


Figure 5. Mardin city in Turkey (URL2)

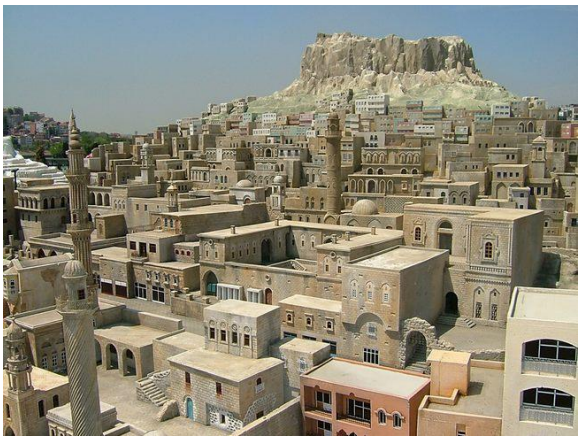


Figure 6. Mardin city in Turkey (URL3)

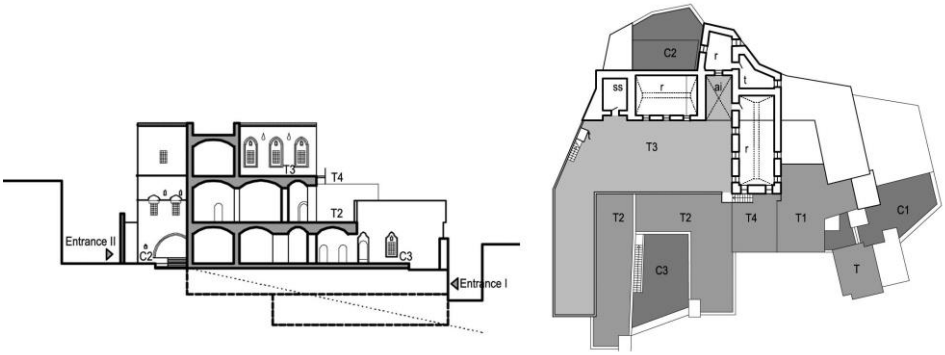


Figure 7. Example of plan and section of courtyard house in Mardin (Uraz, 2005)

The other example (Figure 8) which represents unconventional (mutated) apartment typology is located in Baykal neighborhood of Fmagusta city in North Cyprus.

Figure 8. Unconventional (mutated) apartment typology in Baykal region (Author, 2016)

Construction of upper floors without having prior provision is the main reason for appearance of this mutated type. At the beginning, the ground floor of this building was constructed similar to the existing typical single storey buildings in the Baykal neighborhood, but by passing time due to the changes in social structure and need of accommodating of the other family members, this building was vertically extended which the result was an inefficient building type.

2.2.2.3 Functional Typology

This typology was brought up in modernist period based on the function of buildings like hotel, hospital, school and etc… Buildings of modernist era are not much influenced by their surrounding environment and buildings became important individually (Aymonino, 1976 and Moudon, 1994). Standardization and establishment of healthy urban environment for the entire people was of the great aims of modernization (Howard, 1965), but gradually economic problems and increase of population pushed housing typology towards mass production (Heynen, 1999 and Sieburth, 1989). Further consideration about typology during modernist period will be dealt in more detail later in theory of type in modernist era.

2.3 Theories and Discourses on Types and Typologies

Although, extensive researches took place in the field of typology and morphology under the topic of typo morphology by establishing Italian, British and French schools and these schools expanded their approaches particularly through Europe and North America by publishing many books and different conferences which absorbed many followers in this term, but it should be underlined that before these research based concentrations, academic and professional curiosity about type and typology was an old interest among many famous architects as well. Vitruvius in his ‘Ten Books on Architecture’, very briefly and basically has paid attention to this issue (Güney, 2007).

After Vitruvius in the 18th century which is known as age of enlightenment for the first time more serious efforts were made by well-known researchers of the time about the concept of type which until beginning of neo-rationalist period mainly remained at the level of discourses, but for better understanding of the concept of type these discourses need to be evaluated as well. Transformation and evolution of type and typology which is starting from enlightenment period can be reviewed based on methodological and historical revisions within three different stages. The first development in the idea of type is related to the rationalist philosophy of enlightenment period, afterwards the second stage is developed in the modernist era and at the end after 1960's, neo-rationalism opened the way to the third stage of definition of the building type.

2.3.1 Discourse on the Type in Rationalist Philosophy

In this period Laugier (1713-1769) considered the beginning of shelter as the primary type of accommodation. This way of thinking in typology was giving a natural basis to the architecture which was seen in early huts. Laugier, as same as Vitruvius, believed that the origin of form in architecture is influenced from the nature (Braham, 1989; Goode, 1992 and Güney, 2007). Laugier's image of a primitive hut was consisting of rational standards and elements. He described trees as the first columns which are locating on a full square, considered the branches as beams and bended boughs of the tree as a triangle roof. In his opinion, this very early hut is considered as the origin of all possible forms in architecture (Figure 9) (Braham, 1989 and Wittman, 2007).

Figure 9. Laugier's primitive hut (Braham, 1989)

2.3.1.1 Quatremère de Quincy and Boffrand Discourses

The other well-known theoretician of this period in the field of typological studies in architecture was Quatremère de Quincy (1755 –1849). Quatremère de Quincy stated (1977), "The word 'type' presents less the image of a thing to copy or imitate completely than the idea of an element which ought itself to serve as a rule for the model" (p. 148). According to him, 'type' is the notion or symbolic definition that is embodied in an objects and elements. Therefore, it is more abstract and conceptual rather than concrete. According to Quatremère de Quincy (1977) notion of type can also be assumed as the ideal that an architect should endeavor for in the process of innovative creation, idea of type is never completely achieved in the procedure of artistic creation. Therefore, Quatremère's definition about type goes further and he developed his critical theories to define type as a metaphysical concept which was the first attempt for presenting modern architectural discourses further than the restricted latitude of classical architecture (Madrazo, 1995 and Quatremère de Quincy, 1977).

He also stated that one of the important responsibilities of science is reviewing the motives which are the cause of creating different versions in every generation. Quatremère tried to describe the notion of type by comparing between ‘model’ and ‘type’. According to him, model was mechanical reproduction of an entity but describes the type as a metaphysical existence. Model is a form that can be copied but in contradiction, type can be a base for conception of works, the works which are not copied from each other, only they are similar in terms of their concepts (Güney, 2007 and Madrazo, 1995). According to Quatremère the origin of type refers to the essence or nature of the objects. Contrary to the hypothesis of Laugier that believed the primitive hut is the origin of all architectural forms, Quatremère interpreted that origin of type is associated to the comprehension of character and form which differentiate particular type and group. The aim of Quatremère was to increase the practicality of types in terms of external attributes by considering the factors of use, need, and custom among other elements (Güney, 2007 and Noble, 2000).

For the first time, the idea that the definite types of buildings by virtue of their character turn into symbols of their function was introduced by Germain Boffrand in theory of architecture. Boffrand stated that character is meaningful function of the building to communicate with the individuals. In addition, the buildings declared themselves to the spectator with their specific constructions, their arrangements and the procedure that they are decorated (Güney, 2007 and Kruft ,1994), but from Quatremere's point of view character is an issue that every building based on its fundamental purpose, given use and its more appropriate type is to be defined. Based on the identity of typology, Quatremere in fact debated 'mother tongues' in architecture or in other words architectural type in connection with the theory of origin that can be taken into

consideration as etymology in architecture (Lavin, 1992). Quatremere described the imitation as common starting point among all artistic products. From his point of view, imitation did not mean a copy but was expressing the law of nature. He considered imitation as the base of invention and a creative process which transforms existing elements in the nature to visible artifact. Invention in architecture means to combine all ecological, formal and functional principles in the nature. Finally, the result of this imaginative combination was formation of houses, monuments, temples and towns (Lampugnani, 1985).

2.3.1.2 Durand and Boullee Discourses

From the other theoreticians of this period coincided with French and industrial revolutions was J.N.L. Durand who was attempting like Quatremere to develop Laugier's principles but in different line. The issue of typological study at that time was for confrontation with historical interruption and separation in the building process between the architect and the client. In this period, formal and functional approaches were respectively generated by the first half of 19th century's architects Jean Durand and Etienne Louis Boullee (Petruccioli, 1998).

Durand was much influenced by descriptive geometry science. By using a comparison classification method, he started to study on the form of buildings and considered a limited numbers of buildings' elements such as columns, walls and foundations of which the result was a typological atlas for architecture called ‘Recueil et parallele des edifices de tout genre in 1801’ (Kruft, 1994). Based on Durand's certainty, his classification was functional and morphological as well which were arranged depending on their type and resemblance. The aim of Durand was to precisely analysis the form and geometry of architecture. In his research the external attributes were not

taken into consideration and this was a clear separation from character idea of enlightenment period regarding definition of type. In this respect, the style was only considered as a decoration for buildings. Durand had disregarded unconsciously the past references by putting together all different historical styles and eliminating important aspects of them (Figure 10) (Madrazo, 1995 and Vidler, 1976).

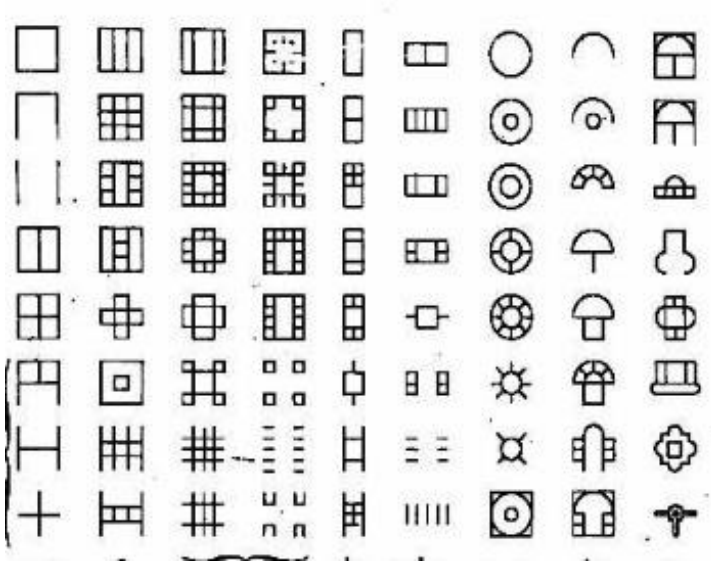


Figure 10. Durand's geometric combinations of typology (Braham, 1989)

Durand was also well known with distinct principle in architectural composition which was a simple method presented for teaching students in Paris Ecole Poly Technique. The mentioned instruction was consisting of 3 phases; the first phase was study of architectural elements, the second phase was assembling the elements in system and the third phase was adapting of a formal scheme to a designated use (Petruccioli, 1998). Through this way, Durand introduced a series of specified building types; the large house, the hall of justice, the school, the library, the museum, the prison and etc...

His method was reductive and rational also had a slight hint to Vitruvian trilogy whereas 'Venustas' which means healthfulness is most pragmatic aspect but was

slightly considered by him. While, ‘Firmitas’ which is in connection with technology and construction had no place in his principle. Only, ‘Utilitas’ for convenience and economic principles were highlighted. In Durand’s method, disregard towards history was a huge gap. He also applied this systematic method in a city scale. Durand’s method was much criticized and accused of being a mechanical combination theory. According to Petruccioli's indication (1998), its greater weak point was that the legibility of classical elements to be not important and by disruption of classical order opened the way to Eclecticism. Durand in his table of format demonstrated geometric combination of shapes which were used as a base for different types of the buildings' plan. In general, his table of format was considered as an index of geometric reduction. His theory, by taking into consideration of new objectives of economy plus geometric reduction idea can be treated as the first move towards prototype modernist idea (Güney, 2007 and Liew, 2004).

In addition, Durand was in charge of construction of many small private houses of which the best one is registered by Kraff named ‘Maison Lathville in the rue du Faubourg – Poissonniere’. A house with very simple characters and incomplete rectangular plan which its staircase was directly accessible from vestibule. The decoration of the house was very low versus the scale of the house. His choice for ornament in the garden side was caryatids which was seen very scarcely in France and was influenced from Doric Temple of Apollo in Delos (Figure 11) (Braham, 1989).

Versus Durand, Boullee paid attention to the role of memory and its value in the post revolution society in France also believing that historical form can make a communication between the values of a designer and the society. His emphasis was mainly on ‘Venustas’. All his un-built projects were a kind of manipulation of classical

forms which their only aim was bringing the concept and symbol to the spectators with little attention to the technology around complicated method with no function. But Durand's guideline at the time was good enough for the students and professionals to make them able to deliver economical and convenient solutions, and were not meant to be considered like theoretical works of Quatremere in theory of architecture (Petruccioli, 1998).

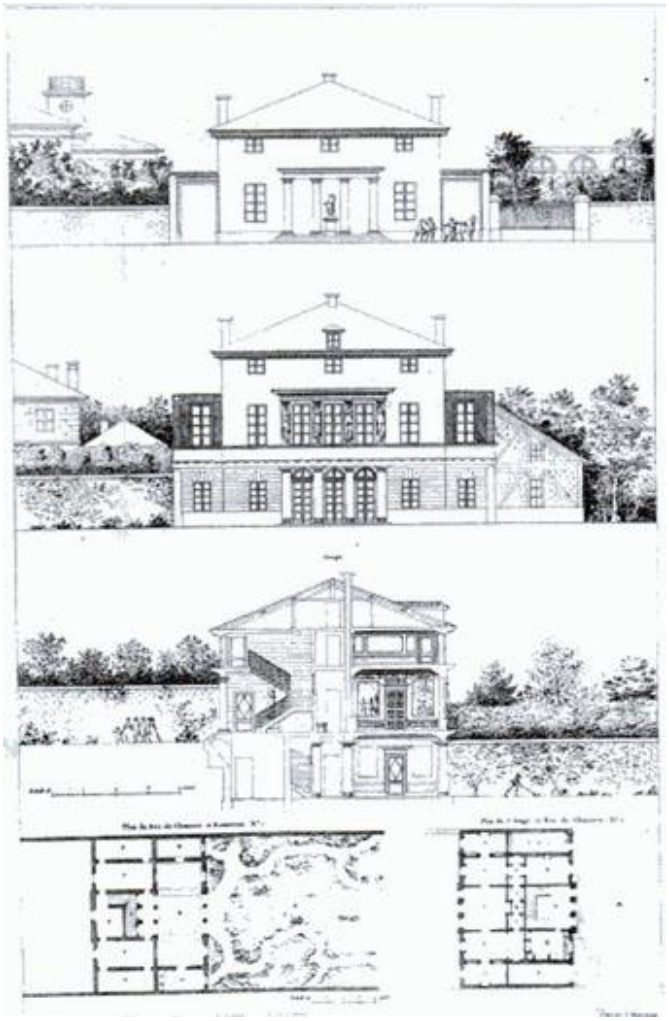


Figure 11. Example of private house which was designed by Durand (Braham, 1989)

2.3.2 Theory of Type in Modernist Era

By commencing of modernity in many places and cities of the world, characters of urban form were disturbed. Modernist movement ignored all dependency to the past

and history (Heynen, 1999). In many parts of the world in the process of modernist movement, new city planning and new building typologies were proposed (Broadbent, 2003).

In general, building typologies in this period can be reviewed in terms of functionalist and standardization approaches.

2.3.2.1 Functionalist Approach

In modernist era buildings demonstrated themselves individually and independent apart from their urban environment (Aymonino, 1976 and Heynen, 1999). This matter was completely in contradiction with the previous typologies which directly were shaped under the influence of urban form. In fact, the modernist buildings were not defining and being defined by their own urban environments. As a result, a new typology which was depended on the function of every building was appeared (Broadbent, 2003). In this classification, the buildings were considered with their own functions like hotels, schools, hospitals, houses and etc...

Concept of modernity constantly scuffles with historical elements in sequence of innovative creation (Heynen, 1999). At the beginning of modernist period, the idea of functionality and rationality was so strong. In point of fact, the form of the buildings instead of being adopted from aesthetic formulation was the result of rational planning which was created by consideration on social issues (Güney, 2007 and Hays, 2000).

In modernist architecture, simplicity, disregarding ornamentation, pure geometric forms, functional spatial organization also utilizing of ribbon windows and large glass surfaces for visual interaction between interior and exterior spaces were of essential principles (Hays, 2000 and Given, 2005). Also, utility of new technologies and load-

bearing aspects of steel and concrete enabled the architects to design interior space based on logical facts instead of ordering the conventional space through routine traditional frameworks (Cieraad, 2006 and Le Corbusier and de Pierrefue, 1948).

In terms of interior space organization particularly houses were dramatically changed as well (Cieraad, 2006). According to Attfield, “the modern open-plan living room, which replaced the conventional plan of separation between the little used ‘front room’ or parlor and the all-purpose ‘living room’, became a feature of public housing” (1995, p. 74).

As a matter of fact, modernity is an architectural effort asserting reliable creation rather than eclecticism tendency which is conveying forms from the past. therefore, modernist architecture by avoiding design through classical elements prepared the basis for creative design of iconic and unconventional buildings (Lipstadt, 2001). As an example, cube houses in Rotterdam or other products of some Avant-garde architects reveal some clues about the unconventional typologies (Figure 12).

Figure 12. Cube houses in Rotterdam, an iconic building with unconventional typology designed by Piet Blom in 1984, has been renewed and converted into a new Stayokay hostel (taken from Türkan Uraz archives, 2016)

2.3.2.2 Typification and Standardization Approach

Although the concept of functionality and rationality was the main idea in modernist architecture, but in 1929 the issue related to billige Wohnugen (cheap housing) which was published in CIAM congress in Frankfurt undoubtedly was a severe pressure on the architects to concentrate more on economic crisis and therefore the matter of economical houses became an important parameter. After 1929 it is clearly observed that in designing of public housings, an economic design efficiency was considered as the first priority and then functionality and rationality were noted (Heynen, 1999 and Sieburth, 1989). Consequently, the base of many architectural projects became standardized. In other words, typical typology in modernism period was coming from the change of social structure and needs of after war mass production. As Cieraad (2006) stated:

> Ideally modernity in terms of housing was envisaged by designers as universal type of mass housing suitable for and accessible to all citizens. It gave priority to case of use and maintenance, rejecting traditional styles and unnecessary ornament in favor of a minimal aesthetic (2006, p.73).

Also, Moneo (1978) regarding to mass production and industrialization specified that notion of type in this period is on the basis of three principles; functional theory, disregarding the past to create pure forms and in line with the notion of standardization for mass production. Cause and effect relation between function and form which brought up previously by Durand was excessively used at this time. Functionalism has disregarded all history and considered useless the beliefs that context is the most significant factor in terms of form-making procedure.

The modernist architects deliberated the architecture as a social responsibility that should have provided safe and healthy environments for all statuses in the society (Heynen, 1999). In fact, modernism ignored gender and socio-cultural issues and

finally during this period type was originated from the scientific needs in the people's life. In this regard, form-making process was equivalent with the process which should have followed for mass production and type became somehow standardized and typified (Broadbent, 2003). According to Vidler (1976); “The pyramid of production from the smallest tool to the most complex mechanic was now seen as analogous to the link between the column, the house and the city” (pp. 2, 3). Type, In the process of mass production needed to be repeated and transformed to prototype. This new definition of type was close to the definition of model interpreted by Quatremere previously which had defined model as mechanical reputation of an object (Güney, 2007). In addition, from urban designing point of view, having mechanical concept of typology has caused destruction of urban tissues because a very deep disruption had been appeared between typology of buildings and urban form. On the other hand, over standardization in terms of separating of different zones from each other like separation between private and commercial zones has caused fragmentation in cities. Consequently, many cities lost coherent spatial unity which was previously existing in different areas (Remak, 1981).

2.3.3 Theory of Type in Neo-Rationalist View Point

The emergence of type is deliberated when a group of buildings have similar formal and functional characteristics among each other. According to Petruccioli (1998) “In the process of comparing or superimposing individual forms for the determination of the type, the identifying characteristic of specific buildings is eliminated and only the common elements remains which then appear in the whole series” (p. 11). As a matter of fact, in 20th century typological studies were fluctuating between two wrong approaches of formal and functional until late fifties that a new fundamental thought of the modern movement attracted both approaches without dissolving into a

compromise (D'Amato and Petruccioli, 2015 and Petruccioli, 1998). At this time, theory of type was formed after collapse of modern architecture with the aim of emphasizing on continuity between the buildings and traditional urban patterns. Its purpose was to deal with the fragmentation which is resulted from modern architecture between urban pattern and architecture of the buildings. This theory was stressing on the natural urban development (Particularly traditional towns) also unbroken chain of continuity amongst building architecture with streets, districts and finally the entire city. (Cataldi, 1998; D'Amato and Petruccioli, 2015; Güney, 2007; Oliveria, 2016 and Petruccioli, 1998). According to many scholars such as Moneo (1978), Moudon (1994) and Petruccioli (1998), typological studies during neo-rationalist period found its systematic approach by establishing three famous schools; Italian, English and French schools which worked on typo morphological progress. These three schools began theorizing in the field of built environment by precise focusing on the urban fabric. Although studies of all three schools had root in history, but their methodologies were different. Debates of these three schools also demonstrate the use of type in design theory and approaches.

2.3.3.1 Italian School

Typo morphological study in Italian school began in 1959 by Muratori (Cataldi et al., 1997). In the midst of modern movement, Muratori's theory initiated on the basis of the need to reproduce building design on different primary principles. His ideas were intensely imbedded in post – idealistic philosophy and he did not accept discontinuity between history and architectural design (D'Amato and Petruccioli, 2015 and Petruccioli, 1998, 2014). He had a critical viewpoint on existing built landscape and believed in a design process that creates a relation between memory and history. Muratori and his followers, especially in traditional cities of Italy like Venice, studied

the process of urban growth in the city and established it as a base for a theory of design (D'Amato and Petruccioli, 2015; Moudon, 1994). He treated the roots of architecture in the coherence tradition of the city which existed from ancient era till 1930, and not in modernist time. According to Muratori (1960) “lack of coherence in modern urban design and planning is caused by the devaluation of inner intuitive forms that are used to shape environment” (P. 21). In general, Italian school in its typo-morphological studies focused at the architectural level and their aim was creating a correct formulation of design approach (Cömert, 2013 and Kropf, 1993). For Muratori, structure of a city was understandable only from historical point of view and he used to consider building typology as a base for urban analysis. From his point of view, the studies related to typology were not only limited to the buildings, but also the gardens, streets, progress of city construction and any other factor that were determining the form of the city in a certain period were important and called them built landscape which are representing the nature of building fabric (Moudon, 1994 and Petruccioli, 1998). Although Muratori’s investigation was criticized in terms of its complicated methodology but undoubtedly, he was a famous philosopher, researcher and practitioner who was known as a pioneer in the subject of typo-morphology and has inspired many other well-known architects like Aldo Rossi, Carlo Aymonino and Ginfranco Caniggia (Moudon, 1994).

2.3.3.2 Methodology of Caniggia

Caniggia who was a follower of Muratori also reviewed the process of city building in the traditional cities of Italy like Como in 1963, North Africa and North Europe. He transmitted Muratori's complicated theoretical works more practical in architectural terms (Moudon, 1994 and Oliveira, 2016). Caniggia as well as Muratori, did not use the word ‘morphology’ because in his theoretical analysis, the important subject was

not urban form. According to these two researchers, typology was more appropriate regarding to their analysis in terms of development of cities. Caniggia stated that procedural typology was the main principle of urban design and architecture of the city. Procedural typology is used in all dimensions and human environment scales; for buildings and their surrounding environment, urban fabric and territory. Mainly Caniggia's concentration was on buildings and their surrounding environments (Moudon, 1994).

- **Building**

Caniggia in order to analyze the building, considered every details such as building material, structure of the building and spatial organization which all produced different building typologies. In order to explain the evolution of building type, he pointed out the concept of typological process which confirms progressive transformation of type through time. In fact, typological process is reconstruction of the changes of a type during the time (Caniggia and Maffei, 2001; Cavallo et al., 2014). Methodology of Caniggia in terms of building typology and their surrounding open spaces were consisting of an extensive classification which he examined the original type of these buildings up to their various mutations or transformations during the time (Butina-Watson and Bentley, 2007; D'Amato and Petruccioli, 2015). As mentioned previously in detail about building typology in chapter two, according to Caniggia, categorizations of different types of buildings are; special building, base type and leading type.

Besides, leading types under effect of irregular contextual conditions like sloppy lands, placement in non-standard tissue and etc… adapt themselves within the conditions and become mutated. All modifications made on a building type in order to fit in an

irregular situation are called synchronic variants (Butina - Watson and Bentley, 2007; Caniggia and Maffei, 2001; Cataldi, 2003; D'Amato and Petruccioli, 2015 and Petruccioli, 1998, 2014). This building typology according to Butina - Watson and Bentley (2007) is called Mutated type.

Another important concept that directly deals with building typology and surrounding environment is urban tissue.

- **Urban Tissue**

As it was mentioned before, at the beginning of this chapter in 'definition of urban tissue', urban tissue is the selfsame as Conzen's plan unit. Plan unit according to Conzen's point of view is a part which in terms of route (street) system, plot (lot) system and building type appears different and distinguishable from its surrounding areas (Conzen, 1960). But, according to Moudon (1994), Caniggia has not given a clear definition of urban tissue and has left its concept obscure. He incompletely described urban tissue as a concept of different buildings in the mind of builders before the act of construction which it is the result of arrangement of various buildings and their brief notable characteristics (Caniggia and Maffei, 2001). Although Caniggia deliberated that the main factor for distinguishing one tissue from other surrounding environment is coming from the characteristics of building types in that tissue (because the main concentration of his method was on architecture level rather than urban analysis aspects), but attended to review other elements of urban tissue like; lot, pertinent strip, route and block as well.

- **Pertinent Strip**

It is the areas attaching to any route which comprises the built lots. Analysis in this part applies to review the location of the buildings towards street (being detached or

attached to the street line) and continuity or discontinuity of series of buildings along the street. In addition, pertinent strip looks constant when the tissue related to a route is constructed within a certain period of time (Caniggia and Maffei, 2001). Pertinent strip in terms of façade characteristics associated with the relations of the openings, entrances and position of the garden walls. But on plan level, pertinent street is distinguished by proportion of plots, position of the buildings into the plots, and their relations to the main route (Figure 13) (Caniggia and Maffei, 2001; D'Amato and Petruccioli, 2015).

Figure13. Pertinent strip in terms of façade characteristics
(Caniggia and Maffei, 2001)

- **Plot or Lot**

Lot in terms of Caniggia is the combination of built area and pertinent area in one lot (Figure 14) (Caniggia and Maffei, 2001 and Cömert, 2013).

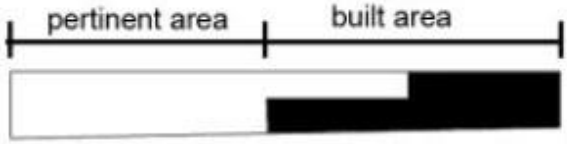


Figure 14. Built and pertinent area in plot (Cömert, 2013)

- **Route**

Route is a structure for providing the access from one place to another one. Routs can be categorized to matrix route, planned building route and connecting route.

- **Matrix Route:** Is referred to the routes that their direction takes form regardless the surrounding buildings. Mostly, matrix routes are rectilinear but for making the distance shorter in case of having obstacles they become curvilinear. In fact, matrix routs are main streets. (in Figure 15 is shown in purple) (Cömert, 2013; D'Amato and Petruccioli, 2015; Stanilov and Scheer, 2004).
- **Planned Building Route:** According to Caniggia, planned building route is formed from the gaps between the existing buildings in a matrix route or is the result of destruction of a building for making access and a passage for all existing buildings of the area (They are perpendicular to the matrix route) (in Figure 15 is shown in red) (Caniggia and Maffei, 2001).
- **Connecting Route:** It is referred to the routs that connect planned building routes to each other (in Figure 15 is shown in green) (Cömert, 2013; D'Amato and Petruccioli, 2015).

Figure 15. Different type of routes (Cömert, 2013)

- **Block**

According to Caniggia, block is the space that is surrounded among combinations of matrix route, two parallel planned building routes which are generally perpendicular to the matrix route and a connecting route paralleled to matrix route (Figure 16) (Caniggia and Maffei, 2001; Cömert, 2013).

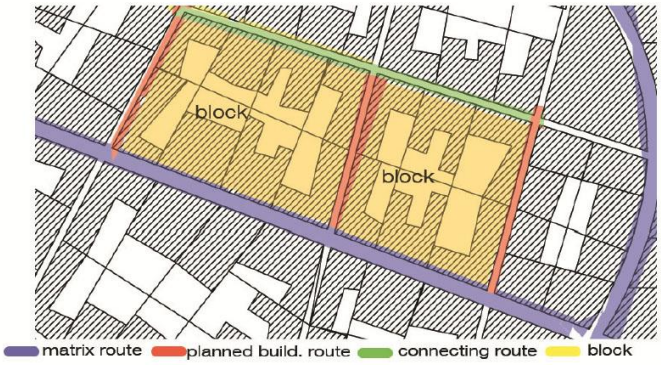


Figure 16. Block position (Cömert, 2013)

Another important factor for analyzing urban growth and structure of environment is related to combination of all elements of the city that Caniggia mentioned that Scalar components.

- **Scalar Components and Urban Organism**

Whereas Caniggia was an architect and not a historian therefore his analysis did not document the city as a historical process but demonstrated the essential framework of city making (Moudon, 1994). Caniggia, described human environment as built objects which are in connection with each other. Every component of the city and its relation with other components should be studied in different scales, somehow that all built objects that are influenced by planning and design should be reviewed from a small scale of building up to territory level (Caniggia and Maffei, 2001 and Moudon, 1994). He divided the built objects in four different categories such as building, building

fabrics (group of buildings), city and region that any of them are considered as a complex entity shaped from elements, structures, systems and organisms (Bucci and Mollo, 2010). As an example, Caniggia in his study about town considered the buildings as element and described the structure as a link between complexes of buildings which is called ‘tissue’, then mentioned ‘system’ as combination of tissues which forms different districts. In Caniggia’s belief, when all these factors become unified they shape organism or nucleus of town (De Roo and Hillier, 2016). In scale of individual building the same hierarchy is applied. Caniggia described building materials such as brick, stone, etc… as element. He considered the structure as a relationship between materials which led to shaping of walls, roofs and etc… then named the system as arrangement of the structure that creates rooms, stairs and corridors. The combination of all those parts shape organism (Caniggia and Maffei, 2001). So, built environment can be treated as organism that their components itself are an organism as well. Caniggia, described modularity of environment (how the components are fit with each other) and Scalar components (how the components in different scales are related to each other) as two main principles in structural environment (Moudon, 1994).

2.3.3.3 Discourse of Type in Terms of Rossi and Aymonino

From the other famous architects who were inspired from Muratori’s studies and also Italian school in the field of typology were Rossi and Aymonino.

Rossi picked up the concept of type from Quatremere de Quicy (1977). Accoding to Petruccioli (1998) Rossi’s idea about type “is based on a nostalgic view of an immutable past” (p. 10). In his book called Architecture of City (1982), Rossi has clearly quoted from Quatremere’s book: “The word ‘type’ presents less the image of

a thing to copy or imitate completely than the idea of an element which ought itself to serve as a rule for the model" (Quatremere, 1977, p.148). According to him type is the notion or symbolic definition that is embodied in objects and elements. Therefore, it is more abstract rather than concrete. In addition, as it is discussed by Stevens (2013) the works and theories of Rossi about type are largely influenced from analytical physiology of Carl Jung in the field of archetype and collective memory. Jung (1961), described these two phrases as much effective in all human behaviors and experiences particularly it affects so much on the human emotional feeling but the involved person never knows about it directly and it is only uncovered by looking at their effects.

For Rossi, type was similar to idea of archetype by Jung. According to Rossi, type is an inner law in the process of forming of a building which is not created by a specified person, but it is rather shaped by the basic daily life style and peoples' psychological and social experiences (Lobsinger, 2002). Therefore, type is the product of cultural traditions. In fact, according to Rossi, applying basic geometric elements which were produced from the reduction of architectural forms in the past was the best way for the continuity of the classical architectural forms to modern language and maintaining the tradition of different societies (Stevens, 2013).

Analogical approach in architectural design is another important subject that Rossi has considered. He expressed the city by two viewpoints, first one is series of effective things and objects that are applied in a design, and the second is something that is called by him analogical interpretation which is related to collective memories of individuals in a particular society. Therefore, the first one is fixed, but changeable, whereas the latter one is universal and unchangeable. According to Rossi, archetype is not clearly definable and cannot be turned into architectural form directly. Rossi did

not apply archetype for designing his projects (different from Laugier's primitive hut theory), but he utilized an analogy of archetype taken from a familiar object like a barn (Rossi, 2001). Mostly, Rossi's projects are consisting of the repetitive special elements and the fragments that relies deeply on his memory or taken from an image of a context which the building is constructed in it (Lobsinger, 2002; Rossi and Eisenman, 1982). Gallaratese in Milano is one of the distinguished residential building projects that designed by Rossi and the other well- known Italian architect, Aymonino in 1967. Rossi among five building complex designed the fifth one which is a northern extension. What at first sight attracts the attention in this project are open sided corridor, columns, repetitive elements and totally white color of the complex without any decoration. Rossi inspired the long rectangular form and rhythmical portico of Gallaratese from traditional tenement in Milano (Lützeler, 1994). The corridor, without any doubt is the main idea of Rossi upon this project and he does not involve other factors like colors and decorations to disturb his strong feeling (Figure 17).

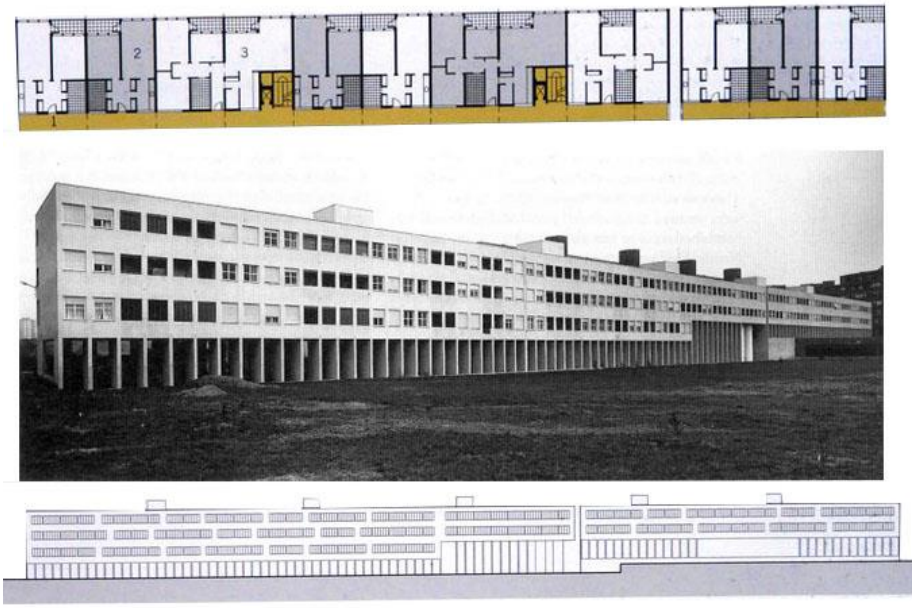


Figure 17. Gallaratese project (1967) by Rossi (URL4 and URL5, edited by Author, 2016)

As Rossi stated: “An analogical relationship with certain engineering works that mix freely with the corridor typology and a related feeling I have always experienced in the architecture of the traditional Milanese tenements” (Granham ,2013, p.181).

The feeling that Rossi brought up was taken from his collective memory, an archetype which related to the local residents' daily life (Rossi, 2001). In fact, he made an analogy between hysteresis building morphology and modern building form as an apartment typology. Although, Rossi has described context as an essential aspect in designing of Gallaratese but except in linguistic terms, it can be hardly observed the relation between real context and this project. For Rossi, an ideal city comprises different types which have interaction only with themselves and their own context and finally turn to a reminder of the perfect past, the past that may not even exist (Arnell et al., 1985).

As pointed out before, Aymonino was also inspired by Muratori. Aymonino specifically noted about ‘reversed’ connection between building and city which was born during modernist time. He described that how the presence of a city was on the basis of a dialectical relation between typology of building and urban morphology. According to Aymonino, compact building types during medieval era were at the service of urban form. But by developing of modernism, new types of buildings appeared in modern cities which were mainly independent from urban form and categorized based on their functions like library, theatre and etc… (Moudon, 1994). Aymonino claimed that in the modern city relation between building typology and urban morphology has become reversed. In fact, building types have created independent spaces and environments which were not served to complete the urban form (Bandini, 1984).

Aymonino and Rossi's works were clearly coincided with the views of Muratori and Caniggia, but about explanation of crisis in modernist era they changed their way. Aymonino and Rossi accepted "the reversed relationship between building and city as part of an irreversible change in the socioeconomic forces that shaped the city" (Moudon, 1994, p. 294). According to these two architects, in designing of new buildings, inspiration from history depends on the architect itself (Lehtovuori, 2005). But Muratori and Caniggia treated modernism as a deviation and provisional situation in forming of cities. This difference in interpretation caused two parallel and incompatible thoughts in design theory. In contradiction, Caniggia noted that the relation between city and buildings after modernist period must be re-constructed and designing of new buildings are to be taken place based on the analysis of traditional cities (Moudon, 1994). Moreover, Petruccioli (1998) in opposition to Aymonino and Rossi mentioned that although both were followers of Italian school but in typological studies they remained as formalist and finally they reached to the conclusion that in case of breaking of relation between building typology and modern cities, the analysis of traditional cities cannot have influence on the design of new buildings. Therefore, their discourse was in contradiction with the approach of Petruccioli as well.

2.3.3.4 British School and Conzen's Methodology

Geographical studies on urban morphology begun amongst German geographers. Schluter (1899) can be considered as one of the first persons who have worked in this field. From other famous pioneers in urban morphological studies at geographical level can be pointed out to Hassinger (1916), Giesler and Martinity (1918) Bobeck (1927) and Scharlou (1941), until Conzen which by his unique methodology highly developed the studies of urban morphology in this field that later became a base for Birmingham school studies (Conzen, 1981). At the beginning, Conzen studied in Geographical

Institute of Berlin University on cultural morphology, then he started to work in England as a town planner until he received offer from New Castle university for an academic position. His empirical researches were mainly focused on reading of cities' plan of small medieval towns which the peak of his studies was in Alnwick and Northumberland (Conzen, 1960). Town plan, townscape and fringe belt were of the most important concepts of his method (Conzen, 1968).

- **Town Plan**

The method of Conzen particularly focused on the town plan analysis. Although it only demonstrates the city in two dimensions but encompasses all the purposes, concepts and characteristics of urban form. Conzen in his studies on town plan considered three important elements; street system, plot pattern and building pattern or block plan (Conzen, 1960 and Moudon, 1994).

- **Street System**

It is referred to an open space where is bounded from two sides by street line and it provides a path for traffic of vehicles. By interlocking series of streets which are in connection with each other, street system or street pattern shapes (Cömert, 2013 and Conzen, 1960).

- **Plot Pattern**

Each individual plot is a basic component of land subdivision which works as organizational grid in urban form. Combination and arrangement of plots in a built up area is called plot pattern which is divided into street blocks (a group of interconnected plots which are bounded by street line). Besides, similar plots in terms of ratio and shape are placed in one category (Figure 18) (Moudon, 1994).

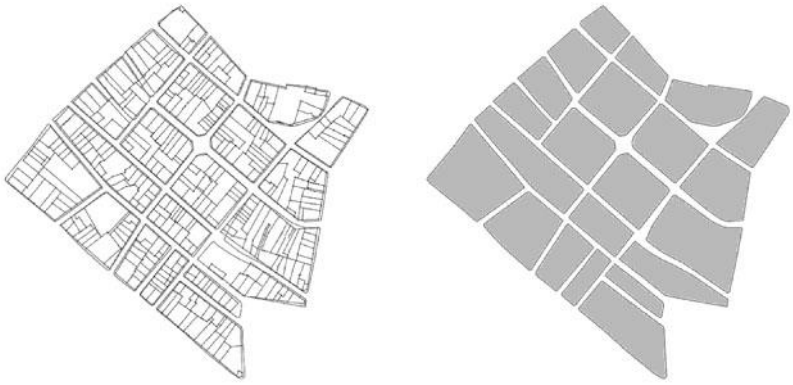


Figure 18. Street and plot pattern (Gurer, 2011)

- **Building Type or Block Plan**

It is referred to the position of buildings in a built up area. In fact, block plans are a closed figure which is specified by the outer walls of a building.

According to Conzen all these three elements are connected to each other like a puzzle (Petruccioli, 1998). Caniggia and later on French school also in their morphological researches studied town plan and its elements, but the precise definition of Conzen about town plan was as an analysis tool and an essential beginning point in typo morphological studies. Conzen examined town plan by studying on evolution of its element over a certain time (Conzen, 1960 and Moudon, 1994**).**

- **Town Scape**

According to Conzen "Town scape is a physiognomy of urban landscape" (conzen, 1960, P.131). In fact, Townscape is a combination of land use analysis, building pattern and plan unit which totally are in connection with each other (Cömert, 2013 and Conzen, 1988).

- **Land Use analysis**

Land utilization is the study on function of individual units that are located in separate plots which their classification is done by considering their function like residential neighborhood, commercial districts and etc…

- **Building Pattern**

It is referred to the elements that are located in individual plots and are classified based on the function of building, the period of construction, position of the building in a plot and the way of connection between the building and street (Figure 19) (Cömert, 2013 and Conzen, 1973).

Figure 19. Building classification in terms of period of construction (Cömert, 2013)

- **Plan Unit**

Town plan is consisting of different components called plan unit. Conzen defined plan unit as a part of the city which morphologically is distinctive from its surrounding area in terms of street system, plot pattern and building type which all can be reviewed in different scales (Conzen, 1960). Each plan unit, under the influence of its local socio-economic factors and period of construction of its elements can be different from the

others. Plan units are the cause of stratification in town scape (viewpoint and vision about city) which is one of the main gained of Conzen (Conzen, 1981).

- **Fringe Belt**

From other important concepts that Conzen worked on it was fringe belt. Conzen has represented fringe belt as a strip or a belt-like zone which is originated from the fringes which are developed stationary or slowly and is consisting of a mixture characteristic of land use. These regions particularly on the edges of urban areas have embedded (Whitehand, 2007). Fringe belts in urban areas remain for a long time and finally transform to a residual in urban land scape (Conzen, 1960). Later on, Conzen's followers in Birmingham university like Slater (1990), Whitehand and Larkham (1972) by using Conzen's methodology shifted their concentrations from small settlements towards main problems such as influence of industrial settlements on urban form, fringe belts and suburban areas which was demonstrating of applicability of Conzen's methodology and ideas on the other examples (Petruccioli, 1998).

2.3.3.5 Different Approaches on Typo Morphological Studies

French school and space syntax methodology are another alternative approaches in typo morphological studies which will be briefly overviewed.

- **French School**

The French school of Versailles was opened in the early sixties by Levi Strauss after Italian and English schools. From the other pioneers of this school can be pointed to Panerai, Depaule and Castex. The origin of the school in terms of typo morphological studies was coming from Aymonino, Rossi and Muratori's considerations. The researchers of this school were mainly concentrated on the cultural morphology issues that were connected to architectural typo morphology of France (Castex, 1977 and Van Bilsen et al., 2006). French school as well as Italian school was severely in opposition

to the modern movement in architecture. Its distinguished difference with Italian school was the given priority to social aspects because the French school studies were under influence of the famous French sociologist Lefebvre, unlike Muratori and Caniggia who mainly physically examined urban growth and typological development (Petruccioli, 1998). For example, in a review of typo morphological analysis in Cairo done by Depaule, one of the pioneers of French school, attention to physical aspects of space as well as attention to use, social and cultural aspects was important (Arnaud, and Depaule, 2008).

- **Space Syntax Method**

From the important progresses achieved in the mid twentieth century in typo morphological studies was space syntax, which was created by Hillier (1998). According to Hillier, space syntax is a research program in the area of morphological research of built environment. Its aim is to understand how the spaces connected to each other. Space syntax is a method coming from combination of formal descriptions from space pattern (driven by computer) with empirical observation of how to use these data for connecting two spaces. His research is about modality of the relation between two spaces and its concentration on axial analysis which is of the main components of synthetic studies in urban space (Hillier, 1998).

2.3.4 Outcome of Chapter Two

The important outcomes coming from discussions and also review of theories and the mentioned discourses in chapter two and three are as follows:

- As per the studies that took place in the field of typo morphological development, neo- rationalist era can be considered as a beginning point that encouraged many researchers to approach the problem of fragmented distorted

urban tissues (originated from the architecture of modernist era) with a critical point of view. Theories of the famous researchers of this period were mainly focused on the matter that the continuity between building, street, districts and finally the entire city cannot be manipulated.

- It is so important that in typological studies and understanding of this concept, the related studies not to be focused only on urban scales regarding to urban issues, but considering this concept in architectural level (building scales) regarding to indoor space organization, façade characteristics and relation with surrounding environment is also crucial. This outcome paved the way for establishment of useful methodology which later will be applied in detail for examining of the case study in chapter three.
- Eventually, as Petruccioli (1998) and Oliveria (2016) have stated before, the less well known architects who design majority of regular buildings of a city should be an inspiration to the young architects, not the architects of iconic and famous buildings. It is to be noted that typological development in regular building typologies that leads to the appearing of different leading types has not always moved ahead slightly and step by step, but sometimes due to some contextual issues the existing typologies are mutated in a sudden and unusual form which its outcome could be appearing of unconventional typologies or mutated types. In fact, mutated types could be resulted from the sudden changes of leading types or another variation of leading types that the study and review of them, because of ignoring them on many occasions, is so important.

The following Table 1, illustrates the summary of development on typo morphological studies according to well-known scholars, which was previously reviewed in chapter two.

Table 1. Summary of development on typo morphological studies (Author,2016)

Name	Main Working Area	Most Important Beliefs
Laugier (1713-1796)	France	He introduced a natural base for architecture which is observed in primitive hut. In his opinion, this very early hut is considered as the origin of all possible forms in architecture
Quatremere (1755-1849)	France	He stated the comprehension of type as a general character and form which differentiate particular type, group and objects.
Boullee (1728-1799)	France	He used to pay much attention to the memory. All of his unbuilt projects were kind of manipulation of classical forms which their only aim was bringing the symbol to the spectators with little attention to technology which was so complicated and nonfunctional.
Durand (1760-1834	France	Durand by reducing form to their simplest and basic elements created a format table that was the basis for different building types. Economic factors and convenience were at the center of his work.
Muratori (1910-1973)	Italy	Structure of a city was understandable to him only through its historical aspect and was severely opposed to the modern movement. He studied urban growth in a long period of time and turned it to a base for theory of design but his theories were complicate and not practical.
Caniggia (1933-1987)	Italy	He tried to simplify Muritori's complicated theories and make them practical. He called Progress of type as typological process and classified the building types into special building, base type, leading type and synchronic variant. From the other concepts that Caniggia considered were scalar component, urban tissue and urban organism.
Conzen (1907-1998)	Britain and Germany	He carried out his typo morphological studies at geographical level and reviewed fringe belts, town plan and town scape by studying the historical developments' elements.
Rossi (1931-1997)	Italy	He created analogy between the past forms and modern architecture by using basic geometric elements which was coming from his collective memory.
Aymonino (1926-2010)	Italy	Muratori was an inspiration to him. But contrary to Muritori who did not believe in modernism, Aymonino believed that if in the process of modernization, the relation between the buildings and modern cities is broken, in this condition for designing of new buildings there is no need for analysis of traditional cities.
Hillier (from 1937)	Britain	He paid attention to the condition of relation amongst spaces by using axial analysis method.

Chapter 3

TYPOLOGICAL DEVELOPMENTS OF FAMAGUSTA IN GENERAL AND BAYKAL NEIGHBORHOOD IN PARTICULAR

The city of Famagusta or in Turkish language Gazimagusa is known as a coastal city which is located in the east of Cyprus Island in the Mediterranean Sea (Figure 20). It is the second large city in North Cyprus and is located 62 km from east of Nicosia (capital city of Cyprus). Famagusta was well known because of its harbor, trade activities and old quarter (Maraş, which is abandoned for around three decades after division of the island into two parts in 1974). Then its international aspect and value was recognized again due to the establishment of Eastern Mediterranean university in 1979, after many years of isolation (Cömert and Türsoy, 2015).

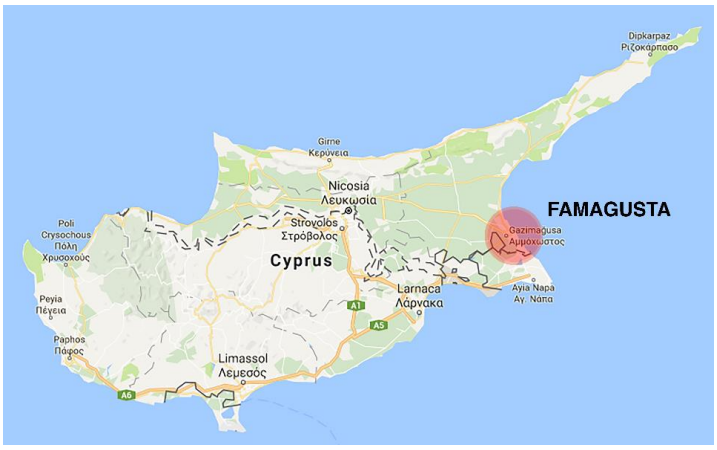


Figure 20. Cyprus Island and location of Famagusta (URL 1)

3.1 Historical Developments of Famagusta

Investigation on historical development of the city is indicating that contemporary city of Famagusta developed throughout seven particular periods as follows:

The foundation of Famagusta city is dated back to 300 BC when Ptolemy II founded Famagusta in the ruins of Asinoe settlements. For a long time, Famagusta just remained as a fishing town, but after demolition of Salamis by Arabs (648 AD) the inhabitants migrated to Famagusta (current location of the city) and gradually, the city developed as a coastal trade city (Figure 21).

Lusignan rule the island in 1192. At this time, Famagusta flourished specifically because of its natural harbor as one of the most important trading centers between East and West. Even in 1464 became the capital city of Cyprus (Hanworth, 1989). Due to the importance and new position of the city, citadel and fort were built for safeguarding and protecting of the city.

During Venetian period (1489 – 1571), Famagusta turned into a fortified city for military purposes (Moat, bastions, citadel, sea and land gate were built around the city) and was one of the most well-known fortified cities of medieval era in 15th century (Figure 21) (Doratlı et al., 1999).

The rule of Ottomans started in 1571. During this period, in terms of social and physical aspects the city changed a lot. During Ottoman dominion Famagusta was mainly developed in terms of military purposes rather than a trading center and for this reason the commercial and economical activities of the city reduced, as well as its population (Jennings, 1993). Moreover, during Ottoman era living in the old town (Walled city) for Christian people was forbidden. Therefore, most of the Christians

migrated from the old town to the outside the wall in the direction of south along the seashore (Figure 21) (Cobham, 1969) which led to the appearing of two important districts, Maraş and Aşağı Maraş (Luke, 1965). Besides, Walled city due to migration of Greek Christians faced population in decline and therefore to compensate this issue, groups of Muslim immigrants were brought from Anatolia (Turkey). According to Arbel (1984) due to adaption of new immigrants in terms of social and cultural traditions, architecture and urban environment in the Famagusta changed a lot.

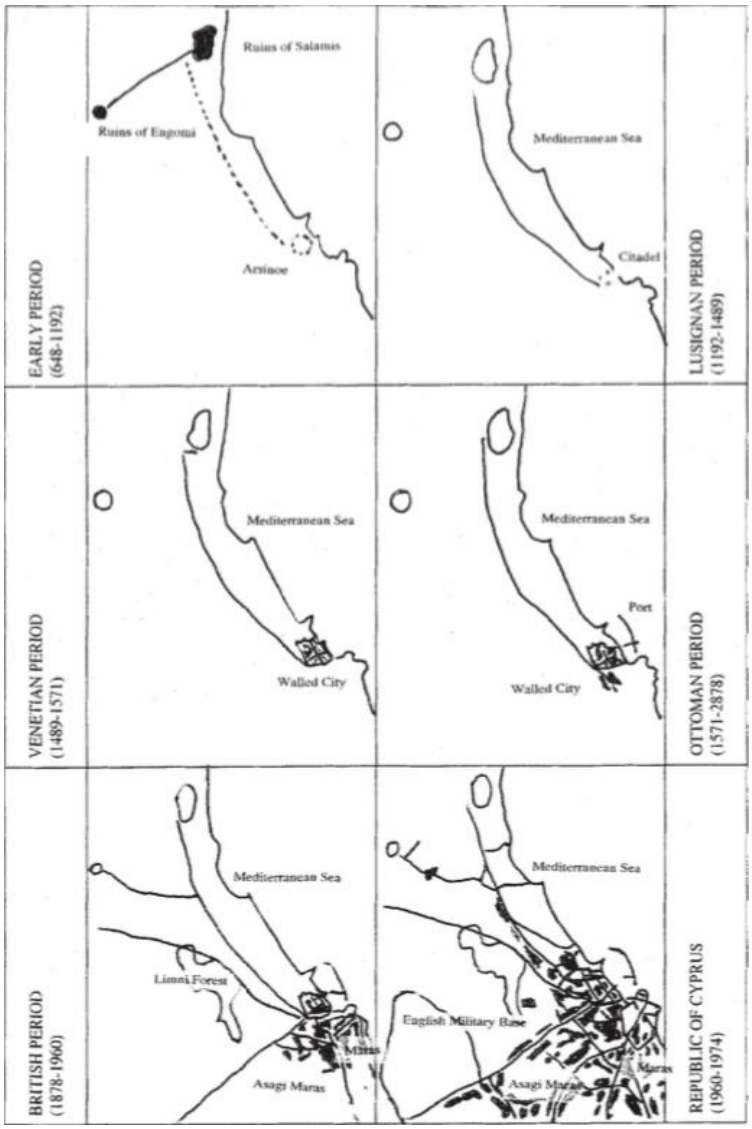


Figure 21. Evolution of Famagusta city until 1974 (Doratlı et al., 1999)

In 1878, the Ottoman leased the Cyprus to the British and in fact Island became one of the British colonies. Main goal during British period was modernization of Cyprus. In connection with Famagusta, train transportation system as a more efficient way for commercial activities of harbor was renewed. In this period, Famagusta became again an important trade town (Hafızoğlu, 2000). In terms of population, the Ottoman policy was to inhabit the Muslim Turks mainly inside the Walled city and the Greek Christians outside the wall and this distribution of population was continued until the British time. But, by abolishing of the prohibition of Christian inhabitancy inside the wall, the increase of population was occurred in the Walled city (Keshishian, 1960). As a result, the Walled city had no enough space for inhabiting of the supposed population.

The main reason of extending of the city to the south and south east directions in British period as shown in figure 22, was related to their consideration for constructing British administrative district (consisting of office buildings, warehouses, storage buildings and urban villas for their staffs) outside the wall, between Varosha or Maraş (economic city core based on tourism) and Walled city. Therefore, the town development was centered around Maraş district (Cömert and Türsoy, 2015). In fact, by this extension, urban development and morphological structure in Famagusta was changed.

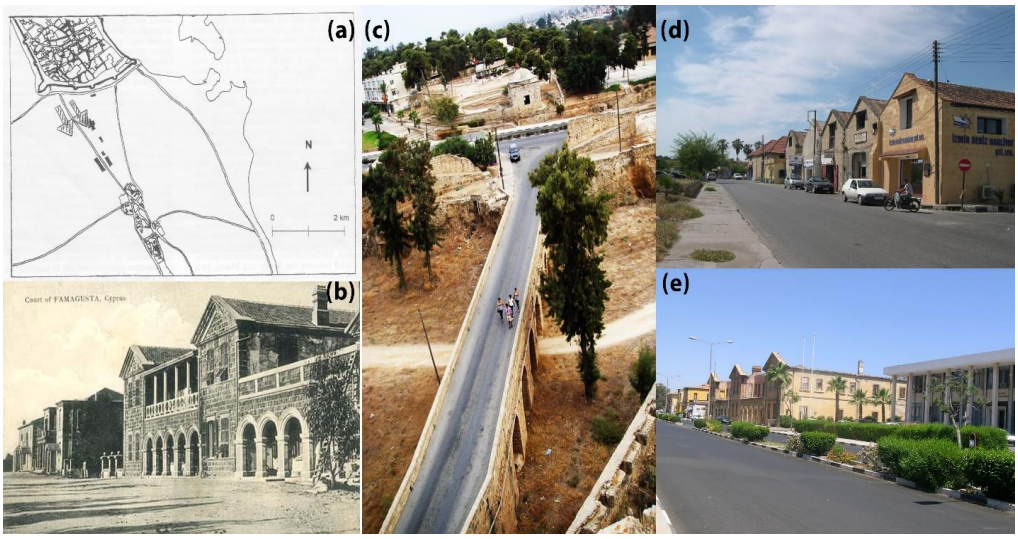


Figure 22. (a) Expansion of the city outside the walls in the British period (Doratlı et al., 1999), (b) Famagusta court (from Baki Bogac archives, 2016), (c) the road that administrative areas during British period developed along it, (d) and (e) Administrative area that constructed during British period (taken from Türkan Uraz archives, 2016)

Moreover, the other important particularities of British period were parallel to developments in terms of socio-economic aspects by constructing the new commercial, recreational and touristic projects specifically in Maraş region. They started to construct new housing projects in new residential districts (as an expansion of Aşağı Maraş region) in Famagusta. In fact, the British in order to furnish people's requirements in terms of dwellings began to construct new buildings in empty lands or destructing of old buildings without consideration on the city pattern and the past typologies (Luke, 1965). After 1946, to promote the quality of urban life and providing healthy situation for all people which was of the main goals of modernist era, for the first time the urban legislation was approved under the title of 'Cap 96' that began to modify and improve the relations between streets, buildings and their surrounding open spaces (Cömert and Türsoy, 2015). In this period, urban areas were planned under the control of local authorities and were divided to similar plots in terms of shape and size. In addition, after 1946 new typology of modern single storey urban houses in

Aşağı Maraş and later in early 1950's in Ayluka neighborhood (present Baykal which is the desired area in this thesis and will be discussed later) were appeared.

Republic of Cyprus was established in late 1960's when the British left the island. Although, Famagusta at this time was not formally and physically separated but as noted previously, in south and south east where the Greek Cypriots were living all touristic and economical activities were taking place, consequently most of the population of the city were concentrated in this area. Contrary to that, Turkish Cypriots who mostly were living in the north-west and the Walled city became isolated (Keshishian, 1960).

But after the war (1974) the island with physical barriers was divided into two parts, the northern part with Turkish residents and the southern part with the Greek residents. The division of the country hardly affected Famagusta as well, because Maraş as the most urbanized and the main core of the city was closed for habitation and turned into ghost town (Doratlı et al., 1999). Also, Aşağı Maraş because of its Greek ownership and uncertain future stopped further development. In fact, before 1974 the trend of the city forming was around Maraş district but extraction of Maraş from Famagusta not only affected on the other neighborhoods but future developments had no alternative to develop towards north-west and along the sea.

The following Table 2, demonstrates the summary of historical development of Famagusta.

Table 2. Summary of historical development of Famagusta (Author, 2016)

Period	Date	Description
The Early Period	648-1192	- The foundation of the city
The Lusignan	1192-1489	- The commercial trading coastal town - Famagusta became capital city 1464
The Venetian	1489-1571	- Booming of commercial activities - Famagusta turned to a fortified city for military purposes
The Ottoman	1571-1878	- Drive out Greek Christian inhabitants outside the Walled city. - Development of the city outside of walls to the South direction. - To compensate the population decline in the old town, groups of immigrants were brought from Anatoli. -Reduction the importance of commercial activities
The British	1878-1960	- Due to the increase of population in the Walled city and lack of enough space, they established their administrative district outside the wall which led to the expansion of the city towards the south. - Increase of commercial and touristic activities in Maras. - They approved the first urban legislation in 1946 under the title of 'Streets and Building Regulations- Cap 96'.
Cyprus Republic	1960-1974	- Although, at this time the city was not formally divided into two parts but generally Turkish Cypriots were living in walled city and Greek Cypriots in the southern areas and outside the wall. - In this period the city and its population were developed more than before particularly in the south-east in the direction to Maras and Asagi Maras as a touristic center of Famagusta.
Divided Cyprus	After 1974	- The island was divided into two parts, the Northern Cyprus and the Southern Cyprus. - By physical barrier, Famagusta city was divided into two parts as well, the northern part (Resident of the Turkish Cypriots) and the southern part (Resident of the Greek Cypriots).

3.2 Urban Form of Famagusta

Famagusta like many other coastal cities is developed in linear form for a better accessibility to the sea. In general, typology of urban form in Famagusta has not been continuous and coherent which caused fragmentation in the city pattern. Some factors such as domination of different powers during history (were mentioned previously)

and natural & man-made restrictions have prevented continuous development of the city.

- **Natural Restrictions**

Cities can be considered as man- made settlements which are affected from their geographical and natural characters. Sometimes, natural characteristics of the cities due to the existing geographical limitation change to natural restrictions which cause discontinuity in development of urban form (Dupont, 2004). In connection with Famagusta, whereas it is located at the seaside therefore it comprises of a remarkable number of wet-lands. On the other hand, Limni forest that is located at the west of the city, for important purposes like animals' ecology is to be preserved. As a result, these limitations have affected on the direction that the city is extended and developed (Figure 23).

- **Man-Made Restrictions**

The war (1974) and dividing the island into two separate parts, South and North Cyprus, has created physical barriers for Famagusta city as well. From those important man-made constrains which have had role in fragmentation of city pattern of Famagusta can point out to the effect of the war (1974) in dividing of the city, dedicating lots of land to the UN forces and army, also possession of the sea front by different functions such as military and free port which caused the limitation in usage and accessibility of sea shore. Moreover, the Walled city as a historic core is bounded by thick walls and whereas access to the outer part is so limited (only by three gates is connected to the outside) therefore it is segregated from the other districts (Figure 23). From other important effective factors in discontinuation of development of urban form in the city is the existence of Eastern Mediterranean university. Gradually, university is imposing the city to grow towards its direction (North part) and therefore

has caused formation of new districts which most of their buildings are constructed rapidly without planning as rental small dwelling apartments. In fact, the various districts in Famagusta not only are different in terms of their urban form features, but in terms of building typology are so distinguished from each other and in general, the city does not have a unified characteristic.

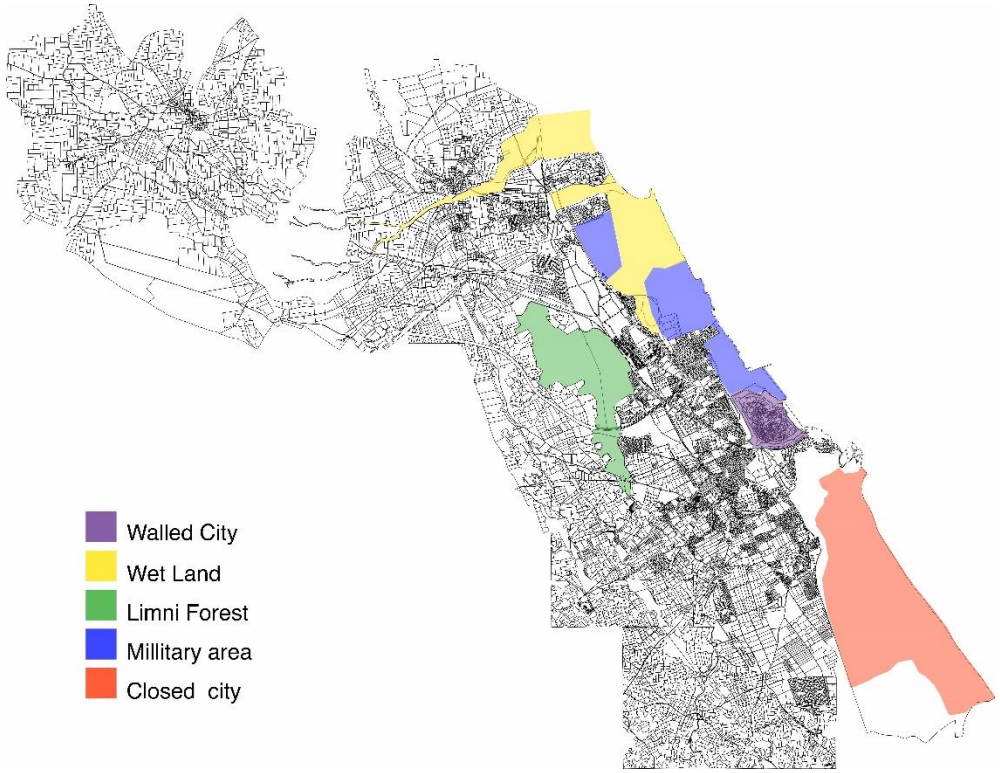


Figure 23. Physical barriers that influenced in development of Famagusta (Author, 2016)

3.2.1 Variety of Districts

As mentioned before, because of natural and man-made restrictions, quarters of Famagusta are mainly shaped in the form of linear along Gazi Mustafa Kemal and salamis road which caused low connectivity amongst different districts and neighborhoods. Based on the municipality's boundary, Famagusta is officially divided into four main zones as follows: (Figure 24) (Doratlı et al., 1999):

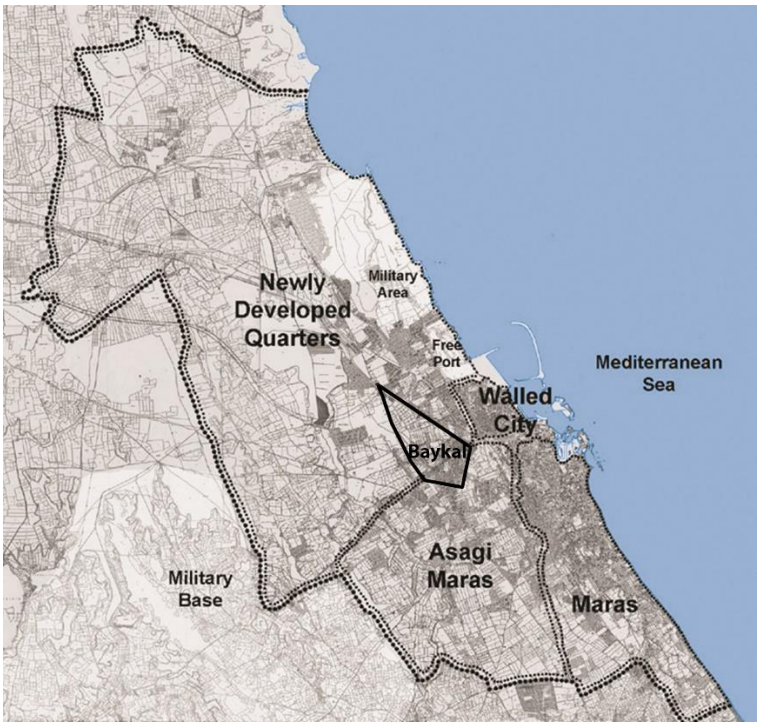


Figure 24. Different zones of Famagusta (Author, 2016)

1. Walled city which is consisting of only one neighborhood called Surici
2. Maraş district which is consist of:
    a. Closed Maraş
    b. Aşağı Maraş which Harika, Zafar, Pertev Pasa, Anadolu, Canbulat, Namik Kemal, Lala Mustafa Pasa and Piyale Pasa are its eight neighborhood.
    c. Developments on late 1950's like Baykal
3. New developing quarters after 1974 which is consisting of five neighborhoods called Karakol, Dumlupinar, Sakarya, Serbest Liman bolgesi and Canakkale
4. Recent developments (suburban area as Tuzla district) (Figure 25).

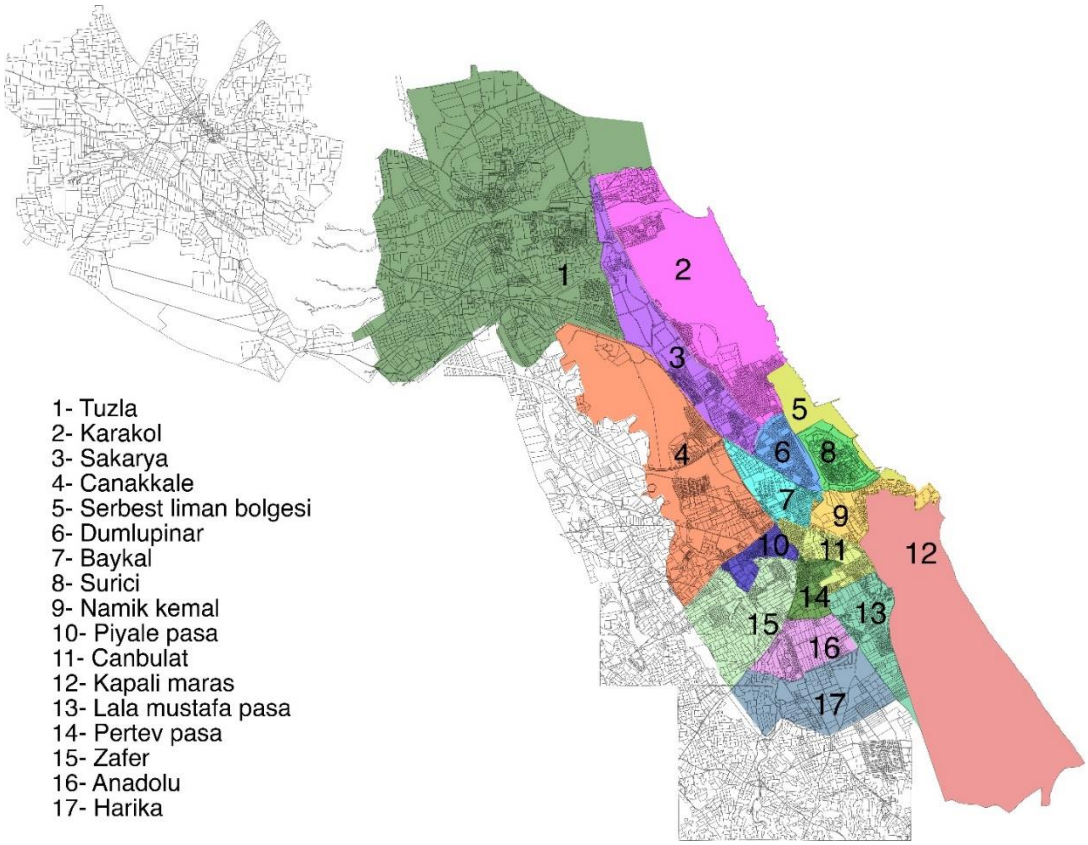


Figure 25. Neighborhood districts of Famagusta city (Author,2017)

After 1974, social structure of Famagusta as well as its physical structure has been changed a lot. According to Doratlı (2000), Famagusta is composing of different cultures which is not only related to the students from various countries, but the migrants who came from south Cyprus and different parts of Turkey have also a remarkable role in forming of multicultural structure of Famagusta. As a result, inhabitants of every district with their own unique cultural backgrounds effect on social segregation.

After the war (1974) Maraş turned into ghost town, and Aşağı Maraş because of its Greek ownership and uncertain future stopped further development. Also, after expansion of the city towards North and forming of new developments, Aşağı Maraş and Walled city due to a very low connectivity with other districts became more

isolated. On the contrary, in Baykal (after Maraş and Aşağı Maraş is one of the oldest neighborhood of Famagusta) with mainly Turkish Cypriot population from the past till today, some tendencies toward developments and growth, was noted.

Before 1974, the new developed areas were mostly agricultural lands but after war the city for its growth had no alternative except to develop in North direction. By passing time and particularly due to the closeness to Eastern Mediterranean university these districts became more populated, also most of commercial and leisure activities take place in these areas. Moreover, most of the residents in Kaliland (a part of Canakale neighborhood) and Sakarya are international students and university stuff.

Tuzla, before 1974 was just a small village but after the war because of its nearness to Eastern Mediterranean university and governmental hospital was rapidly developed, but its accessibility to other parts of the city is poor. Most of the populations in this area are Turkish Cypriots.

3.2.2 Housing Typologies in Famagusta City

In general, Walled city district in Famagusta has a traditional urban tissue with intensive urban typology which it also emphasizes on the importance of continues street façade in Walled city (Pulhan and Numan, 2006). Mostly, the buildings in Walled city are amalgamated to each other and it is so difficult to isolate a building from other surrounding buildings, because the typology of the buildings and urban morphology in Walled city is so interwoven and in other words are melted in each other. The buildings have a much interconnected solid / void relation with each other that eventually have resulted in a continuous urban façade as a whole (Cömert and Türsoy, 2015). Only the typology of the historical monumental as an object building and a limited numbers of remarkable buildings with their well-known façade

typologies like recessive entrance area defined by the eclectic style columns on both sides located in the middle, show distinctive character from others. This type of building façade reflects the characteristic of British period architecture (1878-1960). Later on, as far as modernization during British period was an important aim, they attempted to materialize it together with social and economic developments and the increase of trade activities with Europe and the Near East (Atun and Pulhan, 2009). As mentioned earlier, in this period due to the increase of population in the Walled city and lack of enough space, they established their administrative districts outside the wall which led to the expansion of the city towards south and around Maraş district (Doratlı et al., 1999). Therefore, in addition to new commercial, recreational and touristic projects especially in Maraş, in order to furnish people's requirements in terms of dwellings (mainly Greek Cypriots used to work and live in this area), a number of houses by getting rid of the historical motives simplified and gained more modern look with their simple round shape columns to support and define the verandah at the front. In addition, the glass rooms faced to the south were started to be built rapidly in Aşağı Maraş and later on in Baykal neighborhood gradually in late 1950's (Luke, 1965).

Besides, after 1946 for promoting the quality of urban life and healthy situation for all the people in Maraş districts for the first time urban legislation was approved "Cape 96" that began to modify and improve the relation between streets, buildings and surrounding open spaces (Doratlı et al., 2003), so that in Maraş, Aşağı Maraş and later in Baykal, buildings with their different functions, plots subdivision and street systems were planned under the control of local authorities.

By passing time, designing of housing projects by educated architects became more important and widely observed in Aşağı Maraş. This matter was the reason to appearance of the housing type which can also be defined as main stream on international style modern single storey family houses. This typology was consisting of local and modern architectural characteristics both. Modern single storey housing typology was remarkably popular in Aşağı Maraş (Figure 26), somehow it had a great influence on the design of further housing projects in different regions as well as Baykal which was the first neighborhood area developed in 1960's generally under influence of this house typology which suggests new modern look.

Figure 26. Example of modern single family houses in Aşağı Maraş
(taken from Türkan Uraz archives, 2016)

However, generally the remarkable point in the island is the adding of second floors to the single storey houses, when the families needed accommodation for their married children. This was named by Ulucay (2007) as an 'in between typology' from single storey urban villa to the multistory apartment house. Figure 27 is one of the examples for this typology which is located in Nicosia, though it is looking like a villa from the outside, but comprises of two independent family houses.

Figure 27. A house with two independent storey from Çağlayan district of Nicosia in 1950's (Ulucay, 2007)

On the other hand, social houses as two storey row houses and multi storey buildings were rapidly built to meet the needs for housing of the growing population under supervision of government (Atun and Pulhan, 2009).

Later on, the population of Famagusta especially after establishment of Eastern Mediterranean university (1979) was tremendously increased and consequently the concrete detached apartment blocks were developed for solving the housing problem of the increasing population of the city. According to Oktay (1999) majority of the local people and even professionals mostly due to economical profits for construction of new houses prefer typical unidentified and monotonous development of concrete detached apartment building typologies. As a result, by increasing of demand and supply, apartment typology in Famagusta turned to mass production and this typology are evidently observed in whole of Famagusta city specifically in new developed districts (Figure 28 and 29).

Figure 28. Developments of mass production apartment typologies in Famagusta (Okaty, 2002)

Figure 29. Developments of mass production apartment typologies in Famagusta (taken from Türkan Uraz archives, 2016)

3.3 Development of Baykal Neighborhood: Cooperative Houses as a Case

History of the urban development of Baykal neighborhood exhibits same typologies, although some of them became remarkable as mutated type in relation to the main interest of the research. Interview with the local intellectual Dr. Okan Dağlı, shed the light on this research initiative. He pointed out that the original name of the area was 'Ayluka' in the land registration and located between Lefkoşa and Larnaka roads, extended until Canakkale district. Turkish and Greek Cypriot used to live in different

parts of it; however Turkish people named the area as Baykal later on. Baykal before 1958 belonged to British military camp which was closed in 1958 and moved to the district at the end of Larnaka road called as 2.5 miles. Afterwards the Turkish doctor of the camp bought the whole land and in 1960 parcelletion had been done and each parcel sold to Turkish families. According to Dağlı (2010), these families were mostly bank employers, merchants and lawyers that belonged to the high middle income social class.

The area as being an extension to the modernist part of Famagusta city like Aşağı Maraş, was ready to welcome the nuclear families and subsequently single family urban houses started to flourish up in the neighborhood. Today, there are two different generation (style) of these types which have been mentioned before and can still be differentiated in the neighborhood; the first generation was early modern houses built during the last years of British period by clerk of lawyer, Dr. Dağlı who underlines that apparently some of the first generation houses were even constructed earlier near to the camp border (Figure 30).

Figure 30. First generation of single family urban houses in Baykal (Sevkibey street) (Author, 2016)

The second generation was single storey modern houses with gardens, most of which designed by the professionals. One of the very early examples of these houses is advocate Osman Dağlı house[1]. The house shows very strong connections to the garden, public verandah with well-defined and more privatize balcony in the front façade has enriched the welcoming entrance area. Besides, the glass room enjoys the street view through the trees. In 1984 the first floor was added carefully, balancing the existing façade characteristics by keeping the glass room and locating staircase along the side façade. Being contrary to the first generation houses plans, it shows very clear division between public and private parts (Figure 31).

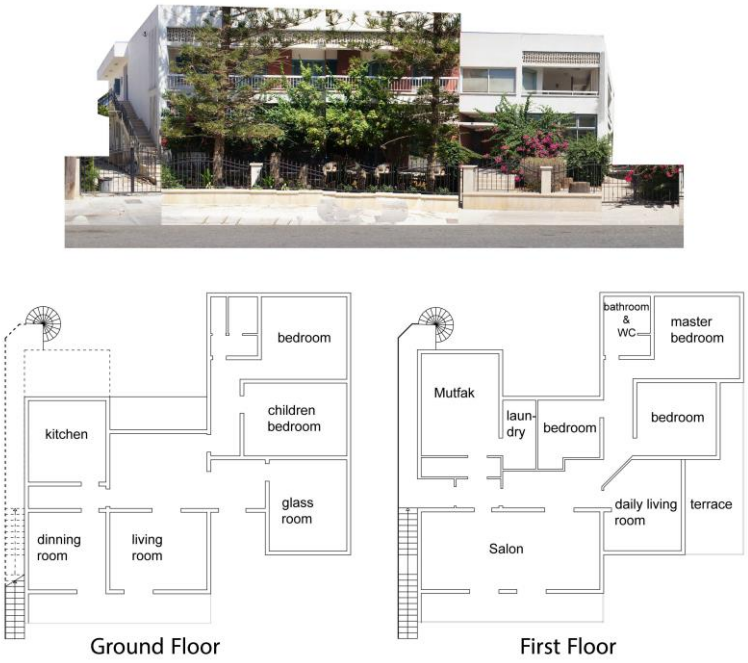


Figure 31. Dağlı house second generation of modern single family houses in Baykal region (Sevkibey street), (Author and plans are retrieved from municipality of Famagusta, 2016)

[1] During the interview with Dr. Okan Dağlı it was founded that he was born in one of the modern house located one of these plots which had been bought by his family, designed by the Hakkı Atun one of the member of the early generation of Turkish architect who had institutional education graduated from İTÜ in 1959. The second floor has been designed by Burhan Atun in 1984 carefully, having a remarkable consistency with the characters of the existing ground floor.

In addition, Production Union Cooperative bought some parts of the planned area in Baykal region for its members and employers. Construction of Cooperative Houses which are semi-detached single storey family dwellings design by the professional architect Arif Feridun, but carry rather modest modern characteristics started in 1963 and finalized in 1968 due to the problematic political conditions.

However, all these single family urban houses, no matter what is their styles, due to changes in social structure of the society and demand for accommodation of the families' married children were transformed to two stories houses for two different families. Lately, specifically after the foundation of the university (1979) even more floors were added on the top of the existing types (Doratlı et al., 1999) and mutated apartment types appeared. This can be seen as the first step of apartmanization in Baykal neighborhood. In short, apartmanization became unavoidable and started in the area which shows quite remarkable variations of these typologies. The result of desultory and un-provisioned floor additions especially in semi-detached houses are evidently seen, because most of these additional floors are built in different periods and its consequence is the creation of typology of unpleasant and disharmonic apartments, as sometimes perceived semi-detached buildings with different number of stories and quite different styles are built side by side (Figure 32 and 33).

Figure 32. Example of unconventional (mutated) apartment typology (process base) in Baykal
(Sevkibey street) (Author, 2016)

Figure 33. Example of unconventional (mutated) apartment typology (process base) in Baykal
(Sevkibey street) (Author, 2016)

Moreover, apartment typology in Baykal is not only limited to desultory and unplanned floor additions on the top of ground floors, but some early modern apartments were built late 1980's on the basis of highly shared standard apartment typology which have the basic apartment characteristics. In fact, by placing indoor

staircase in the middle of the buildings, public, private and semi -private spaces are clearly defined (Figure 34).

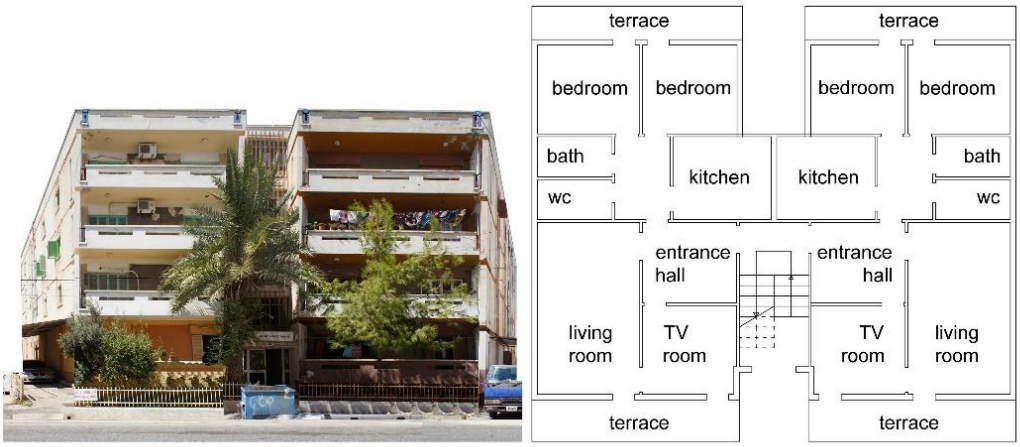


Figure 34. Example of early modern apartment typology in Baykal (Hasan Yusuf Arseven street) (Author,2016)

In continuation of this chapter, whereas Baykal is a particular example which demonstrates variety of housing typologies, therefore this thesis for dealing with the problem of apartmanization in unusual way specifically will concentrate on cooperative houses in Samsun Street located in Baykal neighborhood. Although, all above-mentioned typologies exist in Baykal neighborhood but this study for reviewing mutated type goes through almost twenty cooperative houses that were built by the institutional educated architect in late 1960's, then gradually changed to multi storey houses in 1980's. This can be seen as first steps of apartmanization in Baykal neighborhood when the families started to add more than one floors on the top of their single storey semidetached cooperative houses in the neighborhood. This changed the urban morphology of the area in relation to the changes of the building typologies and selected as a research interest of the thesis. Not only because of this, but in the history

of urban development of the Baykal neighborhood the cooperative houses gained importance in terms of their building construction process.

3.3.1 Methodology

Methodology in this thesis by using of theoretical background information about typo morphological developments in the relevant major field and historical development of Famagusta and Baykal neighborhood will be applied for analyzing and examining of case studies in the selected area. Whereas the thesis focuses on typo morphological analysis in relation to architectural characteristics of the buildings, therefore, the methodology which will be applied in this study is formed from synthesizing Caniggia's and Conzen's method (as far as it is up to the subject of this study).

Apparently, according to many scholars such as Moudon (1994) and Kropf (1996), the research of Conzen and Caniggia complement each other, because definition and method of Caniggia about building types which includes all external aspects (façade characteristics), spatial organization and details is more comprehensive than building type analysis of Conzen. In other words, Caniggia began his works from small scales and expanded them to urban level. Although Conzen studied on building type as well, but his concentration on these issues was not as much as Caniggia. On the contrary, Conzen's method was mainly focused on macro scale and presented more specific definition about plan unit or urban tissue (Moudon, 1994). Figure 35, illustrates similar components in typo morphological approaches of Conzen and Caniggia which are linked together with same shades and assists for better understanding of their point of views regarding to the differences and similarities.

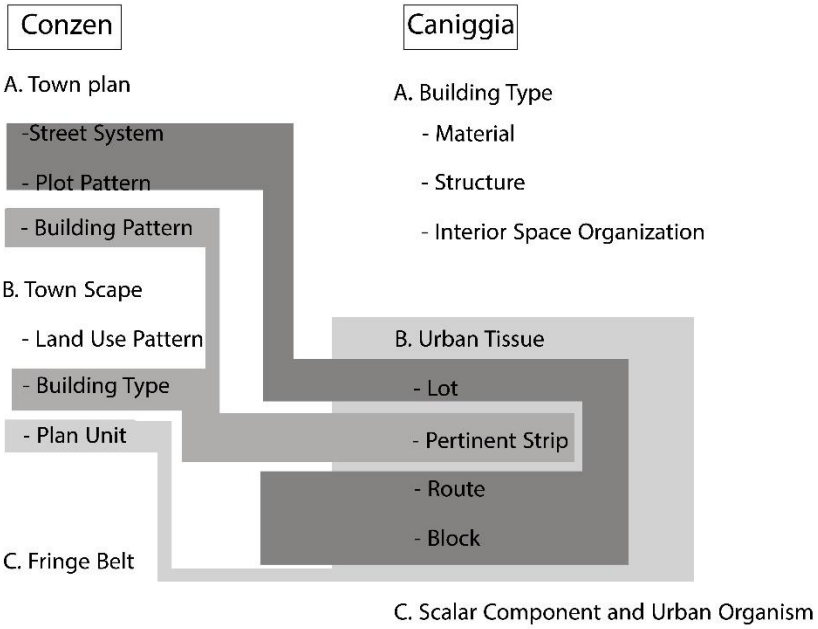


Figure 35. Conzen's and Caniggia's components for studying on typo morphological developments (Cömert, 2013 and developed by Author, 2016)

As it was mentioned before, Baykal neighborhood in Famagusta city in terms of house typologies shows remarkable characteristics. In this part, through exclusive integration of Conzen's and Caniggia's methods will be applied to analyze the typo morphological evolution of cooperative houses in Samsun Street in Baykal neighborhood over time. As it is expected, it could be almost meaningless to achieve typo morphological studies without considering the factor of time. In this connection, existing situation of important components in Samsun street like façade characteristics, pertinent strip, plot typology and ratio, form and ratio of urban block, town scape (consist of building pattern, plan unit and land use analysis) and lastly, buildings typology in terms of indoor organization and space characteristics would be analyzed.

As it was indicated before, in the part of development of Baykal neighborhood, the history of Baykal neighborhood (previously called Ayluka) is aging back to the late 1950's during British period. Gradually throughout time, contextual issues, socio-

economic factors and cultural aspects were reasons of the change of urban pattern in Famagusta and Baykal neighborhood. Existing cooperative houses which are located on the both side of Samsun Street which were remarkably changed due to the influence of these factors. Multi storey housing typology appeared specifically after foundation of Eastern Mediterranean university in 1979. Therefore, the typology of single family modern urban houses had been transformed in an unusual way to multi storey buildings. Although, gradually ground floor plans of single cooperative houses slightly changed over time and showed variation of leading types, but for turning into multi storey buildings, in some cases, they showed very strong transformation. In other words, the typology of modern single houses for transforming to multistory buildings was mutated which decreased the efficiency of the buildings.

In the following, important components of the methodology for reviewing unconventional housing typology based on cooperative houses derived from Conzen and Caniggia's methods will be described.

3.3.2 Components and Tools of the Study

The components of the study show highly dynamic features due to the influence of socioeconomic factors, contextual, political issues and peoples' needs. All reviewed components in this research are adapted from Caniggia's and Conzen's methods which already their common and uncommon grounds were mentioned (Figure 35). Eventually, the utilized methodology in this thesis is obtained from integration of above mentioned two methods for achieving more accurate study in typology of cooperative houses in Samson street.

As the thesis mainly deals with the building scales therefore, the reviewed components in this study are; plot typology, pertinent strip, land use analysis, façade characteristics,

building pattern, plan unit and building type (indicated by façade material, structure of the buildings and interior space organization).

For typo-morphological studies on cooperative houses, in addition to the recorded documents and local interviews especially for the support of the analysis in visual form, the other tools like drawings, photographs, map survey and tables are needed.

For a deep analysis on the position of buildings in the plots and the relation of buildings with the street a map survey is done. Also, drawings related to plans of the buildings which are drawn by Auto Cad software are either retrieved by the municipality of Famagusta or obtained from observation of outdoor and indoor spaces during the site survey. Photography in this research is another tool for a better understanding of façade characteristics and external attributes of the buildings. Moreover, street silhouettes by attaching the facades of individual buildings are produced through Photoshop software which created a conceptual image from the region. Eventually, for a better understanding of various types, the obtained data are categorized in different groups and are illustrated by tables.

In fact, with the support of these tools, characters of the previously studied components of typo morphological analysis (like plot, block, pertinent strip, building typology and etc…) will be better reviewed, figured out and visualized.

3.3.3 Analyzing Cooperative Houses by Applying the Integrated Methodology

As mentioned before, Baykal neighborhood is an interesting region in terms of variety in housing typologies particularly because of unconventional (mutated) typologies which is the result of multi storey construction from single family houses. In other words, it is the very early format of apartmanization in the island that deserves more

attention to be understood with its local characteristics in relation to its western counterparts as well. Methodology in this thesis for analyzing typo morphological studies on twenty semi- detached cooperative houses along two sides of Samsun street is obtained from synthesizing methods of Caniggia and Conzen. In this part, examination on components of plot, pertinent strip, building pattern, land use analysis, plan unit, façade characteristics and finally building typologies will be applied by utilizing the supposed tools.

- **Plot**

Generally, Baykal region is constructed under urban regulation of Cap 96; therefore, all the plots, street systems and open spaces are planned according to the same rules and almost show same characteristics. So that the variety of plot shapes and remarkable plot ratios are not perceived in Samsun street as well.

A considerable number of plots (1 to 26) in terms of plot shape are deep rectangular with around 1:2.5 ratio (Figure 36) and only two plots (27 and 28) which are located in the corner parts and plot number 29 located in the middle of the street are in square shape with the ratio of 1: 1. Majority of the buildings in Samsun street because of the narrow width of plots are semi-detached. Besides, according to Cap96 the least distance between the external walls of building with the other borders of the plot (except the common border with the adjacent house) is 3.05 meters.

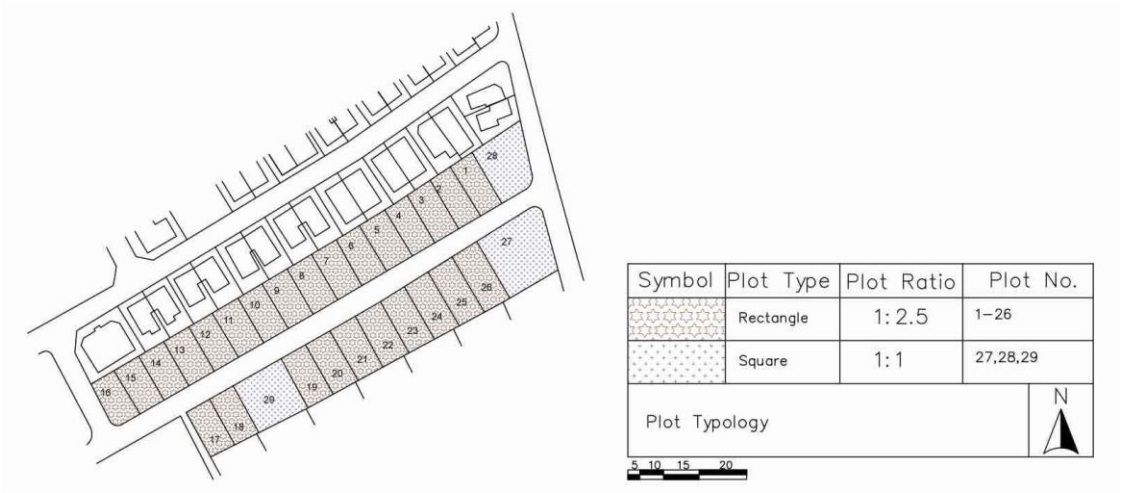


Figure 36. Plot typology analysis in Samsun street of Baykal region (Author, 2016)

- **Pertinent Strip**

Based on the site visit of Samsun street and the site plan which is retrieved from the municipality of Famagusta, all the buildings in this street are detached around 4 meters and elevated around 20 centimeters from the street (Figure 37).

Figure 37. Pertinent Strip analysis in Samsun street of Baykal region (Author, 2016)

- **Land Use Analysis**

Generally, in Samsun street land utilization is allocated to residential premises.

- **Façade Characteristic**

The cooperative houses surveyed in Samsun street are semi-detached, one to four storey reinforced concrete buildings with almost four meters set back from the pedestrian road. Generally, the houses have similar architectural characteristics in the ground floor levels and the facade characteristics have remained almost original with ribbon windows, centrally located entrance door and in some cases the stone cladding material. This is not the same about the upper floors, while they have some common elements like the used material and the balconies that extend out from the buildings and hide some of the details of the buildings, but the architectural language of their facades such as proportions of the openings are different from each other. The rooflines and balconies are not consistent enough to suggest any consistency in the façades of the buildings (figure 38 and 39). From the other contrary points, the location of staircases can be mentioned which either are located on the front or at rear side of the buildings and only in one case it is located on side façade. When the staircases are located at the front façade they also contribute to the Samsun street view. Besides, the position of the main entrance doors of the upper floors has been altered in the cases that the main access due to the location of the staircases is provided from the side or back of the buildings.

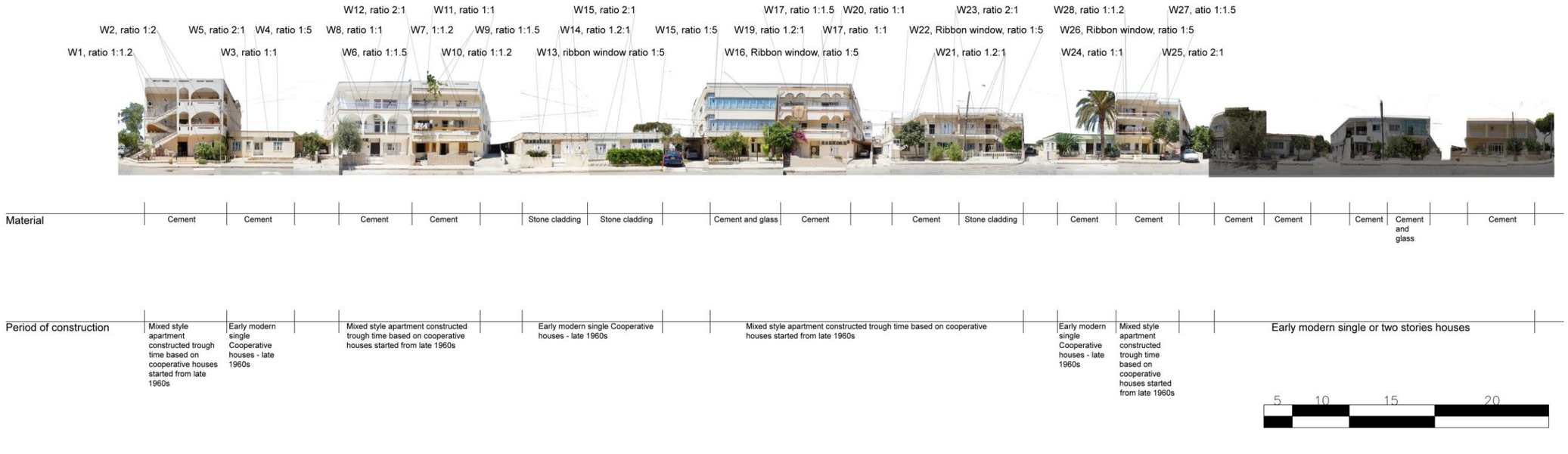


Figure 38. Façade characteristics of early modern cooperative houses and mixed style apartments constructed through time based on cooperative houses in Samsun street of Baykal region (Author, 2016)

Figure 39. Example of original cooperative houses in Samsun street of Baykal region (Author, 2016)

- **Building Pattern**

Whereas the purpose of the thesis is studying on unconventional typologies of cooperative houses with the changes that they have encountered over time, therefore the main part of the selected area (Samsun street) is consisting of mixed style apartments constructed through time based on cooperative houses started from late 1960's which is highlighted with orange color in figure 40. Other patterns are early modern single or two storey houses, modern apartments in 1980's, contemporary mass production apartments and early modern single cooperative houses from late 1960's which are respectively shown by green, blue, brown and purple colors.

Figure 40. Building pattern analysis in Samsun street of Baykal region (Author, 2016)

- **Plan Unit**

According to the observation and analysis, all of the cooperative houses in terms of plot shape and ratio, period of construction and land utilization are identical with each other, but the position of staircases is the main motive for alternation in building characteristics. Therefore, plan typologies of cooperative houses by considering the location of staircases is divided into four categories (Figure 41).

Figure 41. Plan unit analysis of cooperative houses in Samsun street of Baykal region (Author, 2016)

Category A: Belongs to early modern single cooperative houses which are built late 1960's and have maintained their original characters.

Category B, C and D: Belong to cooperative houses that through the time have transformed to leading and mutated apartment types but the distinctive aspects of these three categories are the location of staircases. Category B and C are the buildings that their staircases are respectively located in front and in the back of the buildings. The

staircase of category D is located at the side façade of the building and among twenty cooperative houses only one of them has this peculiarity.

- **Building Type**

As mentioned previously, cooperative houses in Samsun street are semi-detached. All of the houses have an annex for the purpose of working activities, storage, garage and etc… because of the requirements of families for extra rooms in the back yards (Figure 42) (more investigation on plans of cooperative houses demonstrated in Appendix). At the beginning, the original design of the houses for the outdoor spaces considered a side road for garage and back garden which had given a private character to the back yard of the building. Gradually due to the addition of staircases in the trend of apartmanization, not only the character of the buildings as an interior and exterior changed but the identity of the nearby environment and open spaces was changed as well.

Figure 42. Site plan of cooperative houses in Samsun street of Baykal region (Author, 2016)

As it was pointed out earlier (in plan unit analysis) cooperative houses can be classified in four categories.

- **Original Type**

Category A is the original type that always by elapsing the time has maintained its identity. The original houses have two entrances, one in the front as public entrance and the other one in the back for private usage. The semi open space in front of the houses acts as a welcoming area which leads the people inside the houses. From their main plan characteristics, can point out to corridor which divides the interior space into two separate zones in the sides. These two zones are parallel to each other of which, one zone is more private while the other one is more public. Also, apart from the main entrance in the front, there is another access in the back yard which enables the people to enter, but usually family members and close friends enter the house through the kitchen. The position of the kitchen in plan organization is in a way that implies more private character with its private entrance. In addition, by designing two entrances (front and back of the house) and sharp axiality which is created by corridor, a strong parallel position of the zones is clearly observed. On the other hand, whereas living room in this type of houses is located in the private zone, therefore it has the potentiality to be used as bedroom if it is needed and consequently this space has alternative usage, since it can be used as a living room for daily activities or a bedroom for private purposes. Guest room is located opposite to the living room which is usually separated from the other parts and its position is stable (Figure 43).

By passing time, for transforing of the single storey houses to multi storey buildings all modifications and additions changed these basic organizations.

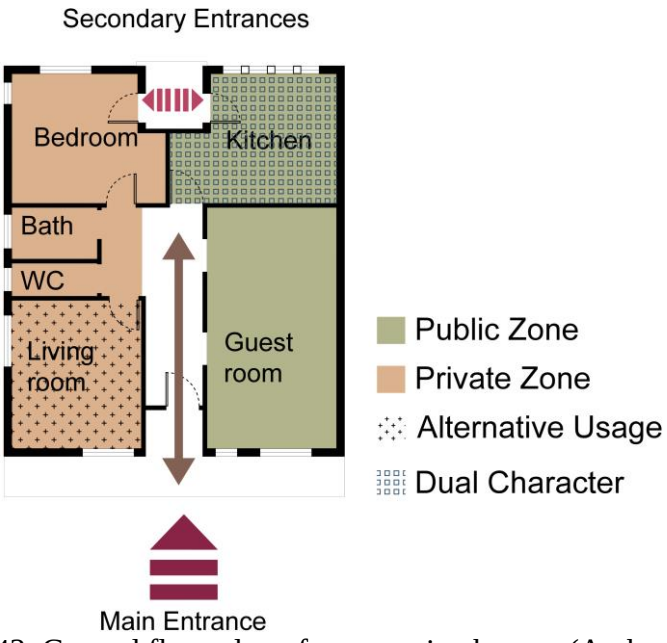


Figure 43. Ground floor plan of cooperative houses (Author, 2017)

- **Multi Storey Apartment**

Category B, according to the studies on plan unit analysis is consisting of the transformed original types into apartments which staircase is located in front of them also in category C and D the staircases are respectively located in the back and middle of the buildings.

The important issue is how the original types by adding staircase and change of its positions were transformed apart from façade and site plan characteristics. In fact, the more imperative factor could be investigating on the changes in interior space arrangement. In other words, mutated type of cooperative houses is not limited to the basic changes on typological characters like different positions of staircase, but in the meantime it also includes the changes in space organization, therefore it is needed to pay more attention to the interior areas.

Table three and four with the aim of responding to these questions based on the position of the staircases have categorized ground floors and upper floor plans of the houses as per their modifications.

Table three, based on the location of staircase indicates the changes in the ground floor of cooperative houses that through the time have been converted to the unconventional apartments. In general, this table has classified the ground floor plans into 3 main groups based on the position of staircases (front, back, middle). Also, each of above mentioned groups are reviewed and categorized based on three factors; 'original buildings just with the addition of staircase', 'leading types (with small extensions)' and 'mutated type (with remarkable changes)'.

- **Outdoor Staircase at Front Façade of the Building**

Buildings number 3 and 4 place in the group of front facing staircase with original plan which their interior space organization are same as original type (described earlier) the only difference is the addition of staircase in front of the building (Figure 44).

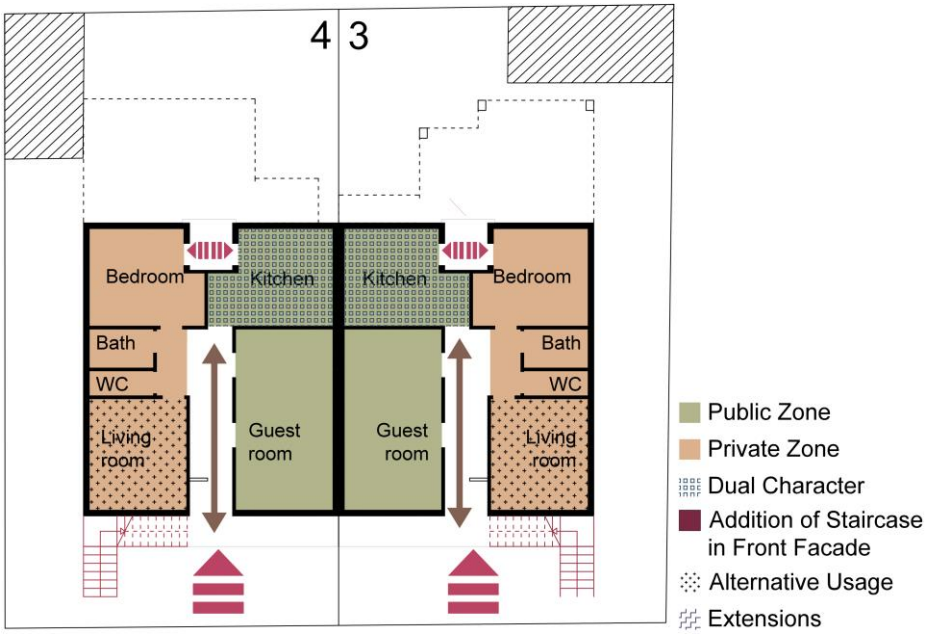


Figure 44. Samples of ground floor plans of original buildings with the addition of staircases in front façade (Author, 2017)

In continue, while reviewing the buildings with front facing staircase, buildings number 1 and 19, because of their little extension at the back are taken into consideration as leading type I. Space organization of both buildings are almost similar compared to the original type and only one or two spaces are added to them. Moreover, like all other original houses the sharp axiality which is created by the corridor has caused two separate zones at the sides. Whereas living room in the buildings number 1 and 19 (like the original types which described before) is located in the private zone, therefore it has the potentiality to be used as bedroom (private space) if needed and consequently this space has alternative usage (Figure 45).

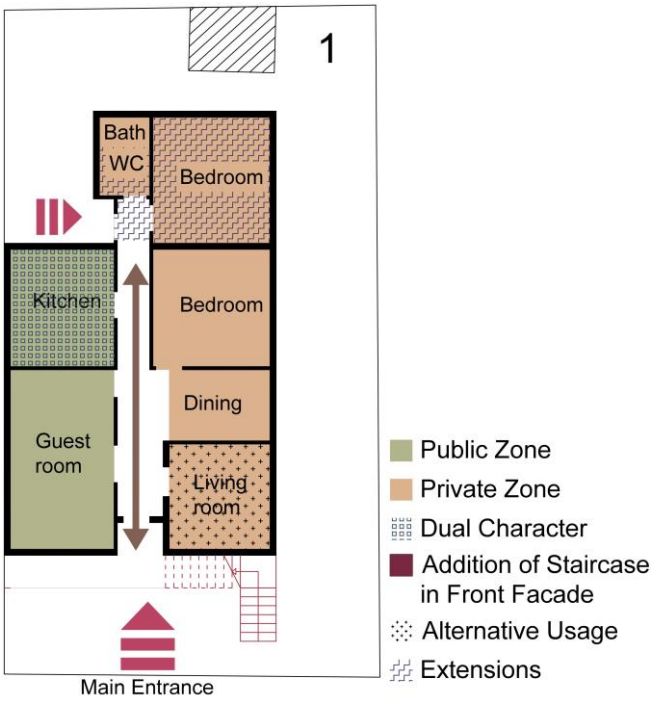


Figure 45. Ground floor sample for leading type I with front façade staircase (Author, 2017)

Location of staircase in front of this private space (daily living room or bedroom) with small opening and ribbon window is more convenient than guest room which has more public face with bigger opening. The Kitchen has a central position as being an ending point of the corridor connects the back and front entrance doors. Individuals can

directly enter the kitchen through the access from the back yard (semipublic area). While the kitchen is somehow private space but regarding to its direct relation to semipublic outdoor space it gains centrality and integrated character, besides its privacy reduces. The position of the kitchen in these plan organizations is in a way that implies dual character.

- **Indoor Staircase at Side Façade of the Building**

Amongst all twenty semi-detached cooperative houses only one house has staircase in the middle. In fact, the difference between building number 5 with original ones is only limited to elimination of WC and bathroom in the middle of the building for placement of the staircase. Then WC and bathroom are relocated at the back side as a small extension. Since these changes are not much remarkable and are same as the changes in buildings number 1 and 19, so this building can be considered in the group of leading type I (Figure 46).

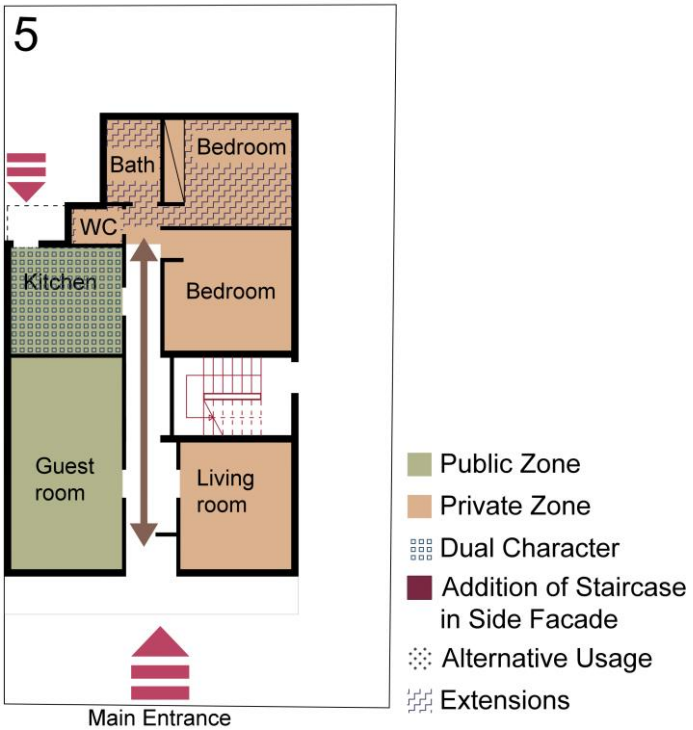


Figure 46. Ground floor sample for leading type I with side façade staircase (Author, 2017)

- **Outdoor Staircase at Back Façade of the Building**

Building number 9 is placed in the group that the staircase is located at the back of the building with original plan typology. It only differs from original cooperative houses in the addition of staircase for accessing to the upper floors. In continue, the buildings with staircases at the back side are investigated. Buildings no 10, 13 and 16 are similar to the buildings in group of leading type I (with a small extension as a bedroom) (Figure 47).

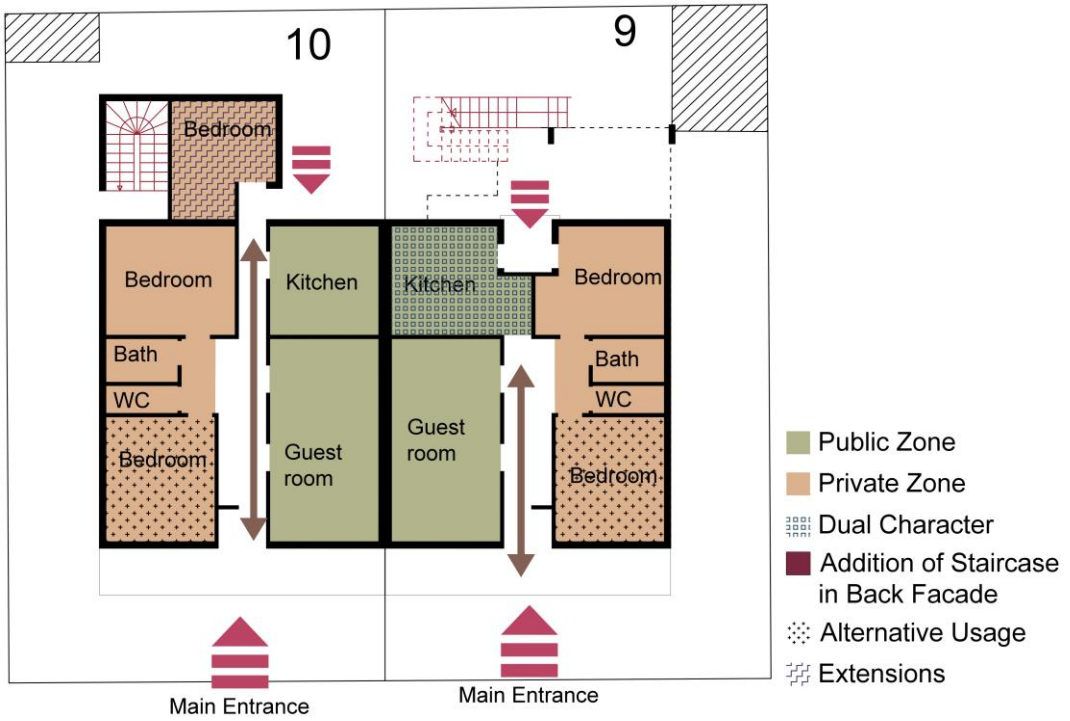


Figure 47. Ground floor sample of original building with the addition of staircase in back façade and leading type I with back façade staircase (Author, 2017)

The only examples of mutated type in ground floor plans are houses number 17 and 18 which their staircases are located at the rear of the buildings. Though, all cooperative houses have another entrance in ground floor at the backside but in these two houses interior space organization is also changed. Because addition of entrance hall and daily living room at the back of building has given more public character to

the back side of the house. The interesting point in plan organization of these buildings is lack of strong privacy in their plans which are caused from creation of the two semi-public (at the back) and public spaces (in the front). In addition, the people who need to enter the house from the back have two options, either can enter the bedroom which is a quite private space and from there reach to the other bedroom in the private zone, or enter to the kitchen which is the only possibility to reach public zone like guest room. Therefore, the character of kitchen in this plan is more private due to the existence of the entrance hall (Figure 48).

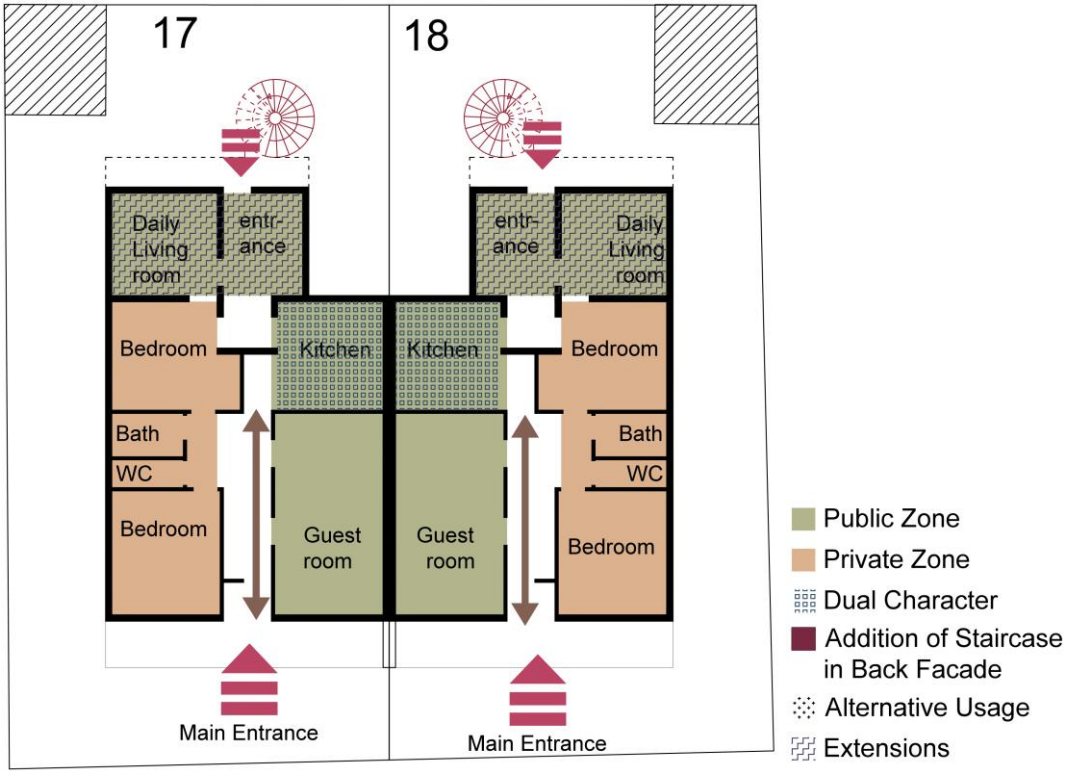
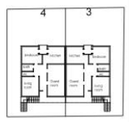
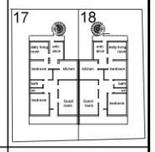
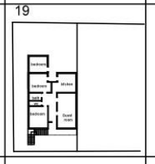


Figure 48. Ground floor samples of mutated type I with the addition of staircase in back façade (Author, 2017)

Table 3. Based on the location of staircase indicates the changes in the ground floor plans of cooperative houses (Author, 2016), Table 4. Based on the location of staircase indicates the changes in the upper floor plans of cooperative houses (Author, 2016)

FRONT POSITIONED STAIRCASE			SIDE POSITIONED STAIRCASE			BACK POSITIONED STAIRCASE		
Ground Floor			Ground Floor			Ground Floor		
ORIGINAL BUILDINGS (JUST WITH THE ADDITION OF STAIR CASE)	LEADING TYPE I (WITH SMALL EXTENSIONS)	MUTATED TYPE (WITH REMARKABLE CHANGES)	ORIGINAL BUILDINGS (JUST WITH THE ADDITION OF STAIR CASE)	LEADING TYPE I (WITH SMALL EXTENSIONS)	MUTATED TYPE (WITH REMARKABLE CHANGES)	ORIGINAL BUILDINGS (JUST WITH THE ADDITION OF STAIR CASE)	LEADING TYPE I (WITH SMALL EXTENSIONS)	MUTATED TYPE I (WITH REMARKABLE CHANGES)
								
								
								

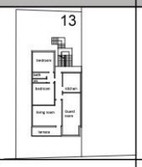
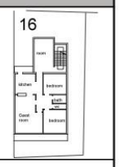
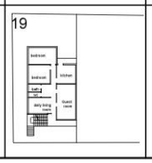
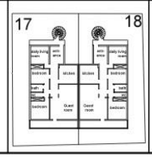
FRONT POSITIONED STAIRCASE			SIDE POSITIONED STAIRCASE			BACK POSITIONED STAIRCASE				
upper floors			upper floors			upper floors				
ORIGINAL BUILDINGS (JUST WITH THE ADDITION OF STAIR CASE)	LEADING II (WITH SMALL EXTENSIONS)	MUTATED TYPE (WITH REMARKABLE CHANGES)	ORIGINAL BUILDINGS (JUST WITH THE ADDITION OF STAIR CASE)	LEADING II (WITH SMALL EXTENSION)	MUTATED TYPE II (WITH REMARKABLE CHANGES)	ORIGINAL BUILDINGS (JUST WITH THE ADDITION OF STAIR CASE)	LEADING II (WITH SMALL EXTENSION)	MUTATED TYPE III (WITH REMARKABLE CHANGES)	MUTATED TYPE IV (WITH REMARKABLE CHANGES)	MUTATED TYPE V (WITH REMARKABLE CHANGES)
										
										
										

Table four following the table three, based on the location of staircases shows the changes of upper floor plans of the cooperative houses.

- **Outdoor Staircase at Front Façade of the Building**

Existence of staircase in front of the buildings does not change very much the indoor space organization in the upper floors just like their ground floor plans. As a result, buildings number 1, 3, 4 and 19 can be considered as leading type II due to the addition of one or two spaces at the back side of the buildings. Moreover, whereas semi-public narrow balcony in the upper floors as a part of outdoor staircase is not enough private for the main entrance door, subsequently, remarkable size welcoming hall has been proposed in interior space organization (Figure 49).

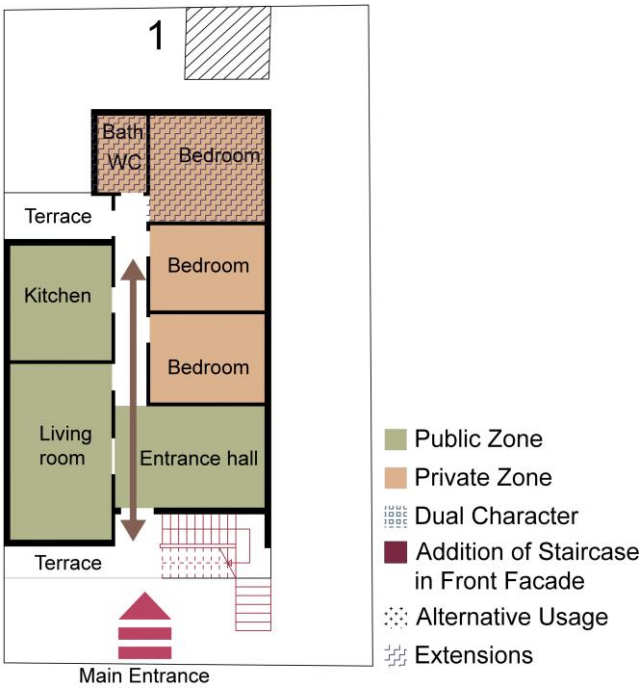


Figure 49. Upper floor sample of leading type II with the addition of staircase in front façade (Author, 2017)

- **Indoor Staircase at Side Façade of the Building**

On the contrary, by having staircase at the side façade of the building (number 5), unlike its ground floor plans, remarkable changes are made in space organization of

upper floors, because with the position of the staircases in the middle; actually the entrance of the building is dislocated. As a result, in this plan typology; its public space is the private front balcony which is only visible by public, but there is no public face and does not have public access. Also, whereas public area in this plan is described by the position of the staircase, consequently the parallel zones in the original typology are changed. Therefore, the front side became public zone and back, private zone. So that, this building is considered as mutated type II. Generally, this house is more private and introverted compared to the other houses which are reviewed in content of this study (Figure 50).

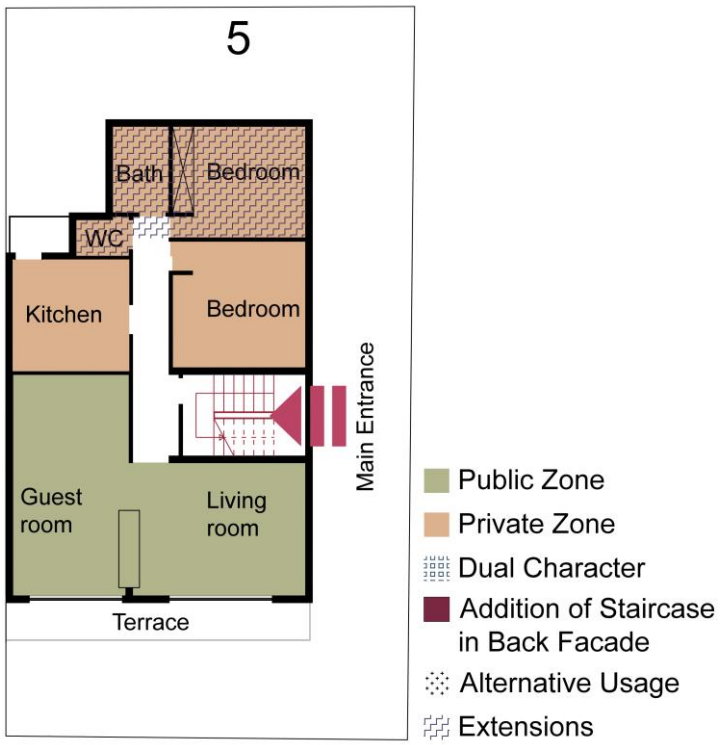


Figure 50. Upper floor sample of mutated type II with the addition of staircase in side façade (Author, 2017)

- **Outdoor Staircase at Back Façade of the Building**

Placing the staircase and entrance at the back of building has made this part more public versus the rather private front part of the building (which is faced to the street)

also this issue has completely changed the interior space arrangement and has led to mutated type III, IV and V.

Buildings number 9, 10, 17 and 18 are mutated type III. The common factor in all of these plans is addition of daily living room for the support of the limited space of semi-public area. In mutated type III, people for entering the house, after climbing the stairs, through corridor or entrance hall are guided to daily living room. Also in these plans, the corridor apart from guiding the people to the guest room (public part of the house) just like original plans which described earlier, with their own axiality has separated public and private zones from each other. In addition, private zones seem more clearly defined (Figure 51).

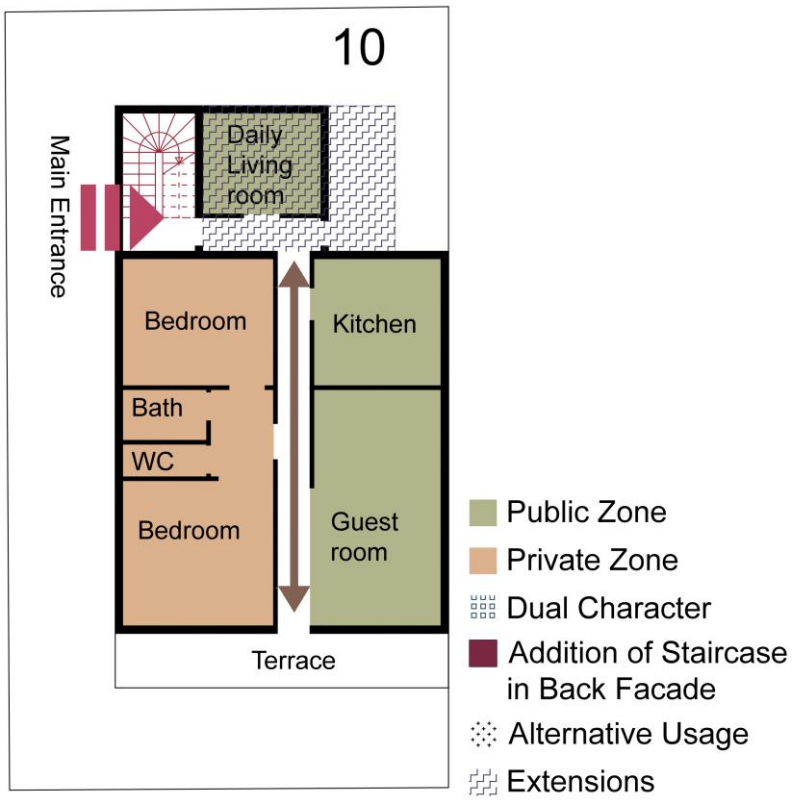


Figure 51. Upper floor sample of mutated type III with the addition of staircase in back façade (Author, 2017)

Although mutated type III and type IV in terms of corridor function are the same and guide the people directly to guest room, but in building number 13 (mutated type IV) due to the lack of daily living room (at the back side), kitchen with its dual character plays the role of daily living room as well (Figure 52).

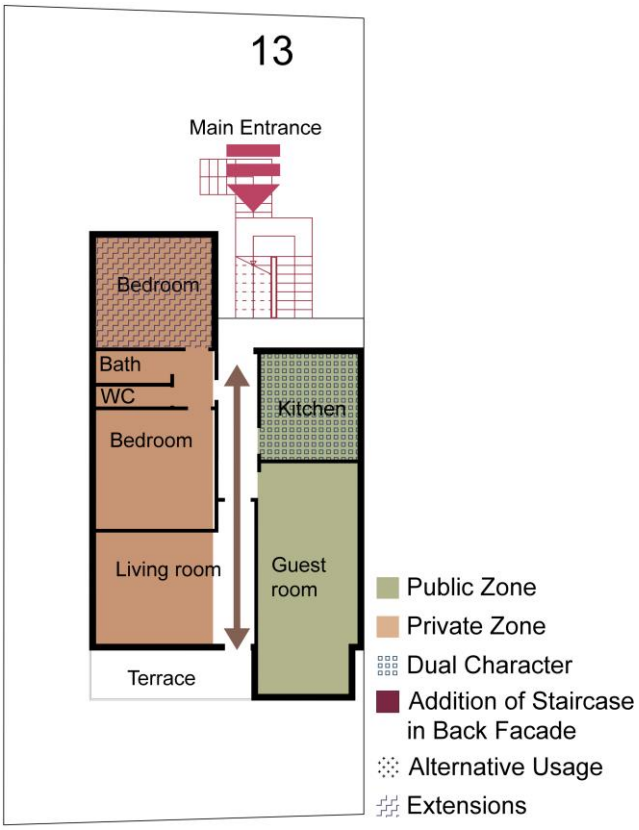


Figure 52. Upper floor sample of mutated type IV with the addition of staircase in back façade (Author, 2017)

Finally, the difference of mutated type V (Figure 53) with other mutated types is; in the building 16 after entrance, the people enter directly into the daily living room without any transitional spaces like corridor or welcoming area, but generally the arrangement and function of the other parts of the house is similar to mutated type III and IV.

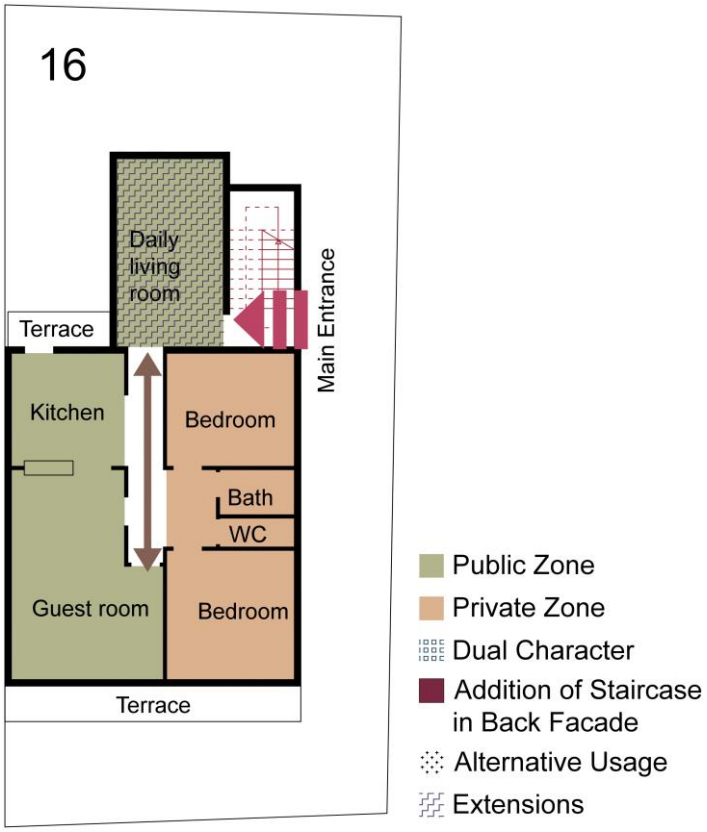


Figure 53. Upper floor sample of mutated type V with the addition of staircase in back façade (Author, 2017)

3.3.4 Outcome of the Chapter Three

Obtaining of plans in the thesis faced great difficulties since the occupants and owners of the houses did not cooperate and refused the permission for surveying the houses. Even photography from the street side was encountered with impolite reaction of some residents. Therefore, the plan layout of the buildings was retrieved from municipality archive and in some cases attained by direct observation. It should be noted that in some cases even in municipality archive there was no information about the building plans and other related data.

In general, the surveyed cooperative houses in this study have still maintained original façade characteristics in the ground floors. Ribbon windows and central position of entrances are some common elements that can be noted. In most cases, the fences in

front of the buildings are maintained to separate the public and semipublic areas. In case of upper floors, although they shared some common characters like cement façade material and balconies which are projected out as cantilevers that somehow overshadow the details of exterior attributes in terms of façade characteristics but in general, unity and common language among them are not visible.

The plan characteristics in cooperative houses in comparison to the general accepted standard apartment typology show remarkable differences since the cooperative houses are not planned to transform as multi storey buildings at the beginning. By passing time, gradually the ground floor plans of the cooperative houses slightly changed and illustrated variation of leading types. On the contrary, mostly addition of upper floors specifically with the back side staircase caused notable changes in interior space arrangements, which create unconventional (mutated) apartment typology. Generally, houses for solving the problem of outdoor public and indoor private confrontation require a convenient size entrance hall. The houses with the front side staircase faced this confrontation with original space organization which provide direct access to public spaces (guest room) in public sides. On the other hand, when the staircase is placed at the rear of the building with the entrance at the back part, the confrontation between outdoor public and indoor private is critical and leads to a public and private shift in interior organization. Since generally the guest room as a public space is located in front of the building, the access from back of the building disturbs the spatial organization. Consequently, for reaching the guest room as a public side, the alternative ways through kitchen or bedroom become unavoidable. As a result, the kitchen and bedroom in the plan organization have dual characters. This problem in upper floors is more obvious because the only access is from the back side

of the building. The spatial arrangement in this case is reverse to general interior space organization of accepted apartment typologies. Generally, in standard apartments after staircase the person firstly arrives to entrance hall which is more public and then the following other spaces are arranged gradually from public towards more private ones. Although, in some cases after entrance, a daily living room is considered in plan organization to overcome the problems resulting from public and private change, but the solution is not very practical since the individuals pass along the corridors and private zone for reaching to the guest room which damages privacy of the house. The location of the guest room is not changed in comparison to original plan typology and shows strong private characteristics while it is treated as a public space.

Chapter 4

CONCLUSION

Actually, before modernist period as stated in theoretical background information in the thesis, the typology of buildings and urban form strongly cooperated with each other. In another terms, building typologies and urban form are somehow complementary elements with each other.

This study explained that with the arrival of modernity in many parts of the world, the characters of urban form were disturbed. Modernist movement ignored all the ties with the past and history. Therefore, it was needed to invent new types and new urban forms which are the base for new building design and city planning. The buildings of this period gained importance individually and independent from the urban environment. This matter was completely in contradiction with the existing building typologies which was shaped by the mutual relation with urban form. As a result, a new typology which related to the usage of the buildings was created as functional typology. At the beginning of this period, the ideas of rationality and functionality were so strong which caused the creativity among architects and led to appearance of function based typologies. Some Avant-garde products tried to break the logical interpretations of functions and clearly demonstrate the unconventional typologies. In addition, utilizing new technologies let the architects to design the interior spaces more rationally instead of using traditional framework and conventional space arrangements. It was illuminated that gradually because of economic crisis, the construction of buildings in

an economical way became an important parameter. Accordingly, many architectural projects appeared as typical mass production. This mechanical approach towards typology caused the destruction of urban tissue more than ever.

In this study, later on, it was clarified that type theory in neo rationalist period in late fifties after the fall of modern architecture was formed with the main aim of reconstruction of fragmentation coming from modern architecture between buildings and historical urban form. Therefore, once more it became obvious that types are important knowledge for both design and designers. With the criticisms of modernist approach revitalization of the urban form and accordingly its correlation with building typologies gained more importance. Research and theoretical development shaded the light on many theoretical approaches. Accordingly, in this period typological research could find its systematic approach by establishing three Italian, British and French schools. These three schools had a great role in development of typo- morphological researches by studying of morphology and building typology while considering the urban factors. Although the studies of all three schools were rooted in history but in return they had different approaches and methodologies. One of them which is worth to be underlined is the Italian school studies (Caniggia's method) that had more concentration on building scale and reviewed the typology of buildings together with urban factors. In other words, Italian school had a more holistic view on typology and for supporting the studies observed all the urban and morphological components from an outside large scale to inside and smaller scale point of view. On the other hand, a main part of the British school studies (Conzen's method) was in connection to urban and geographical issues whereas their studies on architectural characteristics were not extensive.

This thesis by the support of literature reviews discussed that generally building typologies are classified as; base type which is considered as a room with an area of 25-36 square meters with just one opening, leading type which is the result of brief changes on base type within the time due to socio-economic and cultural factors, mutated type is those with considerable changes to adapt with irregular contextual issues and special or iconic building which is referred to species mostly designed by well-known architect with controversial design approaches. Iconic buildings regarding to their irregularity are considered as unconventional typologies. The discussion showed that these typologies welcome research and education oriented challenges.

However, it is clear that many ordinary buildings can be potential resources for same intentions. As it was presented in the study, being unconventional is not only regarded to iconic buildings by well-known architects, but it could also be discovered through studying the normal ordinary buildings which are the majority and give the character to the most cities. The study of typo morphological developments demonstrates that the transitions of ordinary buildings are not always the previously initiated process, but sometimes under special circumstances basic form could be mutated and consequently unconventional typologies or mutated types appear. Therefore, making a research on them is not only necessary but also informative as well. Generally, the houses change as per users' needs and under influence of cultural and social factors. The supposed changes will be intensified when urban and building regulation does not limit the users. These outcomes paved the way for establishment of useful methodology for examining mutated types in the thesis. Therefore, it is found out that the buildings cannot be judged only based on their urban and façade characteristics, but sometimes mutated types are discovered through a careful analysis of space

organization. Cooperative houses of Samsun street in Baykal neighborhood are interesting examples for mutated types. All the houses are semi-detached and have similar façade characters in ground floor levels but, generally similarity and common language do not exist among the upper floors of the houses. Whereas the buildings were not planned for transforming to apartments, by adding the upper floors and consequently staircases specially from the back side shows remarkable changes in interior organization. The addition or subtraction of space in interior organization can cause considerable changes in interior arrangements which occasionally shows shift in public and private spaces. The spatial structure overcomes this through sequential connection of the spaces which show dual functional characteristics that give the way from public to private gradually.

In fact, the thesis is a direct contribution to the typo morphological studies. It could be suggested as an interesting touch to illustrate time base architectural development and its variations as a slow and constant development of the leading types and sudden and rapid development of mutated types.

The suggestion of the thesis for further research attempt is dealing with different typologies like comparing leading and mutated types with application of the space syntax analysis which is one of the alternative methodologies suggested for typo morphological studies in this thesis that will form a strong base for this comparison. However, it would be even more interesting to support the comparison with the social survey among the users. In fact, by synthesizing different approaches which were underlined in this thesis a more extensive studies on typo morphology can be achieved.

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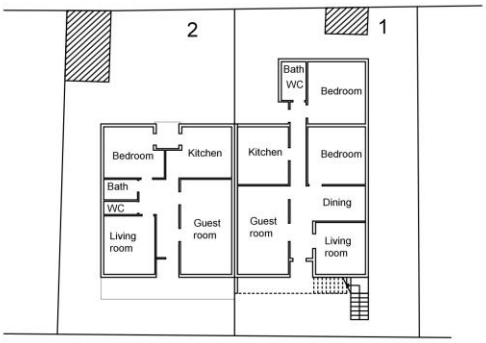
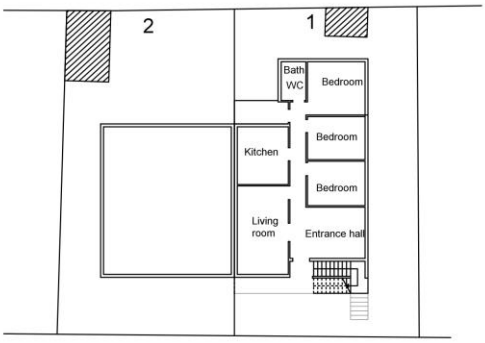
APPENDIX

Plans of Cooperative Houses in Samsun street, Baykal Neighborhood

Building NO	ARCHITECT
1	GOKHAN NOYAN
2	ARIF FERIDUN

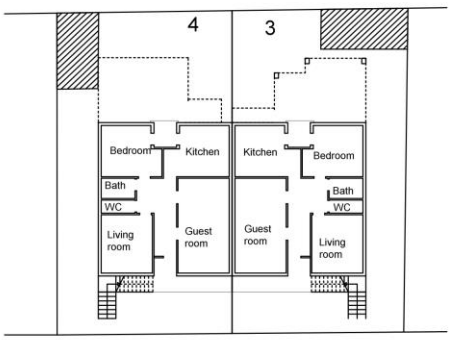


Ground Floor



First Floor

Building NO	ARCHITECT
3	MEHMET YUZUGUKEN
4	OZDE ULUCAY



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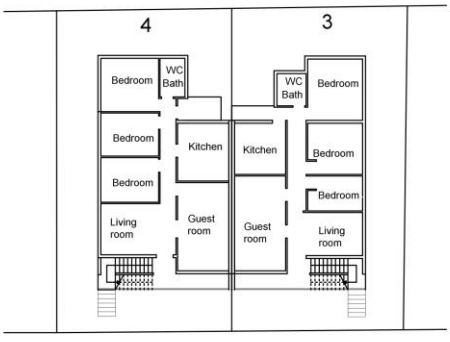
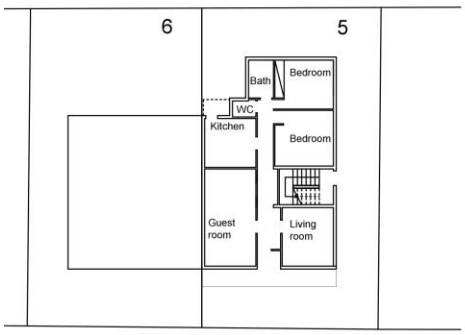


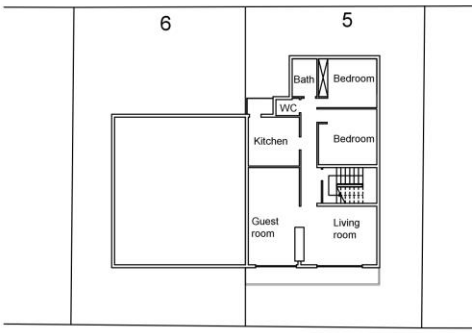
First Floor

Plans of buildings number 1 and 2 obtained through observation (Author, 2016), plans of buildings number 3 and 4 retrieved from municipality of Famagusta, 2016

Building NO	ARCHITECT
5	MEHMET ONCU
6	_____

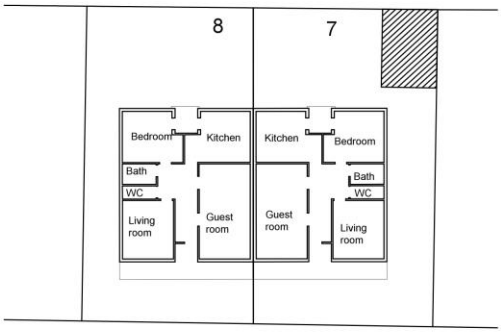


Ground Floor



First Floor

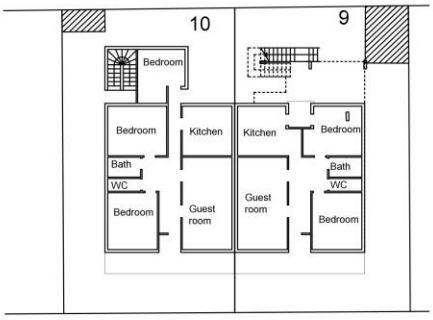
Building NO	ARCHITECT
7	ARIF FERIDUN
8	ARIF FERIDUN



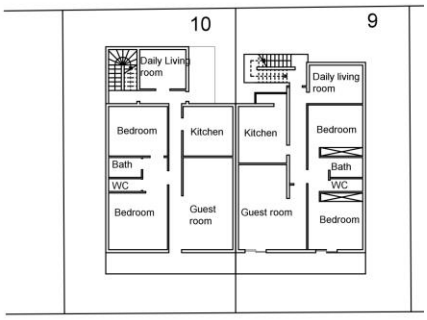
Ground Floor

Plans of building number 5 retrieved from municipality of Famagusta, 2016, Plans of buildings number 7 and 8 obtained through observation (Author, 2016)

Building NO	ARCHITECT
9	SAFFET SARPER
10	____

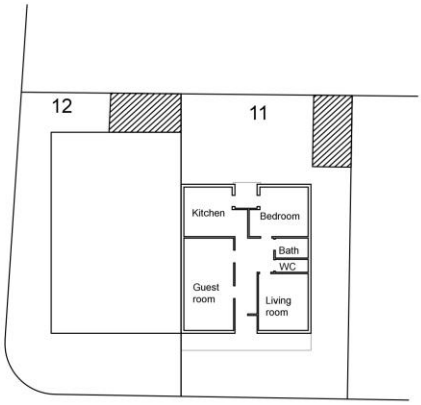


Ground Floor



First Floor

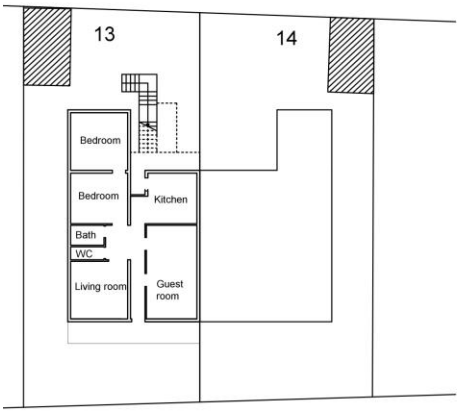
Building NO	ARCHITECT
11	ARIF FERIDUN
12	____



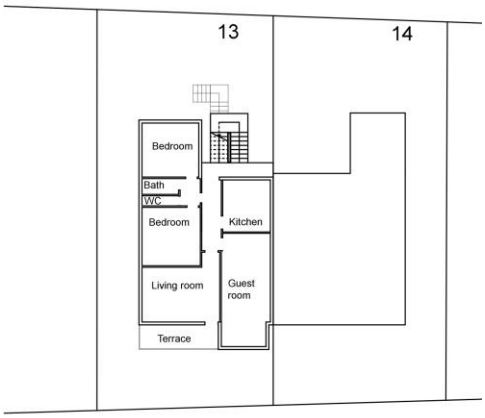
Ground Floor

Plans of buildings number 9 and 10 retrieved from municipality of Famagusta, 2016, Plans of building number 11 obtained through observation (Author, 2016)

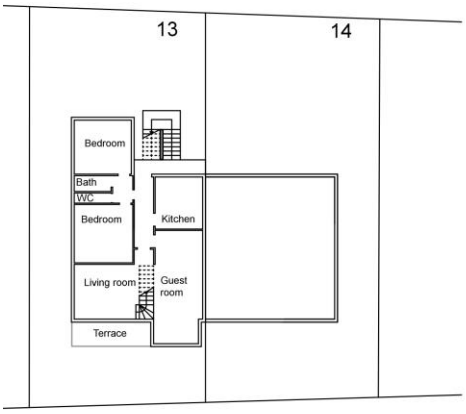
Building NO	ARCHITECT
13	BORA ATUN
14	____



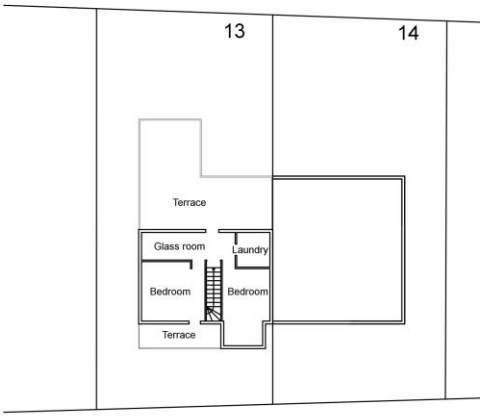
Ground Floor



First Floor



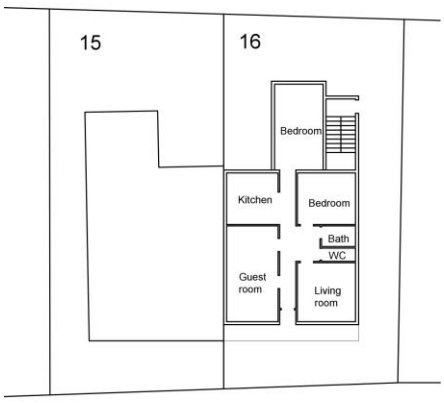
Second Floor

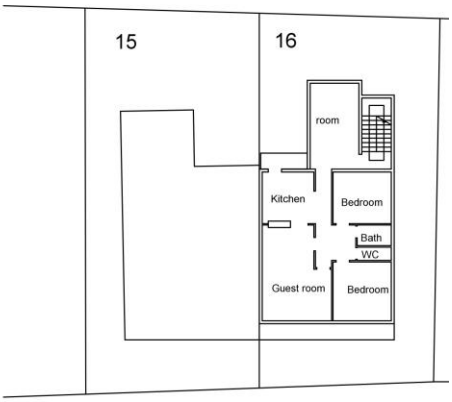


Third Floor

Plans of building number 13 retrieved from municipality of Famagusta, 2016

Building NO	ARCHITECT
15	____
16	CETIN S OZTINEN

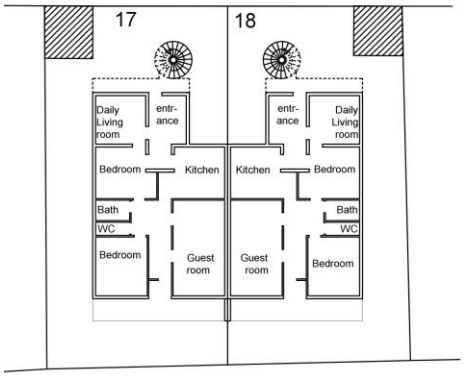


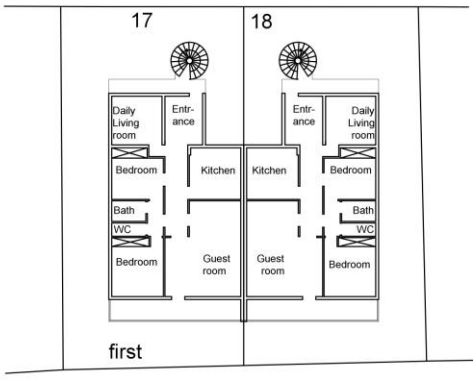


Ground Floor

First Floor

Building NO	ARCHITECT
17	MEHMET ONCU
18	____



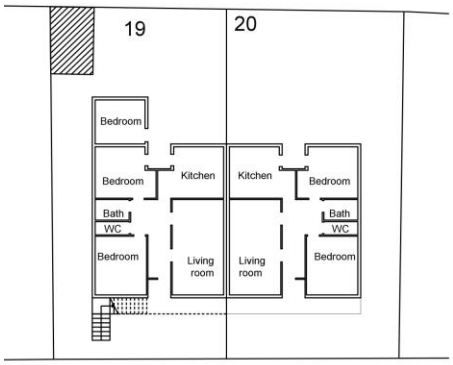


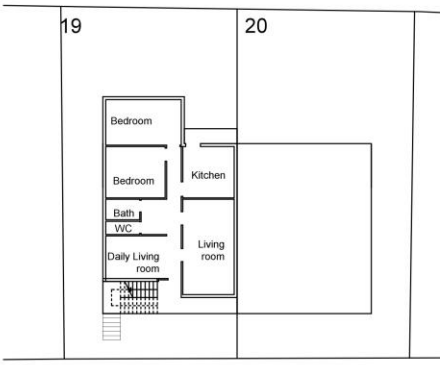
Ground Floor

First Floor

Plans of buildings number 16 and 17 retrieved from municipality of Famagusta, 2016, Plans of building number 18 obtained through observation (Author, 2016)

Building NO	ARCHITECT
19	_____
20	_____





Ground Floor First Floor

Plans of buildings number 19 and 20 obtained through observation (Author, 2016)