

TRANSFORMATION OF THE MORPHOLOGY OF THE OLD CITY OF  
SULAIMANIYAH (NORTHERN IRAQ) FROM THE PERSPECTIVE OF  
OWNERSHIP PATTERNS

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HANAW MOHAMMED TAQI MOHAMMED AMIN

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PERSPECTIVE OF OWNERSHIP PATTERNS**

Submitted by **HANAW MOHAMMED TAQI MOHAMMED AMIN** in partial  
fulfillment of the requirements for the degree of **Master in City and Regional  
Planning in Urban Design, Middle East Technical University** by,

Prof. Dr. Canan Özgen  
Dean, Graduate School of **Natural and Applied Sciences** \_\_\_\_\_

Prof. Dr. Melih Ersoy  
Head of Department, **City and Regional Planning** \_\_\_\_\_

Assoc. Prof. Dr. Baykan Günay  
Supervisor, **City and Regional Planning Dept., METU** \_\_\_\_\_

**Examining Committee Members:**

Assoc. Prof. Dr. Adnan Barlas  
City and Regional Planning Dept., METU \_\_\_\_\_

Assoc. Prof. Dr. Baykan Günay  
City and Regional Planning Dept., METU \_\_\_\_\_

Assoc. Prof. Dr. Bahar Gedikli  
City and Regional Planning Dept., METU \_\_\_\_\_

Assoc. Prof. Dr. Berin Fatma Gür.  
Architecture Dept., METU \_\_\_\_\_

Assist. Prof. Dr. Müge Akkar Ercan  
City and Regional Planning Dept., METU \_\_\_\_\_

**Date:** 04. 05. 2010

**I hereby declare that all information in this document has been obtained and presented in accordance with academic rules and ethical conduct. I also declare that, as required by these rules and conduct, I have fully cited and referenced all material and results that are not original to this work.**

Name, Last name: Hanaw Mohammed Taqi Mohammed Amin

Signature :

## **ABSTRACT**

### **TRANSFORMATION OF THE MORPHOLOGY OF THE OLD CITY OF SULAIMANIYAH (NORTHERN IRAQ) FROM THE PERSPECTIVE OF OWNERSHIP PATTERNS**

Amin, Hanaw Mohammed Taqi Mohammed

M.Sc., Department of City and Regional Planning in Urban Design

Supervisor: Assoc.Prof. Dr. Baykan Günay

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The main objective of the thesis is to study the forces that built up the morphology of the old city of Sulaimaniyah and the reasons of its existence. It focuses on the morphological elements of property (ownership elements of streets, blocks and parcels) and their existence in spite of the impacts of modernism in the transformation of these elements.

Modernity in Sulaimaniyah city affected the city in terms of the transformation of traditional life pattern and traditional structure into modern function. Modern function covers a new administrative system and new commercial functions. The city adapted itself to these new institutions. As a consequence, the power of state displayed itself in the form of building roads, and then the new larger and regular parcels were created to adapt new functions.

Furthermore, the study aims to establish the historical evolution of the city starting from its foundation and the periods, which are signified by the introduction of modernism concepts. This study is analyzed through a morphological research depending on the physical elements as quantitative characteristics. It starts with an



evolutionary plan analysis, which is a tool of morphological study and covers the old part of the city in macro scale, mezzo scale, and consequently, micro scale. The old fabric of Sulaimaniyah city as organic fabric faced the modernism's impact gradually due to the construction of streets. In spite of this fact, preserving old fabric's morphology behind the power of ownership pattern is still surviving.

In this thesis, typology is another research method, which is used to analyze the evolution of the building fabric of the city in both functional and formal configuration. In addition, a comparison of traditional and modern building types in the old city shows that there are similarities between these types, which suggest that these types are part of the old fabric of the city and they define the morphology of the old city. The study concluded that the morphology of the old city is the product of property in two dimensions (ownership parcels), and the building types on them.

Key words: Morphology, Ownership pattern, Old city, Typology, the city of Sulaimaniyah

## ÖZ

### ESKİ SÜLEYMANİYE (KUZEY IRAK) KENT MORFOLOJİSİNİN MÜLKİYET İLİŞKİLERİ AÇISINDAN DÖNÜŞÜMÜNÜN İRDELENMESİ

Amin, Hanaw Mohammed Taqi Mohammed

Yüksek Lisans Tezi, Kentsel Tasarım Bölümü

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Tezin ana amacı Süleymaniye'nin eski kent morfolojisini oluşturan kuvvetleri incelemektir.. (Çalışma), modernizmin sokak-ada-parcel gibi mülkiyet elemanlarının dönüşümü üzerindeki etkisine rağmen , mülkiyetin morfolojik elemanları ve varoluşu üzerinde yoğunlaşacaktır.

Ayrıca, çalışmadaki diğer amaç da modernizm kavramlarının giriş kısmında da gösterildiği gibi, kentin kuruluşundan bu yana olan tarihi evrimini, ve geçirdiği dönemleri tespit etmektir. Bu da sayısal karakterli fiziksel elemanlara dayanan bir biçimsel araştırma ile analiz edilebilir.Morfolojik araştırmanın bir aracı olarak, evrimsel bir plan analizi bakış açısı ile başlanılmıştır. Kentin eski kısmı büyük ölçek, orta ölçek ve sonuç olarak da küçük ölçekle ele almıştır. Organik doku olan Süleymaniye kentinin eski dokusu, yolların oluşurulması nedeniyle modernizmin etkisine yavaş yavaş maruz kalmıştır. Bu gerçeğe rağmen mülkiyet yapısının gücü ile eski dokunun biçimini korumak hala mümkün.

Tipoloji, kentin yapı dokusundaki evriminin hem fonksiyonel hem de resmi biçimlendirilmesi açısından incelenmesinde ek bir yöntemdir.( Çalışmada ) Ek olarak geleneksel ve modernin, eski dokudan modern bölgelere doğru olan karşılaştırılması da sergilenmiştir. Tiplerin benzerliği; mülkün düzenliliğinin görsel olduğu ve yapı

paylaşım şekillerinin kentin morfolojisini tanımladığı gerçeğini kabul eder. Çalışma; eski doku morfolojisinin, parsel sahipliliği ve bunların üzerindeki yapı hakları gibi mülkiyet biçimlerinin ürünü olduğu sonucunu çıkarmaktadır.

Anahtar kelimeler: Morfoloji/ Biçim, mülkiyet düzeni, eski kent, modernizm , Süleymaniye şehri

To My Family

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# **CHAPTER 1**

## **INTRODUCTION**

This particular study is about morphology of the old city of Sulaimaniyah (northern part of Iraq) from the perspective of ownership pattern. The Old city of Sulaimaniyah, which was created by the ruler of dynasty of Baban, consists of narrow roads, cul-de-sacs, irregular blocks, and parcels. Towards 1920s, the morphology of the old city was transformed by the power of state in the construction of roads. In spite of this transformation, the old fabric of the city is still remarkable. In the framework of the thesis, this transformation marked a modernism for Sulaimaniyah city, which means the transformation of traditional life pattern and structure pattern towards modern function. Modern function in Sulaimaniyah city reflected itself in the new administrative system and new functional system. As a consequence, the structure of the city expanded by the creation of the regular parcels and blocks to adapt new functions.

The existing morphology of the old fabric of city throughout history is interrelated with the ownership pattern by their resistance against transformation. The power of protected ownership elements of streets, blocks, and parcels are the forces that define the morphology of the old city. Through morphological analysis, the comparison of the ownership elements of blocks in the old city defines the limited power of state in the transformation of the morphology of the city. At the same time, it shows the power of ownership elements against the transformation of morphology of the old fabric of city.



The evolution of the city and its transformation are analyzed based on the Morphological method. Conzen's town plan analysis as a method of morphology is the method of this study.

In this study, Typology also shows the role of buildings in defining morphology of the old city. The formation of the buildings from 1920 until 1980s is the subject of typological analysis. However, the changing user in the interior of the buildings and the new constructed buildings in side the old city are also the subject of transformation in the formation of building types, but they are not concerned in the framework of this thesis. This is besides social and political structure, which played important role in the formation of the city, but they are not the subject of this study, as well.

In addition, this study establishes the evolutionary steps of historical development of the city. Consequently, it shows the existing morphology of the old fabric of Sulaimaniyah city.

### **1.1 Definition of the Problem:**

In spite of the gradual transformation of the city towards modernity, the existence of the old fabric of Sulaimaniyah city is remarkable. Modernity affected the old fabric of the city and its morphological elements of ownership pattern. From 1930s until 1960s, several roads were constructed to connect the city to the surrounding major cities and help the growth of trade and industry, leading to the modification of physical structure of the city.

The study enquires the forces that built up the morphology of the old city and the reasons of its survival against modernism's impact on its ownership elements. It analyzes the gradual evolution of city's morphological elements of streets, blocks, and parcels. It starts from the creation of the city until today, especially the impacts of modernism, which introduced the construction of straight roads in sequential time periods.

To study the progress, morphological analysis is used to define the city in a macro scale to figure out the alteration of city in different stages, from traditional to modern times, and then from mezzo scale to micro scale. The investigations of this study compare the transformation and existence of the ownership elements of blocks, parcels and building types.

The analysis of the map in the 1927, and British RAF (Royal Air Force) image in the 1924, shows the old fabric of the city before the impacts of modernism in terms of the road construction. In addition of that, the maps of the city in the 1958 and 1960 are also used in the morphological analysis of the evolution of the old city. The aerial photographs of the city in the 1944, 1952 and the recent satellite image are the basis to discuss the evolution of the morphological elements. The study shows the reaction of the ownership elements against the impacts of modernism as a new thinking in terms of the regulation of these elements.

Thus, the thesis establishes stepwise growth of the city from its foundation until today, and also sheds light on the visibility of the morphology of the old fabric behind the roles of ownership pattern.

## **1.2 Scope of the Study:**

The main aim of the study is to define the existing morphology of the old city through the power of property in two dimensions (ownership elements) and the building types on them. Furthermore, another aim of the study is to establish historical evolution of Sulaimaniyah city.

The old part in Sulaimaniyah city, which hosts the oldest neighborhoods in the city, is chosen to discuss the forces behind its survival as an old fabric. The old city is affected by modernism in the development of road construction. Through the morphology, ownership elements of streets, blocks, and parcels are analyzed in different time periods. For instance, to observe the evolution of the old city from the 1920s until today, maps and aerial photographs are analyzed with a focus on the road construction activities. In addition, for the specific years of 1927, 1960, and 2009, the ownership elements of blocks and parcels are examined through the

morphological method. These analyses show the existing morphology of the old city throughout history except its transformation in terms of the road construction by state. Furthermore, typological analysis is used to define the role of building fabric in the morphology of the old city. It classifies building types into different types that represent the impacts of modernism on the typological formation of the old city. The formal configuration of the residential building types is studied from the 1920s until 1980s. The selected years, show the gradual evolution of the study area towards modernity. The rules of different administrative periods and their roles in the history in terms of morphology is a part of the study, as well.

### **1.3 The Method of the Study:**

The methodology refers to the analysis of morphological elements of streets, blocks, and parcels. In the thesis, gradual morphological steps are analyzed: in the chapter 2, the literature review describes the morphological, typological analysis and their roles to define the urban fabric of the city. The brief description of morphology is analyzed with a focus on property (ownership elements), and then the role of property in the existence of morphology is studied, as well.

From this perspective, methodology is divided into two parts: morphological and typological analysis. The morphological method is used to analyze the plans of the city and to define the old fabric of city. Conzen's morphological analysis (town plan analysis) provides the morphological tool to define the evolutionary steps of the morphology of the old city. Typology is used to show the role of building types in the morphology of the old city. It also defines distinctive types of building based on the functional and formal configuration.

In the chapter 3, the framework of macro form and abbreviated historical evolution of Sulaimaniyah, are analyzed. The factors of political, social and economical structure are exposed in relation to the historical evolution of the city. These factors affected on the different evolution of the city, from the past to present. The growth of the city, from its creation until the recent years, is defined through the interpretation

of historical and recent maps of the old city. The findings show, the gradual distinctive development of the city, in different time periods.

The morphological analysis of the ownership elements of the study area is illustrated in the chapter 4. The alteration of morphological elements, are exposed in the period of the rules of Ottoman Empire, British, and Iraqi rules. However, these rules are important in the transformation of the city, but they are not in the aim of this thesis. Study area is examined in the two levels: mezzo scale and micro scale. Mezzo scale analysis relies on the characteristics of the morphological elements and the gradual evolution of these elements in terms of the morphology. In addition, the image of the study area defined the old city in accordance with the past. Thus, based on the study of Lynch, the study area is illustrated to define the districts, nodes, landmarks, paths and edges. Furthermore, based on the maps and aerial photographs, the analysis of the study area as a whole shows the gradual evolution of the old city towards modernism. It shows the transformation of the old city in terms of road construction.

In the micro scale analysis, two ownership blocks are examined in the study area; the quantitative elements of blocks, parcels, and their floor area ratio are illustrated. The existence of these elements against the impact of modernism, show the survival morphology of the old city. The illustrated large ownership parcels and small ownership parcels are compared with respect to the impact of modernism. In addition, typological analysis shows the role of building types in the definition of morphology of the old city. Based on the typology, traditional and modern building types are classified. Traditional building types and their transformation towards modernism are defined in the morphology of the old city. The buildings, which are erected on the regular parcels in the modern period, are compared with the traditional types. They are analyzed, to define their role, in the morphology of the old city and then, separate the old city from the new city by producing the edge for the old city.

Finally, in the conclusion, the forces that built up the morphology of the old city and the reasons of its existence will be discussed. Based on their existence and transformation, the different consequences from the comparison of the two distinctive ownership blocks in the study area will be explained. For instance, the

central block shows the transformation of ownership elements due to the construction of roads by the state, while; the residential block exposes the power of ownership pattern in the existing morphology of the old city.

Thus, the existing power of the ownership pattern defines the existing morphology of the old city. The comparison of building types in the old city, defines their role in the morphology of the old city. In spite of the fact that, they are affected by the regularity of ownership elements (parcels, blocks, streets) in the modern periods, they keep the characteristics of traditional building types in the old city and then, its morphology. Thus, the building types are part of the old city in defining its morphology. The conclusion means, the morphology of the old city consists of the ownership elements and the building types on them.

## **CHAPTER 2**

### **MORPHOLOGICAL APPROACH**

Theoretical framework of this thesis depended on the morphological and typological analysis. Morphological analysis provides a comprehensive interpretation of the physical evolution of the ownership elements of streets, blocks, and parcels. Typological concept explains the physical characteristics of the building fabrics in the micro scale analysis based on their functional and formal configuration of types. Furthermore, Morphological analysis is used as the main principal target to define the old city in the macro scale: it is used to figure out the gradual transformation of the old city from traditional to modernity. The study identifies urban fabric of the old city, its ownership elements of streets, blocks, and parcels, In addition, the impacts of modernism is defined in the sequential time periods. The study of literature provides the brief description of the morphology with a focus on property (ownership elements), and then the role of property in the existence of morphology is studied, as well.

#### **2.1 Morphological Study and Morphological Approach as a Method:**

The morphological approach is characterized systematically by different kinds of elements (their organization, and their evolution over time), and their association with space. These elements resulted from the historical development and functional requirements (Whitehand, 1981). Based on geographer and planner M.R.G.Conzen, who started to examine morphology in the late nineteenth century, the morphology is expressed in the townscape, building fabric and pattern of urban land use. Townscape is the combination of town plan, pattern of building forms, and pattern of

the urban land use. "Building fabric is the actual three dimensional mark of physical structure on the land ownership parcel." (Kostof, 1991, p.11). Conzen describes town plan as "itself subdivided into three constituent parts or elements: streets and their arrangement in a street system, plots and their aggregation in street blocks, and the block-plans of buildings" (Conzen, 1960, p.5).

Town plan described in the study of Conzen (as cited in Kostof, 1991, p.11) showed that: town plan as "the cadastre or matrix of land divisions functionally differentiated by legally protected ownership". From this point of view, which marks the power of ownership elements of morphology (parcels and blocks); in his particular study of property relations, Günay, defined the power of legal ownership pattern in the traditional society towards modernity. In his book, he mentioned that state has its impact on the regulation of real property, and its influence is restricted. In the contrast, the traditional ownership was free from any interference of state, and once it is established, it is difficult to change (Günay, 1999, p.3).

The role of building types in the morphology of city is defined: according to Conzenian School, the study of urban landscape form is the basis to develop a theory of the city-building process, which is not only explicit, the historical evolution, but also guides future planning efforts. There are three schools of urban morphology in England, France, and Italy. One of the schools: British school focuses on the work of M. R. G. Conzen and his town plan analysis as a base of the study of urban morphology (Moudon, 1997). Hence, holistic understanding towards the history and morphology of the city is prerequisite for this study. Planning of the city without control mentioned by Günay "The duality between spontaneity and planning has been introduced into the fabric of today's cities" (Günay, 1988). Duality of urban fabric is the concept of different urban pattern of the city, and then different formation of morphology. Neighborhoods exhibit recognizable patterns in the ordering of buildings, spaces and functions. "Intuitively the environment of unique cities like London, Venice, Amsterdam, and Bologna is recognizable by the way these elements are knit into familiar patterns, systems, and building types". (Habraken, Teicher, 2000).

## 2.2 Morphological Study:

The Combination of town plan, building fabric, land utilization pattern and the site are forming morphological regions (Conzen, 1975). In his practical study, Conzen used two dimensional plans (town plan) with all important characteristics of urban form. In his study of Newcastle upon Tyne in England, he used the method of an evolutionary plan analysis, which is the town-plan analysis in sequential time periods to concentrate on the analytical process of three main elements of the town plan. The elements can be analyzed over time in evolutionary periods, such as streets and their street system, plots and their plot systems, and the building arrangement within these patterns (Whitehand, 1981).



Figure 2.1 Conzen's fundamental elements of town plan: town plan or street pattern, streets and plots (land use pattern), and streets, plots, blocks (building fabric) (Kostof, 1991, p.11).

The evolutionary method of plan analysis provides comprehensive interpretation of the physical development of ownership elements of the city. It defines factors that affected on the morphology in different political periods (authority rules). Conzen investigated different types of changes and developments, for example in the concept of Burgage cycle and the Fringe belt. In the practical study of Burgage cycle in Newcastle, he presented an evolutionary town plan analysis as a target to show insight analysis of its physical development over time (Whitehand, 1981).



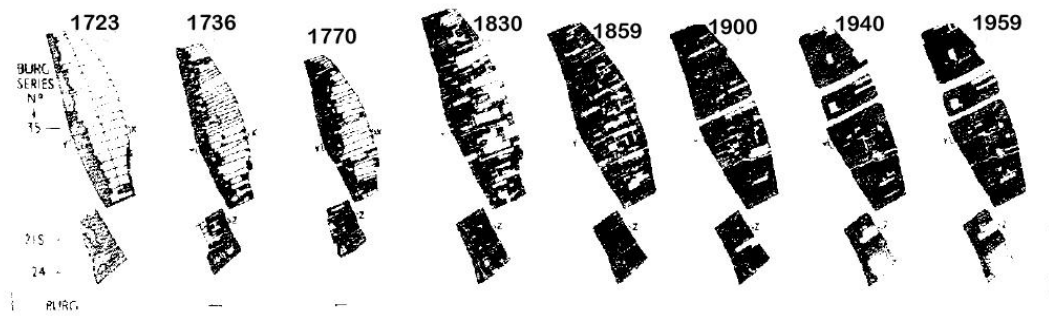


Figure 2.2 The Burgage cycle in the study of Conzen. (The development of Newcastle from 1723 until 1954) (Whitehand, 1981, p. 45).

Thus, to understand visible changes of the morphology of city, Conzen started with property analysis. In his work, the form of property explained through morphological analysis. Burgage was defined in terms of property "defined in legal terms as a property unencumbered with manorial services which could be bought, sold or bequeathed freely without reference to any manorial authority" (Bond, 1990). He showed that in the traditional society, the land contract between owners was common. Conzen explained how the characteristic of morphological units in a market town of medieval origin related importantly to the individual property units. He defines that they were arranged as they were along the public thoroughfares and market place. These properties characteristically developed with a dominant building at the front, and in the back perhaps by several smaller buildings "trailing off". The rear of the property is both enclosed and made accessible by a back lane. Thus, in Conzen's work, the property pattern, and its role in the formation of morphology was physically presented. He relied on the Burgage property units, and their relationship with the building patterns.

Taylor used sort of various maps in addition to some relevant sources to study the black ghetto-formation process in Cincinnati in the nineteenth century. He advocated that the maps do not only support the descriptive data in the various historical sources, but also enrich the data by providing a concrete and visual perspective. They reduce complex data to simpler data, easily understandable terms, and modeling. They make various types of spatial relations in the urban environment (Taylor, 1984, p. 45).

In his explanation of the physical elements of city, which determine the structure of urban form, Lynch, divided physical forms of city into five elements. The elements are paths, edges, districts, nodes, and landmarks. Path is the main dominant factor of the city, which can be called road. It is linking all components of the city. District represents the characteristics of historical, social, cultural and functional activity. It creates the concept of differentiation between districts and individual characteristics. Edge is a signal identity of the district and it shows the changes from one district to another district. Different physical landscape represents the boundary between districts. Node is an important focal point, which is used as a gathering place and is related to people's daily life. Center of the city or center of the districts is frequently the nodes. Finally, landmarks are unique distinguished physical elements with various forms. They provide an orientation and clue to the surrounding urban structures. Thus, all these elements are describing the image of the city. From Lynch's point of view, we can have interpretation of physical elements of the old city.

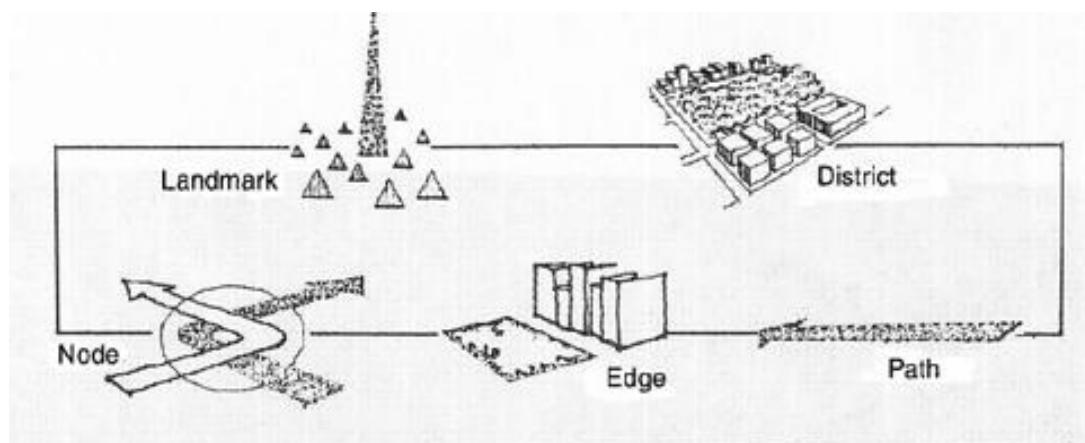


Figure 2.3 The five key elements of urban form (Lynch, 1959, p.47-48)

Consequently, the study of literature in the morphology provides the study of morphology with a focus on the property and its existing power in defining the morphology of the city. Morphological ownership elements of streets, blocks, and parcels are the elements of property to define morphology of the city.

### **2.3. Typological Study and Method of Approach:**

The idea of type is used as an analytical tool for the classification of architectural work. Based on literature, there are many criteria to classify elements into categories. Buildings are classified into different types based on the criteria of functions, forms, locations, styles, and materials (Schneekloth and Ellen, 1989). The word "type" is used to refer to the architectural type with a standard of morphology, such as a courtyard house and Italian Plazzo (Carmona M., Tiesdell S., 2007). According to Albert Levy, studies of typology have taken in different approaches, for example the typology of streets or the inventory of types of streets. Another feature of this approach is the analysis of the relationships between different instances of the same element, such as a relationship of plot to plot, street to street, building to building, and square to square. (Albert Levy, 1999). Typological classification is often applied to buildings. Practitioners of this study are topologists (Muratori, 1959). They study pieces or cells of buildings and open spaces within the framework of discrete piece of land in single ownership. The study of the physical characteristics of plots, streets, building types, types of spaces, size of plots and height of buildings are the examples of the typological study. In contrast, the practitioners, who call themselves as a morphologist, are those who concern both generative pieces of the urban landscape. They study the characteristics of groups and sum of cells that constitute the city (Whitehand, 1981). Both groups agree that the historical process shape the components of an urban landscape.

## **2.4 Typological Study:**

Conzen examined building types as systematic aspects of urban morphology. Alnwick was his field of study to determine the typology of the town. In his study explained that in Britain, residential building types can be divided by period characteristics into traditional, non traditional and modern building types. Traditional building types are the buildings of Pre-Georgian, Georgian and Regency buildings. Non traditional building types are the early and mid-Victorian, Late Victorian and Edwardian buildings. Thus, according to social significances, each of these period groups present number of types.

Schumacher classified streets based on user density, mixed land use, pedestrian and vehicular interaction, and the configuration of streets (Schumacher, 1978). In the same manner, as an example of typological method, street types are classified based on land use, built-form characteristics, and circulation (including pedestrian and vehicular access) (Anderson, 1978). Similarly, Eren Gülcen Şirin, in her master thesis (1995), classified blocks based on forms, dimension, landownership pattern, location, and then a characteristic components of a block based on density and function. She defined different formation of ownership blocks, such as traditional (organic), grids, radial, concentric, and amorphous.

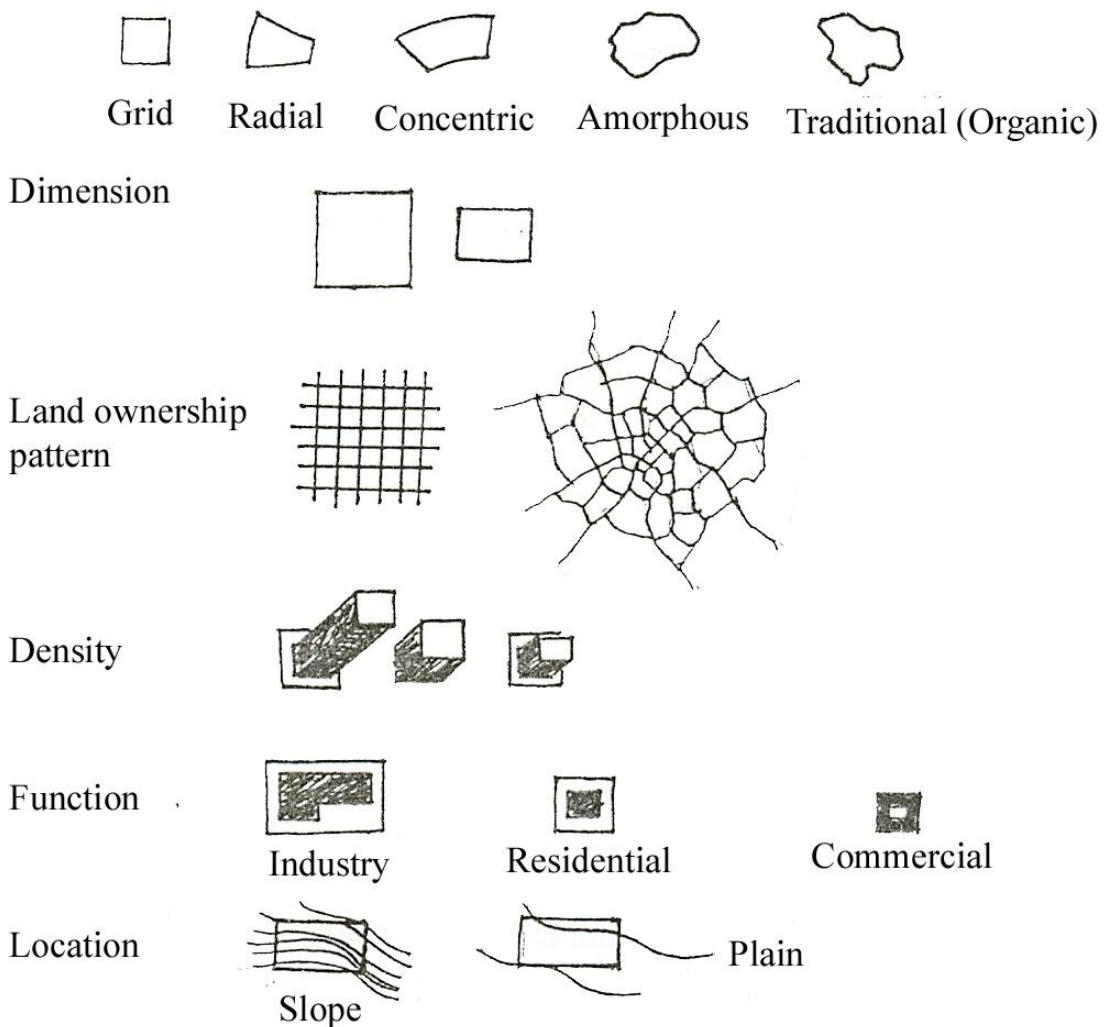


Figure 2.4 Different types of a block. (Eren G. Ş., 1995, unpublished master thesis).

Thus, typology as a system of types is used to classify building types. Method of typology will provide the brief information about town plan and building fabric. They make an important contribution on the formation of urban regions within the town (Conzen, 1932).

## **2.5 Methodology:**

Two main methods of morphology and typology process the framework of the thesis to examine formation and transformation of the ownership elements of the city. Morphology is the principle analytical method to examine the transformation of the old city and its urban fabric. This serves comprehensive understanding of the ownership elements of the old city. It also establishes spatial historical significance for the city that provides a tool to examine the morphological elements of street, block, and parcel in the old city.

Typological analysis provides the clue to understand the physical characteristics of building types, such as the physical characteristics of functional and formal configuration, and their transformation towards modernity. It identifies the impacts of modernism on the building types and their role to define morphology of the old city.

Study of Conzen's town plan analysis, as a method of morphology, is a coherent tool in this study. The evolutionary plans of the old city are analyzed to show ownership elements of street systems in relation to the configuration of overall physical settlements in the sequential time periods. For this purpose, the old city is chosen as a whole to show its evolution from 1920s until today. Besides, the plan of two ownership blocks in the old city is examined in the years 1927, 1960, and 2009. These blocks are chosen to show the power of ownership elements in the existing morphology of the old city. The first block is located in the center of the city, which shows the administrative center of the city and its transformation into the commercial center. The residential block is located in the Sabwnkaran neighborhood.

The morphological analysis of the old city of Sulaimaniyah starts from the perspective of an evolutionary plan analysis as a tool of morphological study. The morphology of the old city is analyzed to define the forces that built up its morphology and the reasons of its existence as the old fabric of the city. The main target is examined through the map analysis of the city in the 1921, 1927, 1958, 1969, and 2009. The maps of the city in 1927 and 2009 are the land parcel maps, While, the ownership parcels are not available in the rest of the maps. For the analysis of the two blocks in the study area in 1927, 1960, and 2009, parcel map is needed. Thus, for the analysis of 1960, the ownership parcels are drawn based on the collection information about each parcel of the two blocks from the land registrar office in Sulaimaniyah. The transformation of each parcel in the year 1960 is used to draw the parcel map of the two blocks (center block of the city and residential block in the Sabwnkaran neighborhood). Besides that, in the typological analysis properties (the two dimension plan of the buildings) are drawing by relying on the aerial photograph of 2007 and British RAF image in the 1924, because in Sulaimaniyah municipality, the property map of the city is not available until today. Furthermore, in this study, the maps and aerial photographs are superimposed to show the gradual evolution of the city, which means that the information about transformation of the city in terms of the road construction, attachment of the modern blocks (regular blocks), and intrusion of the regular blocks inside the old city are obtained by analyzing the produced maps in the 1930s, 1940s, 1950s, and 1960. The published historical and political documentations in Kurdish language mostly served to show the real facts in the transformation of the city in sequential time periods. The analyses of the city are mostly obtained by the author due to the lack of planning and architectural documentations about Sulaimaniyah city.

Thus, the forms of data collection are the maps of f 1921, 1927, 1958, 1960, 2009, and aerial photographs of 1944, 1952 and 2007. The British RAF image of the city in 1924 is used to define ownership elements of the old city in the 1920s. It is the oldest image to show three dimensional plan of the old city. The city has its first aerial photograph in the 1944. From this perspective, as the first source in the history of the city, the RAF image will provide the coherent explanation of urban fabric of the old

Sulaimaniyah city in the 1920s. This image is gained during this research from British Royal Air Force (Devitt P., personnel communication, November 26, 2009). In this study, political and historical books and photos from the past to the present are used as a tool to explain the evolution of the old city. The general interpretation from maps shows the morphological transformations of the old city in terms of the road construction during the periods of modernity. The data utilized and analyzed in this study is mainly qualitative and quantitative data. Qualitative data is obtained by the interpretation of plans and aerial photographs. Quantitative data is collected in the study area, and presented in the micro scale analysis. Consequently, the evolutionary plan analyses are used as the analytical method of the morphological study. They define the evolution of morphological elements of the old city.

Typological method examines the physical characteristics of the building types in the old city as a tool to identify and study the process of the building types. In this research, the buildings of the old city are analyzed according to functional and formal configuration. The RAF image in the 1924 is used to analyze the functional and formal configuration of buildings in the old city. The aerial photograph of 2007 is used to show residential typology based on their formation. Malik Kandi neighborhood is chosen to study the formal configuration of the residential building types from the 1920s until 1980s. The selected period is related to the gradual evolution of the study area towards modernity. From this perspective, typology gives the comprehensive interpretation of building fabric of the old city. It defines their role in the morphology of the old city and classifies them into different types that represent the impacts of modernism on the typological formation of the old city.

Furthermore, in this thesis, the work of Lynch provides the comprehensive understanding of the physical characteristic of the morphological elements of the old city. Five elements of the old city such as paths, edge, districts, nodes, and landmarks are explained as the quantitative data of the physical elements.

## **CHAPTER 3**

### **HISTORICAL BACKGROUND**

#### **3.1 Geographical Location:**

Sulaimaniyah city is located in the north-east of Iraq by 40 km from the Iranian frontier, 35.33N/45.26E (IGCO, 2009). In the south-east, the city is surrounded by mountains of Zagros highlands, and the mountains of Azmar, in the north. The city was initially founded at the western foothill of the Zagros Mountain, within the province of the same name. By the end of 2002, (8) towns and (33) townships with Sulaimaniyah as the core of the province, formed its province (Muhammad Jasem, 2008). To the north-western edge of the city, there is a river of Qlyasan, and then there is a Tanjaro river to the south-western edge of the city.

The city was built at the skirts of the mountains towards the plain, which connects both agricultural lands of Sharazwr and Bazyan. The agricultural lands have played an important role in the economic viability of the city. Today, the city is in the between north and south of the country. It is connected to the neighbor countries by several roads: to the east, through Halabja and Penjwin Road, it is connected to Iran. To the north-west, it is connected to Syria and, through Arbil province, to Dhoke, and then to Turkey. From Chamchamal, Kirkuk and Arbil, is connected to Mosul, Syria and Baghdad. The city expansion in the 1921 covered 132 ha. 50 years later in the 1973, the area of the city has increased to 315.8 ha. In the 1980, it reached 841.5 ha. Towards 1990, the urban development of the city reached 2,173.9 ha. , and in 2003 it reached a size of 3,891.2 ha. Finally, the last record is obtained in 2007 that is 5,858.0 ha. (IGCO, 2009).





Figure 3.1 Sulaimaniyah location and its road connections with surrounding cities.

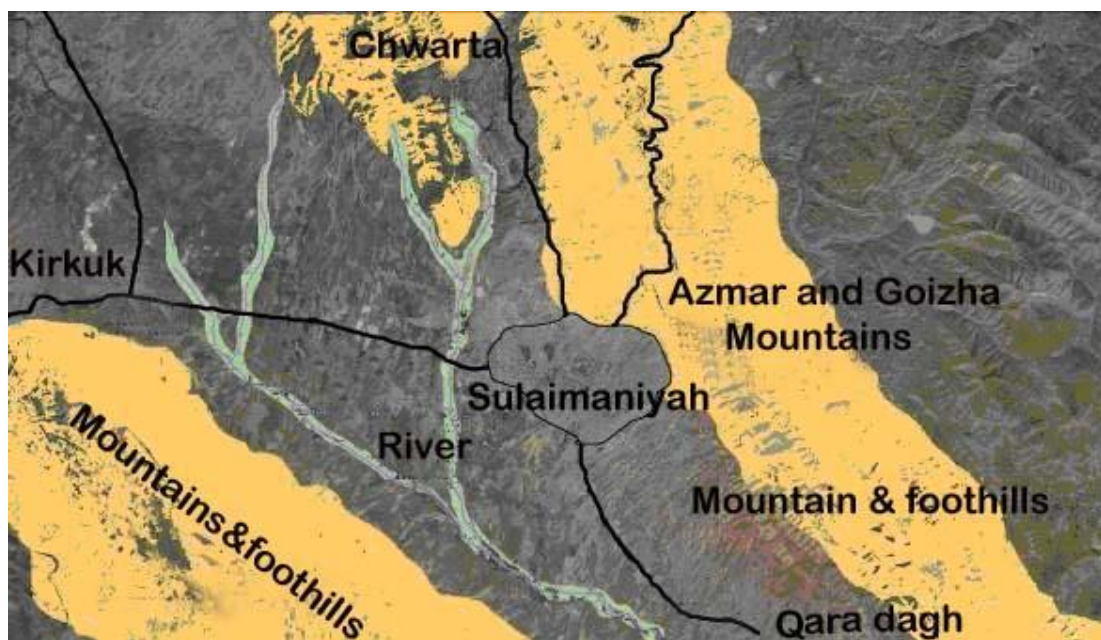


Figure 3.2 Sulaimaniyah topographical formations.

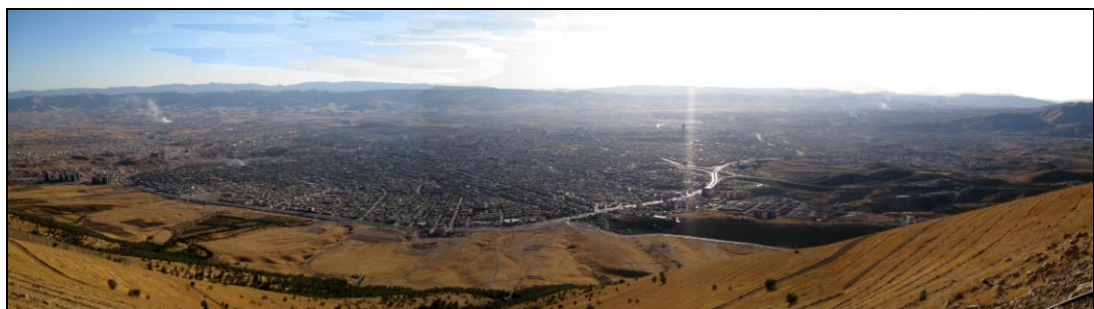


Figure 3.3 Sulaimaniyah from Goizha Mountain.

### **3.2 Historical Development:**

Sulaimaniyah, throughout its history, from its establishment until today, became part of different administrative rules: the rule of Baban, Ottoman Empire, British rule, and Iraqi rule. Based on the historical documentation, there were human beings in this region. Loloyakan and Gotyakan were the two ancient communities, who lived in this environment (Jamal Rashid Ahmed, Fawzi Rashid 1990). From its foundation (1784) until 1850, the city was ruled by the dynasty of Baban. According to the historical sources, evolution of the city was affected by a series of wars, which have caused the decline of its urbanization and ruined the city structure. During the sixteenth and seventeenth centuries, the Ottoman Empire became ruler in this area until 1918. In this period of domination, for the first time, the municipal authority was established to rule and organize the city.

In 1918, after the defeat of the Ottoman Empire at the end of the First World War, the British started to rule this region. A series of rebellions took place. After an upheaval in 1919, in this particular city, Independence was declared from the British. Then, in 1920, the city became part of the Iraqi State, which is created by the British. In March 1923, the British used Royal Air Force (RAF) against the rebellion in Sulaimaniyah, and eventually, in July 1924, the British and Iraqi forces dominated the city. After the independence of Iraq in 1932, in the Iraqi State period, in spite of the political problems, the city has grown more or less normally with the construction of roads, buildings and the improvements of social infrastructure of education and health services. However, in the period of Iraqi rule, in lieu of political consequences, the ring road was built surrounding the city to halt the evolution of the city. Finally in 1991, Sulaimaniyah became part of the regional government authority in the Iraqi rule.

#### **3. 2. 1 Social Structure:**

In the past, different social groups lived in Sulaimaniyah city. There were different ethnic groups. The Muslims, Christians and Jews lived in this city. "Christians are hardly distinguishable in their manner of lifestyle and customs from the Kurds, in

whose truculent and tolerant midst they had existed for many centuries" (Longrigg, 1953). According to Longrigg, Jews were a separated ethnic culture group following their traditions in the city and they were different from the rest of the population in the city. The city settlement pattern was formed by different ethnic groups. The Jewish neighborhood was located in the south-west of the city, their neighborhood is called Jwlakan. The Christian communities accommodated in the east part of the city. Other parts of the city were occupied by the Muslim families. Together they supported the poorer groups for their welfare, which is the best evidence to show comfortable and secure relations between them.

In the old city, social network between Muslims was created by mystic orders, which also acquired a political significance. The interwoven social links were created by Tariqat (literary- the way, the path). The organization of life around this Tariqat, had social aspects of human behavior helping to define a distinct kind of identity (Lukitz, 1995). For instance, in the 1860s, the dominant group was the holy family of Barzinji Saydi (Sheikh). Sheikhs increasingly involved in town life and politics. The second dominant group was the wealthy class. They were the merchants, the members of authority and the large land owners in the city. The merchants were from the different ethnic groups. Based on the tradition, the person, who became a Mutasarif (head of municipality) candidate, had to belong to a wealthy family (large property owner), besides that, the education accomplishments: Turkish and Arabic language were pre-requested. Another class was normal inhabitants of the city.

### **3. 2. 2 Economic Structure:**

Sulaimaniyah has grown as the market town of an agricultural community. It was the market, which connected two agricultural lands of Shahrazwr and Bazyan. Based on the irrigation method, crops, barley, wheat, fruit and tobacco were cultivated. The products of wool, sheep, bulls, cows, foxes' skins, animals' skins, walnuts, hazelnut and beans were being sent to this city's market, and then to Baghdad and to Europe (Meena, 2007, p.163). Several khans and markets served the city as a trading center for doing business with Mosul, Baghdad and some cities in Iran like Tabriz, Sna, Bana and Hamadan through Halabja and Rawanduz trade routes. The goods from

Bana were marketed to Mosul and Bagdad through Sulaimaniyah market. Caravan routes ran everywhere across the frontier zone (Longrigg, 1953). Gums, gall-nuts were the goods for exporting. In addition, tobacco was the most important product for trading. The goods, which were being imported, are: sugar, tea, ceramic ware plates, aluminum plates and glasses from Baghdad. Cotton cloth was coming from Diyarbakir and Halabja. Furthermore, in 1939, the tobacco factory was established in the northern part of Sulaimaniyah province. "Rifles with Russian-made barrels were also made in an old-established factory in Sulaimaniyah and thence distributed over all places"(Longrigg, 1953). This impulse of urban development did not continue due to the heavy taxation from the local government and dominating Shiekhs of the city. Thus, around the 1880s, tradesmen left the city mostly for Iran.

The trade routes were: from Halabja and Rawanduz, to Iran, and through Kiruk to Mosul and Baghdad. They were laid at different times depending on the types of products in demand. The trade route from Qara Dag, was mostly used to go to Baghdad. In the later periods of 1957, due to the establishment of factories, the economy developed. For instance, the sugar factory was established in the 1950s, tobacco factory in 1958 and cement plant in 1961. Today, with the effects of modernization of lifestyle, the city transformed from a town market to social, cultural and political centre. With growth in the literacy rate thank to major projects like schools, universities, hospitals, and free-trade-zones near Turkish and Iranian borders, all these aspects marked the impact on the economic development, reforming and reorganizing the city.

### **3. 3 Macro Scale Analysis: Urban Characteristics of Sulaimaniyah:**

In the year 1784, when the city was founded, according to the historical documentations, the original population of the city was 1000 people. Different tribes were asked to send some of their families to settle there in order to expand the horizons of the city. After 36 years in 1820, the population grew by 10,000 people, and the city had 2144 houses. There were about 2033 Muslim households, and about 144 of the other religions. Traces of historical records show that mosques, churches, houses, markets, baths and khans were built surrounding the Pasha's palace as a



compact structure. The city had 5 mosques, one Catholic Church, 5 baths and six khans. In 1868, Lycklama estimated that the city had 6000 Kurds and 45 Catholic and Jewish families (Rasha, 1987, p.46). On the other hand, Soane mentioned that before WWI, the city had 23000 Kurds and 600 Christians and Jews (Meena, 2007, p.24). After the census of 1987, there is no actual record of the population, according to this census, the total population was 364096. However, by depending on the 2009 master plan documentation, in 2005, the total population of Sulaimaniyah was 670838, and in the 2008, its population was 729633.

In terms of function and structure, the city composed of compact organic arrangement around the palace. It was influenced principally by the traditional architecture depicting community's culture bearing the principles of Islam. Initially, the city consisted of the dominant central part, and then different neighborhoods surrounded it. The map in the 1921 shows that initial pattern of the city covered 132 ha. The residential patterns that surrounded the core of the city were distributed based on the routes that led to the trade activity at that period.

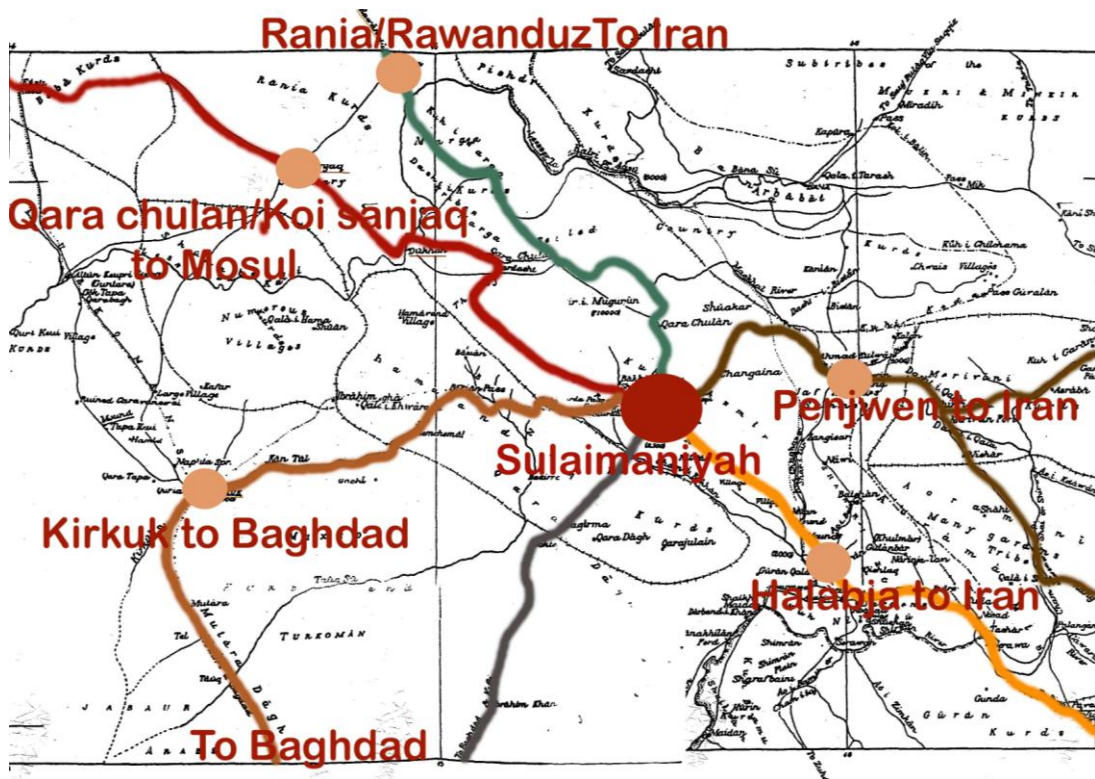


Figure 3.4 Sulaimaniyah trade roads in 1910 (Meena, 2007, p.207).

The trade routes influenced city expansion towards north-east, north-west, south-west and south-east, at a different rate. For instance, the recent route to Kirkuk in the north-west was not attracted by the city expansion as much as the following routes: Halabja and Qara Dagħ. Halabja route was located to the south-east, which led to the trade route towards Iran, and Qara Dagħ route to the south, which was the nearest trade route to Baghdad as the biggest trade center. This route was through Sargirma and Ibrahim Khanchi (see figure 3.4: grey line). Thus, at that period, south of the city, was the most attractive direction for extension. The map of the city in 1921 and 1927, are the evidence of this expansion.

After 1950s, the city was influenced by the main highway to Kirkuk in the north-west of the city. In addition, with the needs of traffic, vehicular roads were constructed. In contrast, originally, in the city, transportation depended on the organic routes. With the construction of Mamostayan (Amin Zaki) road, the new expansion along this particular road and towards Kirkuk road started to mark the modern era. For instance, the new public and administrative buildings, recreational areas and Main Park, all mark the city expansion towards the north-west. In addition, they provided avenue for the public, administrative, commercial and industrial activities. In spite of this, in the north-west direction of the city, the residential developments were taking place. Consequently, new modern blocks were attached to the traditional city (see figure 3.5).

Besides the construction of Sulaimaniyah-Kirkuk Road, the reasons that attract new developments towards that direction were the appearance of several new factories. Although Sulaimaniyah-Kirkuk Road was built in 1956, the road to Halabja still remained to connect the city to the south-east. The Sulaimaniyah-Kirkuk Road connected the city to Kirkuk as an active trade center and close to Baghdad as a center of Iraq's geography for authority. The Chwarta Road to the north-east, Sarchnar Road to the north and Qara Dax Road towards the south were connecting the city to the other parts of the country (see figure 3.6).

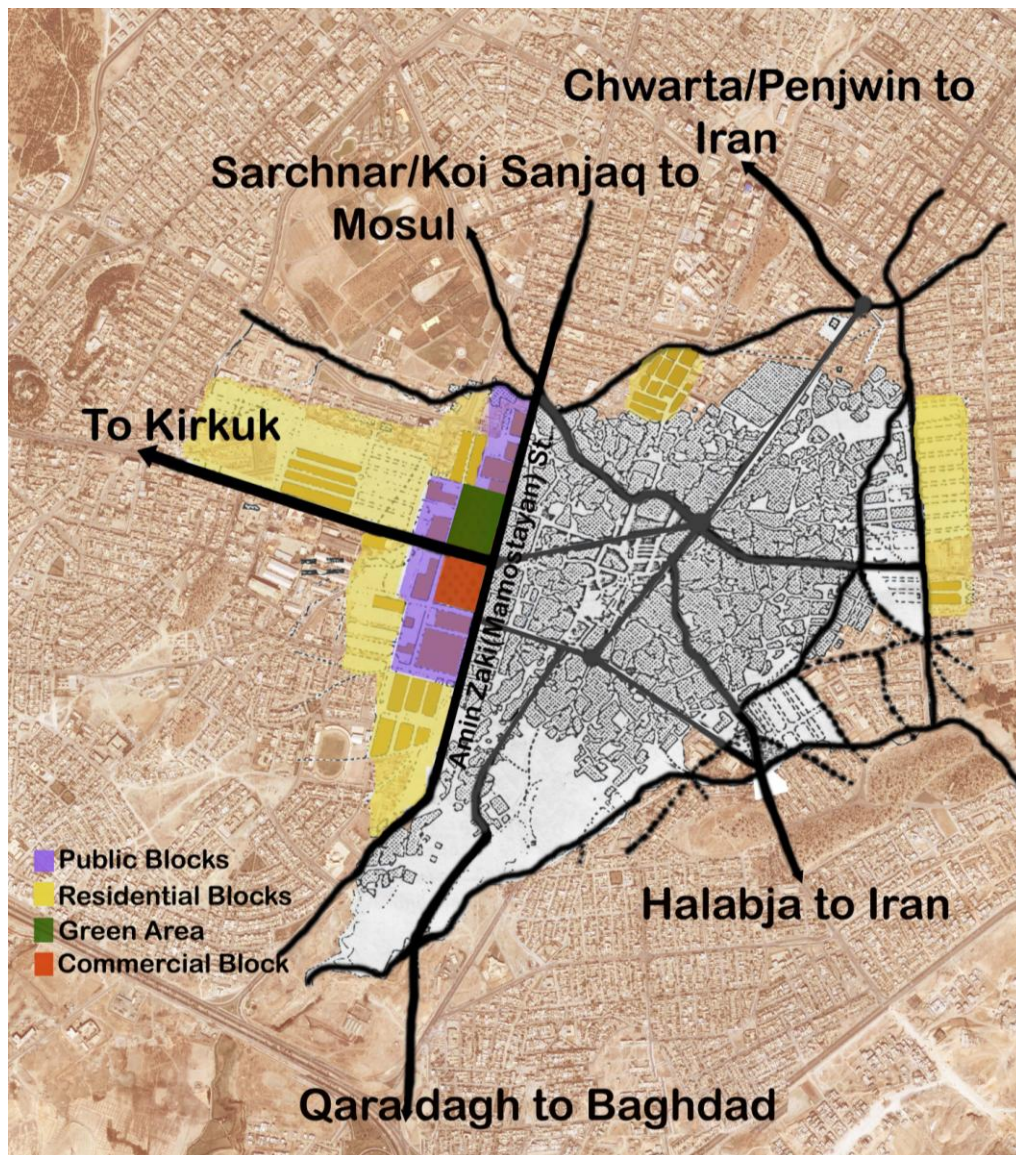


Figure 3.5 The macro form development of city in the 1950s. Source: aerial photograph of the city in 1944, 1952 and the map of the city in 1958.

From this perspective, the city grew with modern enterprises. New modern neighborhoods were attached to the traditional city. Shorsh, Darogha, Goisha, Saiwan and Chwar Bagh neighborhoods were built as a new modern zone, and surrounded the traditional city. As a result, in 1957, the built area of the city covered 216 hectares (2.16 kilometer square) (DOX-QA 78, 1958).

In spite of these developments, the city was still expanding towards the south-east and north-east, and it was more effective for the residential expansions. Iskan, Majid bag, Twi Malik, and Xabat neighborhoods also appeared. Furthermore, the



residential expansions took place in every part at the same rate. To the west direction of the city, administrative, commercial, recreational, industrial and residential expansions appeared. The oldest route to Halabja, which was located in the south-east of the city, was shifted to the south, through Qara Dax Road as an alternative road for the surrounding towns in the south and south-east of the city, while Kirkuk and Chwarta Roads were still connecting the city to the surrounding cities and towns.

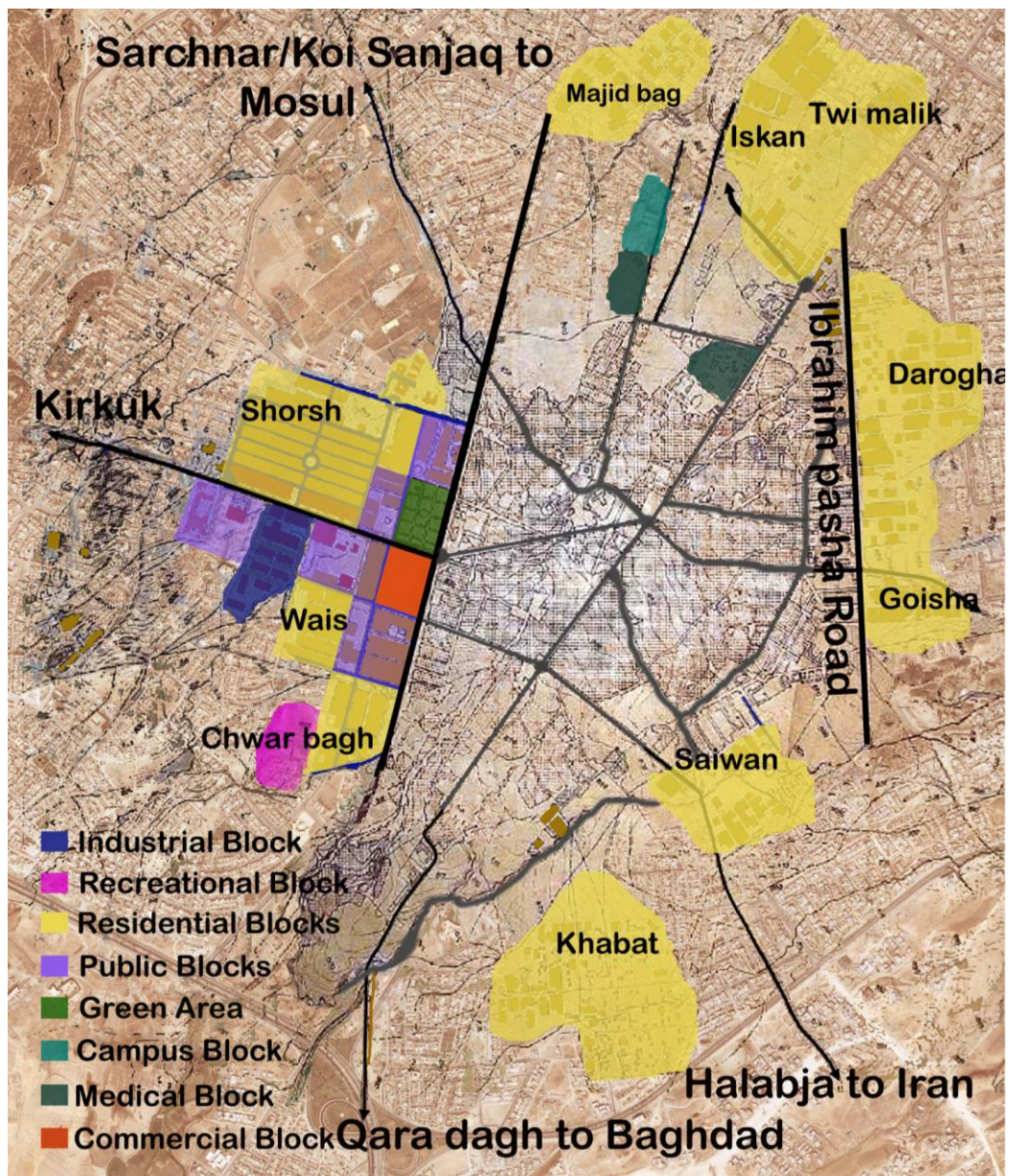


Figure 3.6 The macro form development of city in the 1958s and 1960s. Source: map of the city in 1960s.



In 1968, the construction of the new university, hospitals and neighborhoods, made the continuous growth of the city. The city grew in a circular way until the 1980s. In that period, the city expansion was defined by 52,54km<sup>2</sup> (Sulaimaniyah municipality's archive). In spite of the growth of city, the construction of the ring road (60 Meter Road) around the city obstructed the growth of the city. The expansion of the city out side the ring road was only allowed for the military uses. As a consequence, in 1981, with the needs of political decision, city's future expansion area decreased to 31,352 km<sup>2</sup>. Towards 1991, that decision was cancelled by the municipality. They increased the area based on the map, which defined the city by 73,113 km<sup>2</sup> as a future expansion. In that map, city was surrounded by the second ring road: 100 Meter Road, which was suggested in the Sulaimaniyah master plan of Doxiadis in 1958 (Sulaimaniyah municipality's archive). As a consequence, the villages around the city became new neighborhoods of the city such as, Kani Spika, Zargata, and Wlwba. In addition, the 60 Meter Road (ring road) around Sulaimaniyah, which was built in 1973, lost its function as a boundary element.

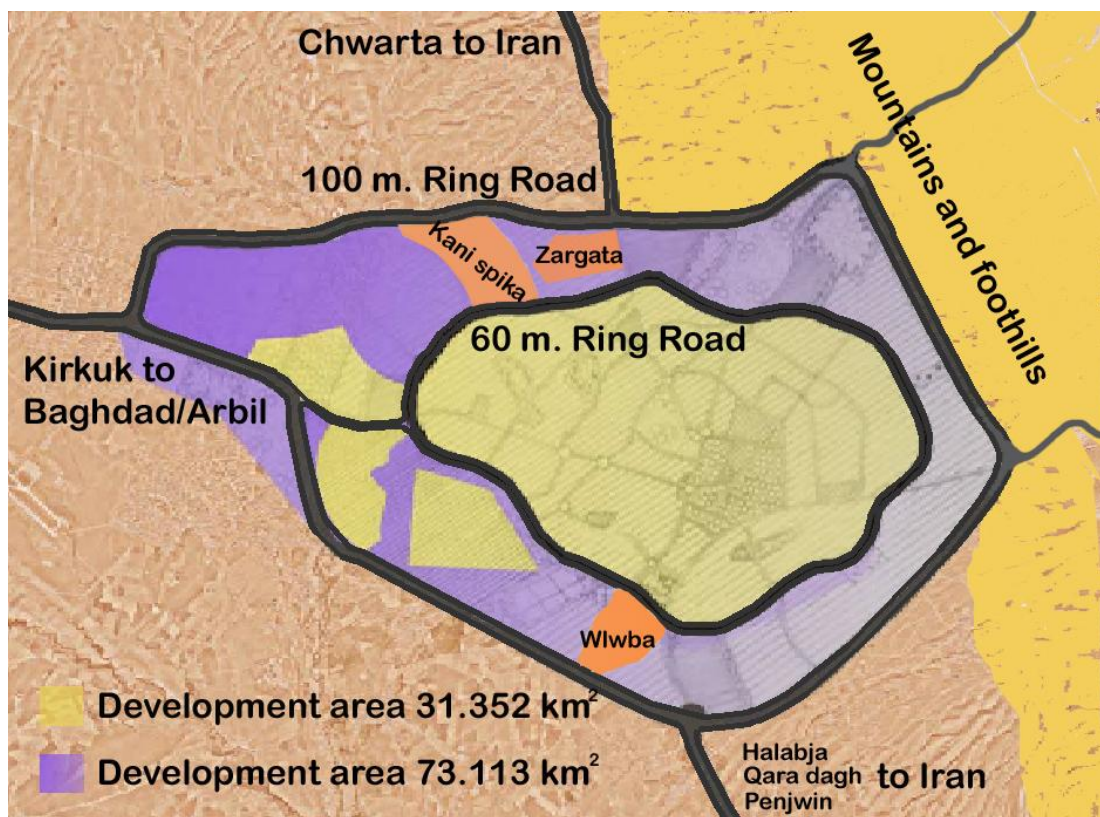


Figure 3.7 The map that defines the 31.352 km<sup>2</sup> and 73.113 km<sup>2</sup> areas. Source: 73.113 km<sup>2</sup> map.

Thus, today, the city is growing circularly with a focus on the expansion towards the north-west direction. However, the directions of the north-west, south and south-east are occupied or partly occupied by designed settlements, the geographical barriers and several cemeteries to the east direction of the city will limit its expansion. The mountains, foothills, and agriculture regions will obstruct the development in the directions of south and south-east. In the south-west, the agriculture areas will limit the city expansion, especially by the new planned highway in that direction. Thus, future urban development will continue towards north-west direction of the city, particularly because of the construction of the new Sulaimaniyah, and American Universities. In spite of this, the 2009 master plan, proposed new CBD in the north-west direction of the city.

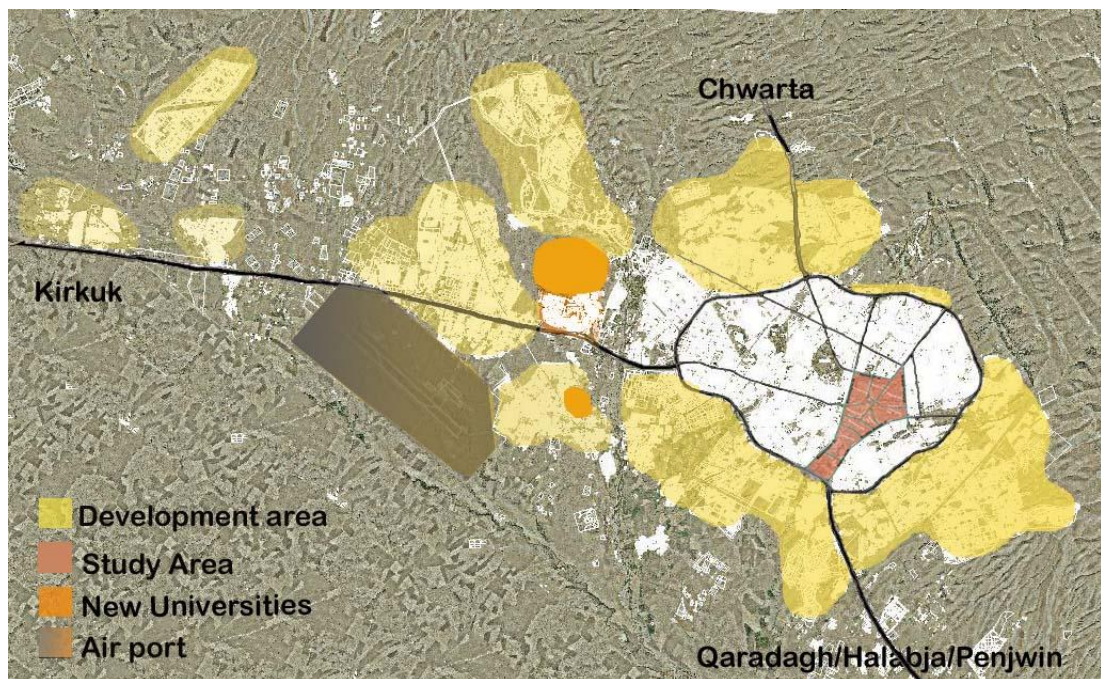


Figure 3.8 Today's macro form development of city. Source: map of the city in 2009.

Thus, with the expansion of the city and its road networks, Ibrahim pasha Road, as part of the boundary of the study area is with this much of the development of the city. It becomes the intersection road of the study area along with the roads of Ibrahim Ahmad, Baban, Mamostayan, and Hamdi.

The macro form analysis defines the old city (study area) in terms of its morphology within Sulaimaniyah city from 1920s until today. Before 1920s, the residential

pattern of the old city was distributed towards trade routes of north, east, and south. The city expansion was affected by these trade roads. After the impacts of modernism in the construction of roads, the city expansion was more affected by the north western direction of the city. From this perspective, the modernity affected the city expansion and then the direction of its expansion.



## CHAPTER 4

### THE STUDY AREA: MORPHOLOGICAL ANALYSIS OF THE OLD CITY



Figure 4.1 The plan of the study area.

#### 4.1 Mezzo Scale Analysis:

The study area is the old city, which shows initial morphology of Sulaimaniyah city. It is surrounded by two intersections. The first intersection is to the east of the city, which is the intersection of Ibrahim Pasha and Ibrahim Ahmad Roads. The second intersection is to the north-west of the city, which is provided by the Mamostayan and Hamdi Roads. Today, the study area consists of eight neighborhoods: Malik Kandi, Sabwnkaran, Kani Askan, Sarshaqam, Jwlakan, Dargazen, Bazrgani and Shexan. They cover 2.19851 km<sup>2</sup>. Generally, the old city (study area) consists of plots, which are served by narrow alleys and cul-de-sacs. Each neighborhood has its own religious institutions and one or two-storey houses. Muslims, Jewish and Christians accommodated themselves in the different directions of the old city. South and east of the study area were accommodated by Jewish and Christians. These neighborhoods were called Jwlakan and Gawran. The neighborhoods were arranged based on the trade routes that led the distribution of the city. Malik Kandi neighborhood is the oldest part of the city, which was supported by the central part (administrative part) of the city and surrounded by the residential neighborhoods. Malik Kandi is located in the north-east of the study area. It is in the intersection of the main roads of Ibrahim Pasha in the east, Sabwnkaran in the south, and Peramerd in the west. According to the historical records, the history of this neighborhood started when, Ibrahim Pasha turned it from the small village to the first neighborhood of the city.

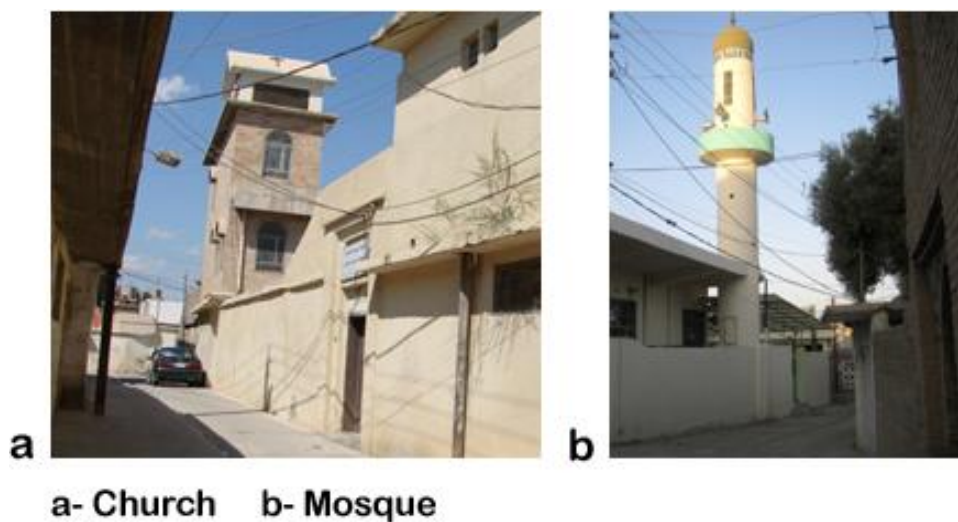


Figure 4.2 The neighborhood has its own religious institution: Church or Mosque.





Figure 4.3 The shape and plan of the study area in 1921 (DOX-QA 78, 1958, P.22)

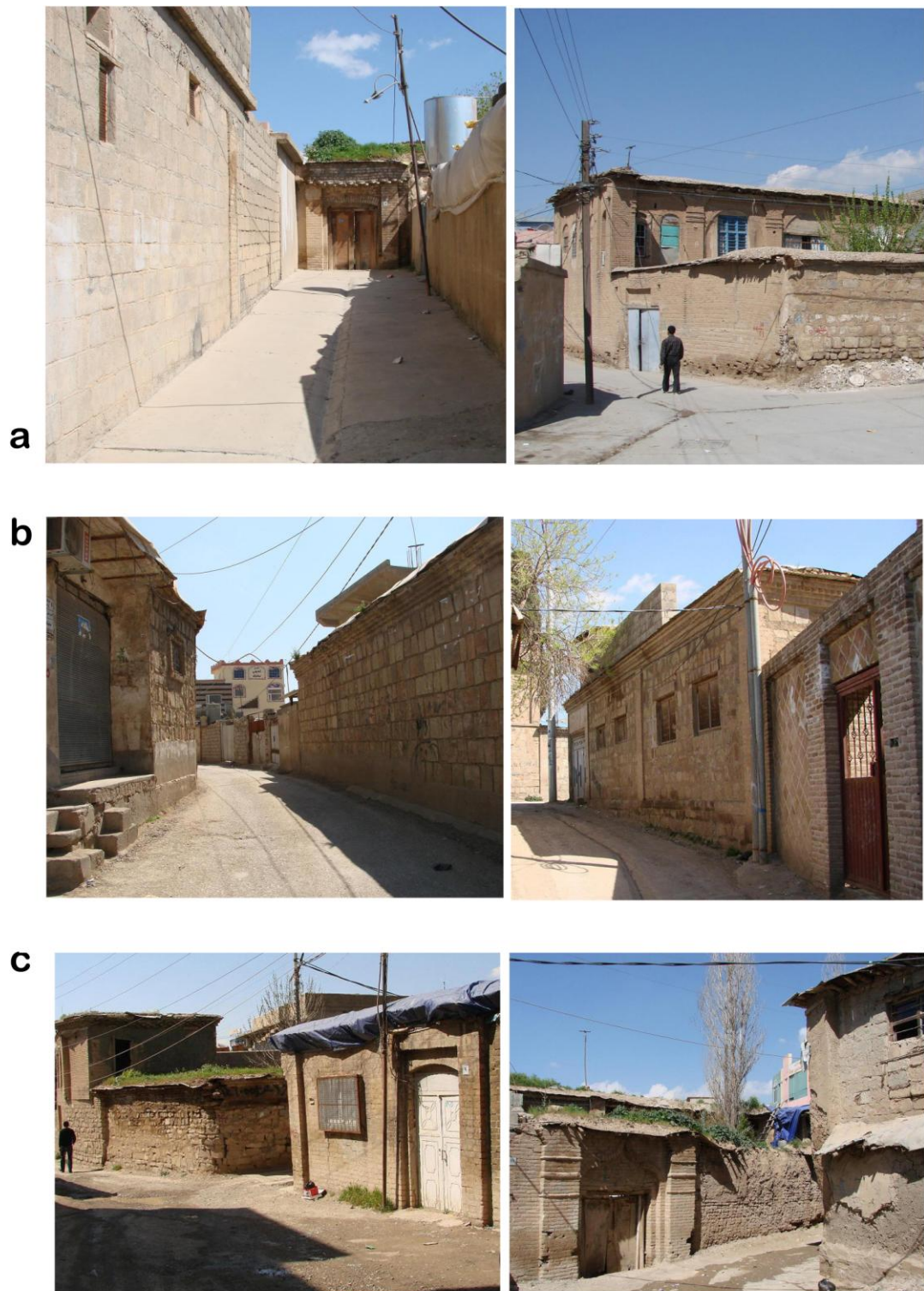
Malik Kandi is deemed to be the oldest neighborhood in the city. This neighborhood is still holding the traditional characteristics of the old city. It has compact organic morphological elements with mixed ownership pattern of religious, residential, commercial and light industrial buildings. Such patterns were applicable for even medical centers and schools. According to the map of city in 1927, the

neighborhoods of Malik Kandi, Shexan and Sabwnkaran were separated by narrow alleys to the north and north-east of the city and defined as a one neighborhood of the city. However, today the neighborhood is mostly turned into the commercial and residential mixed uses, but in 1920s, the structure of the neighborhood shows that it depended on the commercial center in the south of the study area as the main bazaar.



Figure 4.4 Malik Kandi neighborhood in 1927. Source: map of city in 1927.





**a- Cul- de- sac in the neighborhood. b- Narrow roads in the neighborhood. c- Building fabric of the neighborhood.**

Figure 4.5 The urban fabric of Malik Kandi neighborhood.



Both the roads of Goran and Peramerd have the functional characters, which are dominated by the commercial activities. Based on the study of Lynch in the image of the city, in this study, they are considered as the paths for the study area. The road that connects both Goran and Sabwnkaran is a civic space of the traditional city, where people are gathering for social meetings. It is facing the central square, which is called Sara Square. This Square connects all the neighborhoods together. As a consequence, the road has the character of node for the all neighborhoods. Blocks that face the Ibrahim Pasha Street are the edge of the Malik Kandi. They are separating old city from the new districts due to the manifestation of modernism. Thus, Malik Kandi is regarded as a neighborhood of mixed functional uses and the oldest part of the whole traditional city. It is connected to the central part of the city by the paths of Peramerd and Goran Roads.

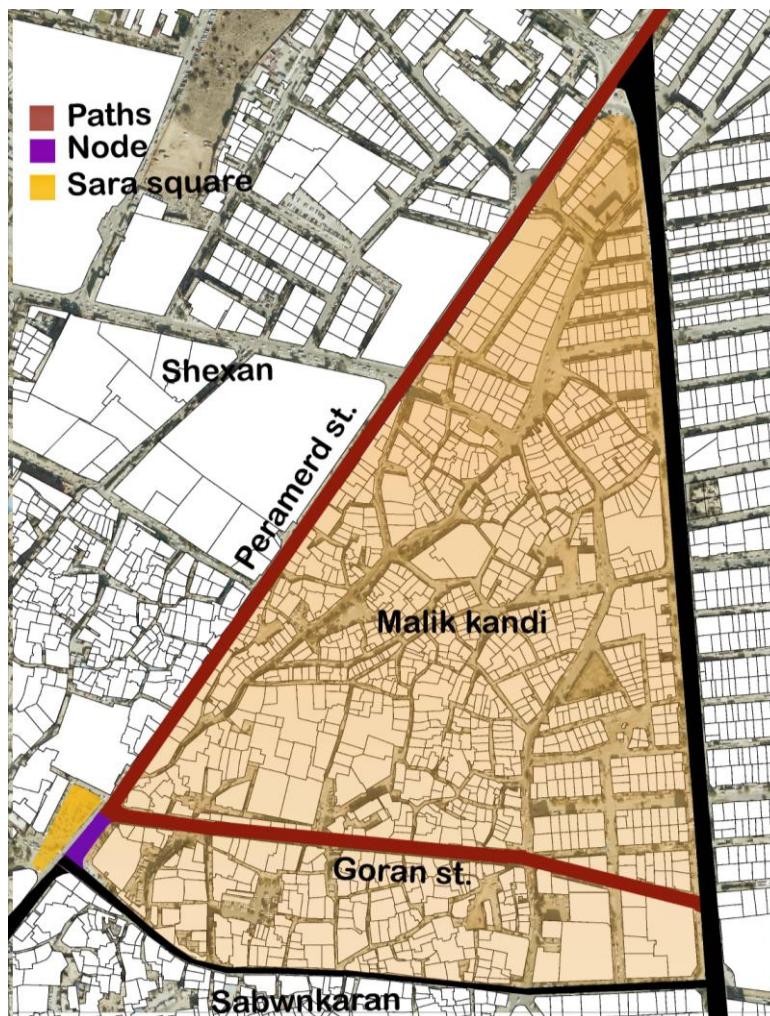


Figure 4.6 The paths and node in the Malik Kandi neighborhood.



Figure 4.7 A view of Goran Road in 2009.



Figure 4.8 A view of Peramerd Road in 2009.



Figure 4.9 A view of Sara Square in 1940s (Historical archive).

The west of the Malik Kandi is called: Shexan neighborhood. It is located to the north part of the old city between Malik Kandi and Kani Askan neighborhoods. It is defined by Hamdi Road in the north, Peramerd Road in the east, and Kak Ahmadi Shex in the west. The blocks in this neighborhood are mostly used for commercial purposes. Kak Ahmadi Shex Road leads this neighborhood to reach the Great Mosque in the south. This mosque is the land mark with the wide square front, commonly is used as a gathering space. The Great Mosque was built with the foundation of the city. It is both functionally and visually dominating the old city. Special characteristics of this neighborhood are defined by the Sara Building, which is located to the east part of the district. It is also the land mark for the old city. The blocks from northern part of the neighborhood with Hamdi Street produce the edge of the neighborhood.



Figure 4.10 A view of Hamdi Road to the north of Shexan neighborhood.





Figure 4.11 A view of Kaka Ahmadi Shex Road, which leads the neighborhood towards the Great Mosque.



Figure 4.12 A view of Sara Building in 1940s. (Historical archive).

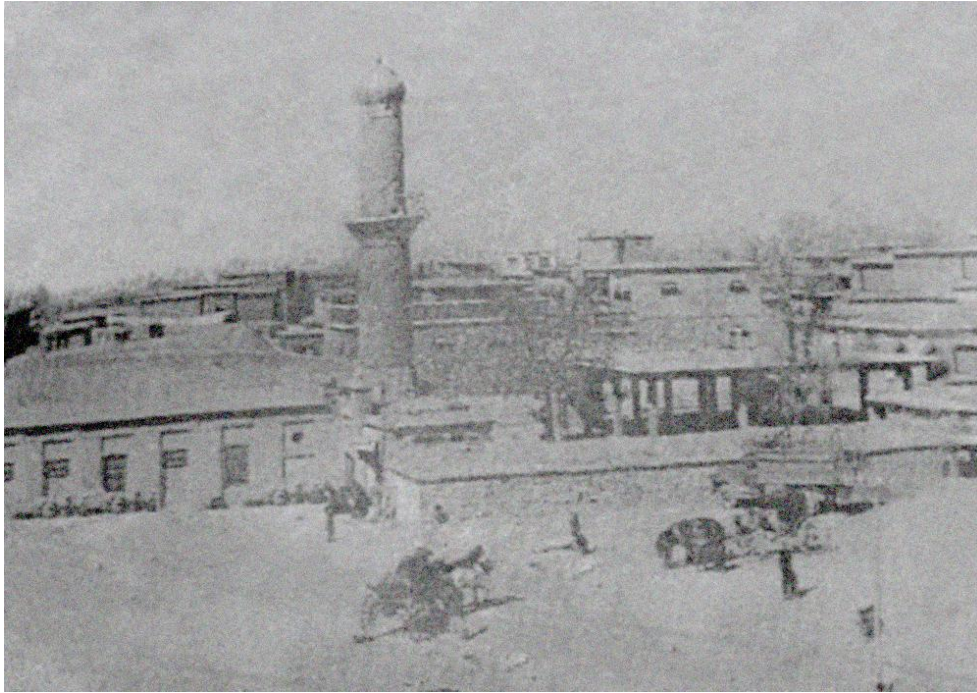


Figure 4.13 A view of Great Mosque in 1958. (Historical archive).



Figure 4.14 A view of Square in front of Great Mosque as a gathering place. (Retrieved January 12, 2010, from <http://www.images.google.com>).

In the past, the south of the Malik Kandi was called Gawran, which is today one of the neighborhoods in the old city and is called Sabwnkaran. It is located in the east part of the study area. In the north part is defined by Sabwnkaran road and the intersection of: Ibrahim Pasha and Ibrahim Ahmad Road. South of the neighborhood



is the intersection of the Ibrahim Ahmad and Nali Road. This neighborhood is separated from the surrounding modern neighborhoods by having blocks in different characteristics as the impacts of modernism and they are the edge of the neighborhood. Sabwnkaran and Nali Roads are paths, which connect the neighborhood to the heart of the city. Catholic Church is located in this neighborhood. In the past and even today, this neighborhood was mostly dominated by Christians.

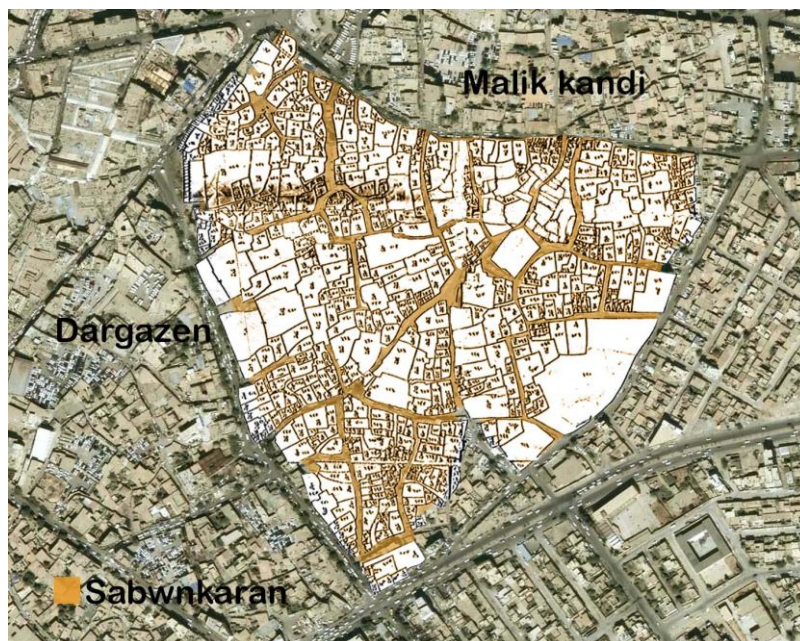


Figure 4.15 Sabwnkaran neighborhood in the 1927.

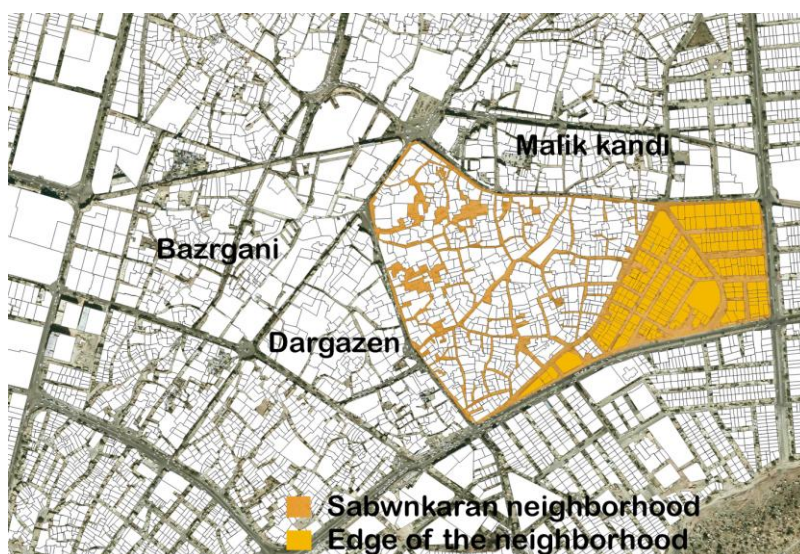


Figure 4.16 Sabwnkaran neighborhood. Source: aerial photograph of 2007.



The north-west of the study area is Kani Askan neighborhood. To the north-west of the neighborhood is the intersection of Hamdi and Mamostayan Roads and to the west is the intersection of Mawlawi and Bekas Roads. The blocks, which are facing Mamostayan Road, are edge of the neighborhood. They are representing clear transformation from the old city to the new city. In the past, this neighborhood was the rest place and it was used by caravans because of its spring water, trees and deers. The British RAF image in 1924 shows that there was a large garden in this neighborhood and it seems that it was the Main Garden of the old city (study area).

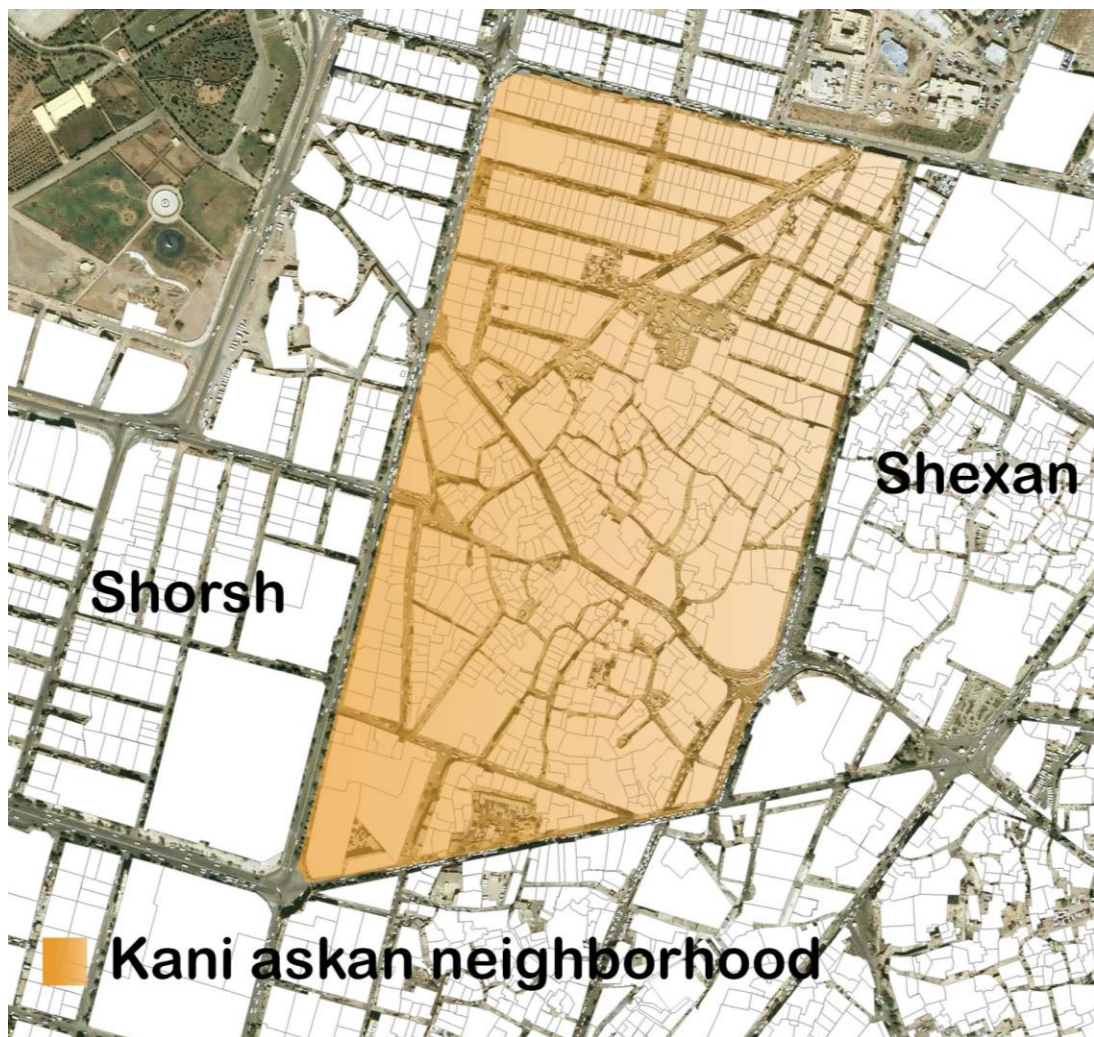


Figure 4.17 The plan of Kani Askan neighborhood.



Figure 4.18 Hamdi Road is separated Kani Askan and Shexan neighborhoods from modern neighborhoods.



Figure 4.19 A view of Mamostayan Road, which is separated Kani Askan from modern neighborhoods.





Figure 4.20 The modern block in the Kani Askan neighborhood.

Towards south of the study area is Dargazen: Residential blocks in the Dargazen neighborhood are separated from the modern blocks by Ibrahim Ahmad Road. In the past, west of Dargazen was the only commercial center for the old city. In this part of the study area several khans were located as the commercial heart of the old city. Due to which it was transformed into a big trading center in modern times.

It is surrounded by Mawlawi Road from the north, Kawa from the east, Mamostayan from the west and Saiwan from the south. Two Roads of Mawlave and Kawa are nodes for the neighborhood with the various functional infrastructures of retail shops, hotels, cafés, flats, services and small workshops. Especially Mawlawi Road is the connection road between new and old districts. It has the beginning symbol as the characteristics of the gate of the old and new city. Today, Kawa Road is separating Bazrgani and Dargazen as a two neighborhoods in the old city.

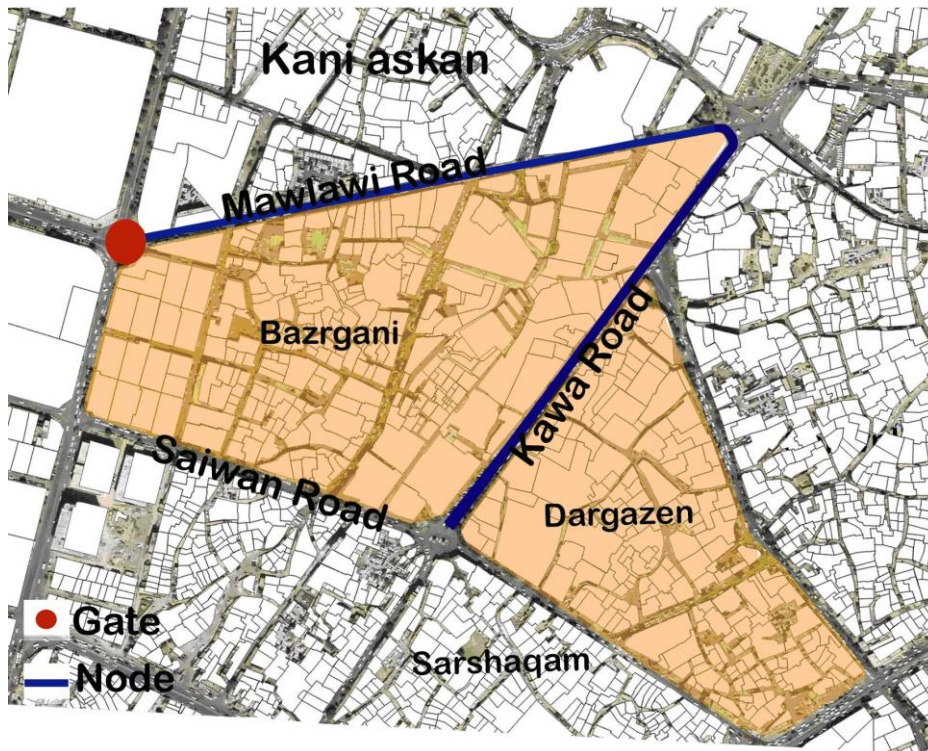


Figure 4.21 Plan of Dargazen and Bazrgani neighborhood.



Figure 4.22 The gate between old and new city (Author, 2009).



RAF image shows that in 1920s, Dargazen, Sabwnkaran and Malik Kandi were separated from each other by narrow alleys. In spite of their separation, they were connected by continuous alleys. From this perspective, the old fabric shows that, the availability of some principles to organize the residential houses in the past in terms of neighborhoods is possible. According to this speculation, each residential group of houses was separated and connected with each other.

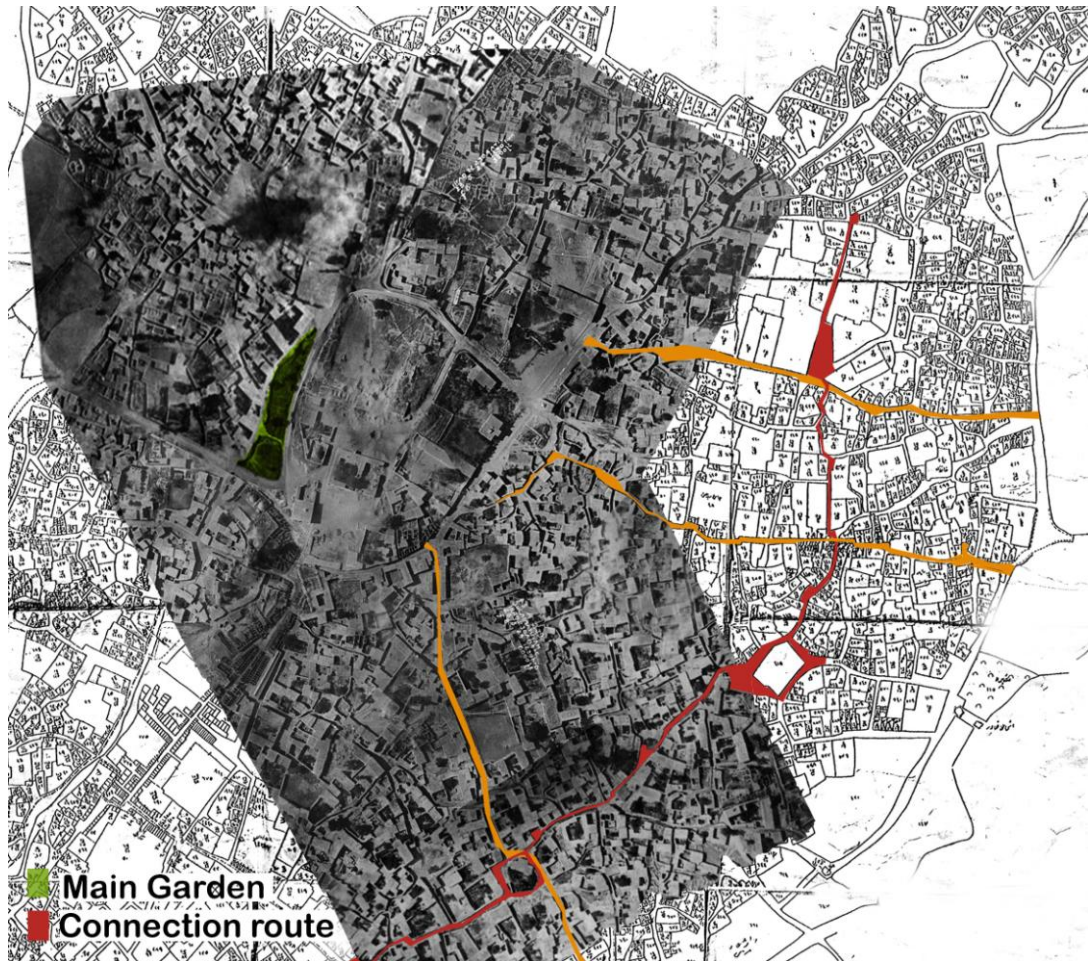


Figure 4.23 The Connection of three neighborhoods: Dargazen, Sabwnkaran, and Malik Kandi in 1920s. Source: map of city in 1927 and British RAF image in 1924.



Figure 4.24 A view of Mawlawi Road in 2009.



Figure 4.25 A view of Bazrgani neighborhood.

South part of Dargazen was called Sarshaqam, which is today one of the old city's neighborhood. This neighborhood is located in the south-west of the study area. To the north is the intersection of Mamostayan and Saiwan roads. Haji mala Ali Road divided this neighborhood for two parts: east and west. Traditional characteristics can only be seen in the heart of the each part. Residential houses are located in the center of each part, and surrounded by commercial buildings. All of the attached



modern blocks separated this neighborhood from the surrounding neighborhoods. To the north-west, six modern blocks attached to the neighborhood, they separate it from the modern neighborhoods. In the past, this neighborhood was the Caravan's way between Qara Chwalan (the previous center of Baban's dynasty), and Baghdad. Sarshaqam neighborhood is described by Salhi Rasha, as the way of caravans to Baghdad (Rasha, 1987). This means that Bazrgani neighborhood developed as the central commercial part between administrative center and the way of caravans.



Figure 4.26 The modern blocks in Sarshaqam neighborhood (Edge of the neighborhood).

In 2006, Municipality prepared land use for this neighborhood. According to the survey, besides the commercial, medical, schools, and mixed use buildings, there are residential, religious, and administration buildings.

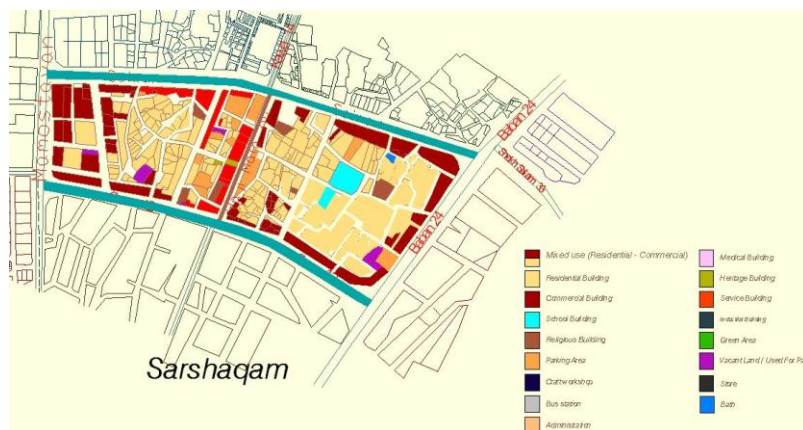


Figure 4.27 The survey of Sarshaqam neighborhood in 2006. (Municipality, 2006).

Currently, the neighborhood is mainly composed of residential houses. Commercial buildings, which faced the Mamostayan, Baban, and Saiwan roads, surrounded this neighborhood. They are mostly mixed use buildings with two or three storey. The religious institutions are located in the middle of the neighborhood, 5 mosques are located in this neighborhood, and in addition, there are administrations, medicals, services, and light industrial buildings.

Finally, Jwlakan neighborhood covers the south-west of the study area. From north is defined by the intersection of Sivar Road and Mamostayan Road. In the past, Jewish families lived in this neighborhood from the creation of the city until 1940s, and then, it was called Jwlakan Neighborhood by people. Observation from the neighborhood shows that the houses composed of small spaces with low entrances, which give the distinctive characteristics to the neighborhood. The neighborhood faced modernism, in the east part was surrounded by modern residential houses. In addition, its residential houses are mostly replaced by the modern building types.

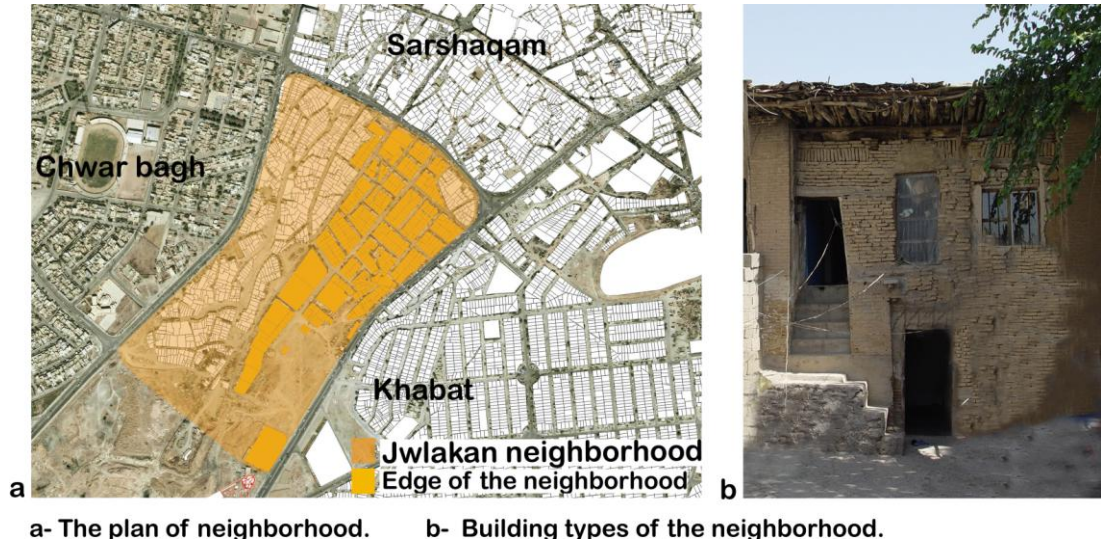


Figure 4.28 The plan of Jwlakan neighborhood.

Thus, these neighborhoods all together are the oldest neighborhoods in the recent city. Based on the survey which, is carried out in 2006 by Sulaimaniyah municipality, the Master Plan Team, and the Ministry of Culture (Museum of

Sulaimaniyah) defined that: there are 74 buildings under the heritage order in these neighborhoods. 5 of them are in the Bazrgani district, 10 in Dargazen, 5 in Jwlakan, 6 in Kani Askan, 9 in Malik Kandi, 24 in Sabunkaran, 14 in Sarshaqam, and 3 in Shekhan.

## **4. 2 City in Different Administrative Periods:**

### **4. 2. 1 Dynasty of Baban (1784-1850):**

The rule of this dynasty in Sulaimaiyah city, started from the date of the city's establishment. Baban's ruler, Ibrahim Pasha, was the founder of this particular city. Based on historical documentation, the original center of the dynasty was Sheher Bazar (a small village of the district of Qalat Chwalan in the mountainous region of Chwarta). Ibrahim Pasha moved his headquarters in 1784 to the plain region of a village called Malik Kandi. Consequently, it became the center of his dynasty. Based on political, economic, social and management factors, that place is better location than his previous mountainous region Qalat Chwalan.

Afterwards, administration buildings, the market, mosques, baths, khans, were erected, and surrounded by traditional residential houses. According to Kareim Zandw Dashte, Palace was built as a Koshk for Ibrahim Pasha, and he started to construct houses around the Koshk for his members of dynasty (Kareim Zandw Dashte, 2000, p.12).

Thus, at the beginning, the city grew with the principles of Ibrahim Pasha. His principles established compact organic form and irregular blocks. Narrow alleys and cul-de-sacs were formed this particular city. The city had 5 mosques, one Catholic Church, 6 khans: Karwan Sara, and 5 baths (Rasha, 1987). In that period, the structure of buildings mostly depends on the Iranian craftsmen. According to Rasha (1987), they were brought to decorate and build houses.

In his book, Akrami Salhi Rasha, mentioned that initially the number of people did not exceed 1000 people. In 1820, Mr. Hart defined the population of Sulaimaniyah, as 10000 people. In the same year, Mr. Rich, described the city, as having 2144 houses. 2033 households were Muslims, 144 of them were other religions. Among the other 144 households, 130 were Jews, 9 were Kldani, and 5 were Armenians (Rasha, 1987).

#### **4. 2. 2 Ottoman Empire (1850- 1918):**

During sixteenth and seventeenth centuries, Sulaimaniyah was part of the Mosul Villey, which was one of the three provinces ruled by the Ottoman Empire: Mosul, Baghdad and Basra. The three provinces were under the direct rule of Istanbul, opening them up to successive reforms in landholding, administration, conscription, law and public education. These reforms were implemented at a different rate (Tripp, 2000, P.8).

In his book, Rasha mentioned that, in the city for the first time schools were opened in the period of the Ottoman Empire. Rustiye School, which was built in 1892, played an important role in the purpose of education. He states that this school was only opened in the Sulaimaniyah and Baghdad city. After 3 years of education in the Rustiye School, students could attend the Idadi Askari in the Baghdad, and Harbi School in Istanbul. (Rasha, 1987, p.445).

In the period of Midhat Pasha, as a governor in the 1869, he implemented both Villey (Vilayeti) Law: 1864, and Land Law: 1858. In the period of Ottoman Empire the provinces of Mosul, Baghdad, and Basra were called Villey. The Villey law mapped out the territorial boundaries of the three provinces (Tripp, 2000). He established a new structure of administration from provincial down to village level intending to bring the central administration to the provinces. One of the fundamental principals of the land reform was Tapu: Sanad to any one who was in possession or occupation of land (Tripp, 2000). During the rule of Ottoman Empire, four official yearbooks were published, in the Mosul yearbook (1907, as cited in Sulaimaniyah yearbook, 1998) showed that: Mosul Villey consisted of four Sanjahi: Mosul, Kirkuk,



Sulaimaniyah, and Hawler Sinjazi Sulaimaniyah Sinjazi consisted of 5 towns and 9 townships.

According to Abdulxalid Sabir (2003), in 1890, the authorities of Istanbul established municipal council in Sulaimaniyah. They called it (Haiati Mashiwryat), which included several small districts. They selected Ali bag Mohamad Bagi Xalid Bagi Baban to become the head of the municipality. Municipality towards 1912, started to regulate the city by implementing some projects such as waste water project and sub base of roads in several districts. However, in this period municipality could not supply the peoples demand, because of the shortage of financial sources. In spite of this, the development of city was extended and new districts such as Sarkarez appeared. Sulaimaniyah city is described in the 'Mosul Vilayeti:Resmi Salnamesidir H.1330 (1912, as cited in Eroglu, Babucoglu, Ozdil, 2005) showed that: in the H.1330, there were 36 mosques,7 Tekke (Dervish lodge),2 Madrasah, 2 Rustiye School, 5 secondary schools, 1 synagogue, 21 fountain and kiosks(built for the dispensing of free drinking water),1 administrative office (Hükümet Konagi),1 Barracks, 1 Redif Deposu, 1 hospital, 1 telegraph office, 2,982 houses, 13 khans, 1.155 shops, 25 cafés, 15 çayhane, 6 bakeries, 11 Tenvir, 10 bathes, 10 Debbaghane, 34 Mill, 24 gardens. Towards 1914, Ottoman Empire involved in WWI. Difficult situations affected people. In that period of the war, many people died because of hunger and diseases such as cholera. After the end of WWI in 1918, The British started to rule the city.

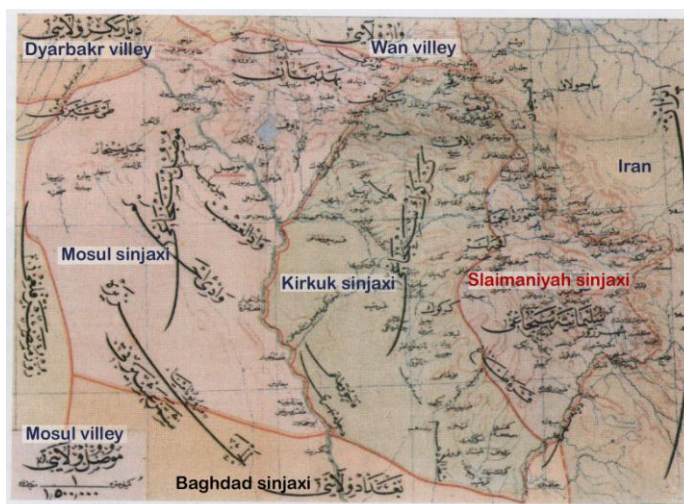


Figure 4.29 The plan of Mosul Villey (Mahir Nakip, 2007, p.24).

### **4.2.3 British Rule (1918-1932):**

British rule started from 1914, in the two Ottoman provinces: Basra and Baghdad. Towards 1918, they expanded with the addition of Mosul. The British rule in Sulaimaniyah was started by indirect rule plan. In December 1918, Sheikh Mahmud Barzinji (tribal leader in Sulaimaniyah) was selected as a governor, and as a part of the plan for indirect rule (Tripp, 2000, p.33). In this period, different administration rules affected the evolution of the city. For instance, in 1919, in Sulaimaniyah, city was dominated by Sheikhs and dominant rich families.

After the formation of the Iraqi state in 1920 by the British, the government was formed. The Ottoman administrative units were restored in all provinces, as were the municipal councils. Iraqi officials began to replace British political officers. They were assisted in each case by a British adviser except Sulaimaniyah' (Tripp, 2000, p.44).

According to Liora (1995), in December 1922, the possibility of installing a government in Sulaimaniyah instead of previous administration was made by British. This decision was a result of the reaction of rebelling and getting support from Turkey by the Sulaimaniyah people. As a result of political problems, the city was bombed by British RAF (British Royal Air Force) temporarily. Consequently, in July, 1924, British and Iraqi troops relinquished control of the administration to the High Commissioner.

From 1920 to 1921, as a reaction of modernism, Sulaimaniyah municipality implemented the construction of roads, and covering sewage systems. Dam project for winter's flood was built near the recent neighborhood of Twi Malik until the end of Grdi Saiwan, but today it is one of the streets of city. The abnormal political condition of 1917-1924, caused damages and the evacuation of the city several times. As a result, its population by November, 1924, dropped to only 20000 people. Consequently, at the beginning of the 1924, Sulaimaniyah was officially connected to the Iraqi government under the British.

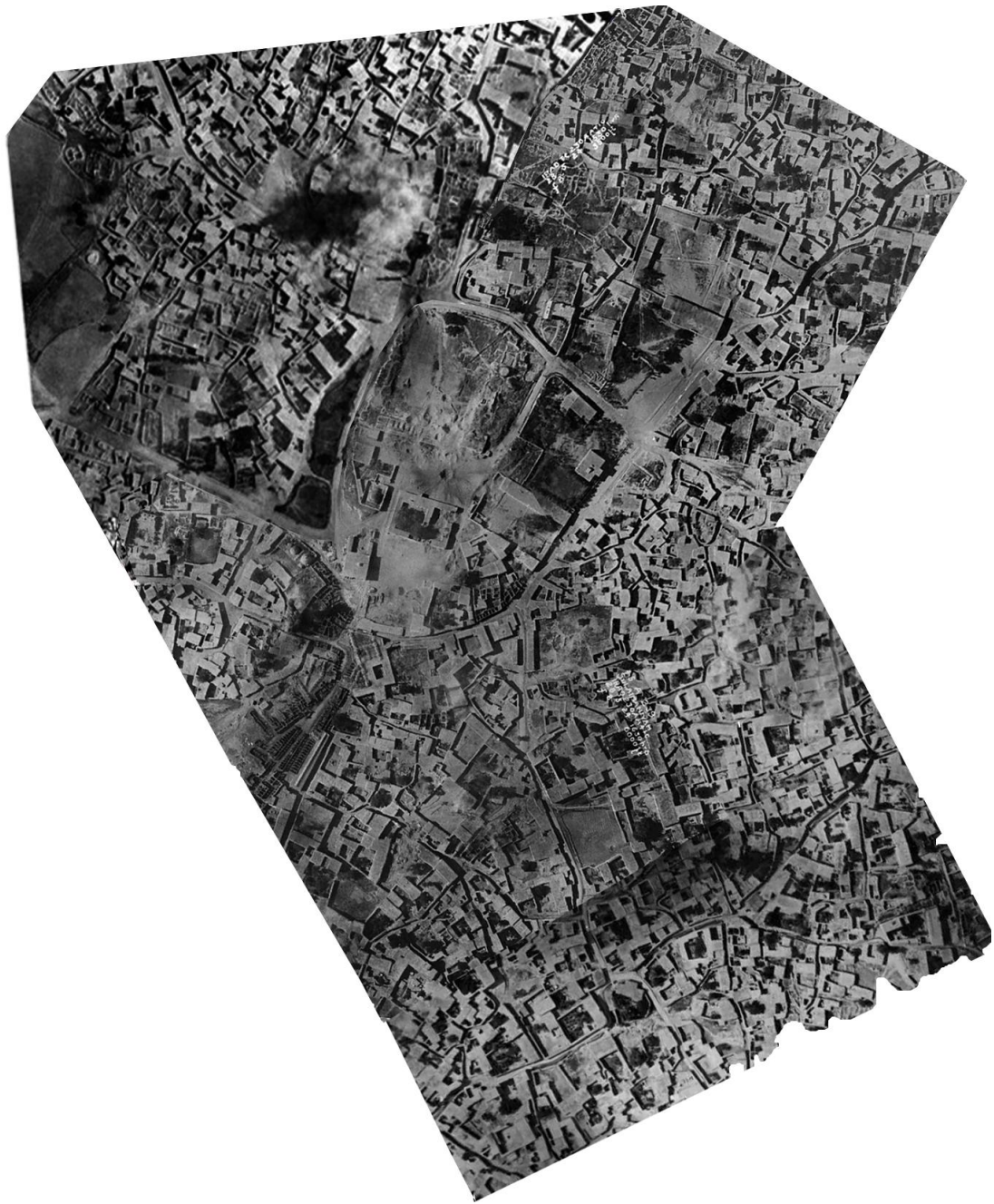


Figure 4.30 Sulaimaniyah in 1924, British RAF image. (Devitt P., personnel communication, November 26, 2009).

Towards 1925, after the opening Sabwnkaran road, the city was arranged in terms of neighborhoods, Municipality divided the city into 7 districts: Goizha, Malik Kandi, Kani Askan, Dargazen, Chwarbax, Jwlakan, Sarshaqam, and preparing map for the city in 1927. According to the map, Malik Kandi neighborhood except itself consisted of Sabwnkaran and Shexan, which they are two different neighborhoods in the today's map.



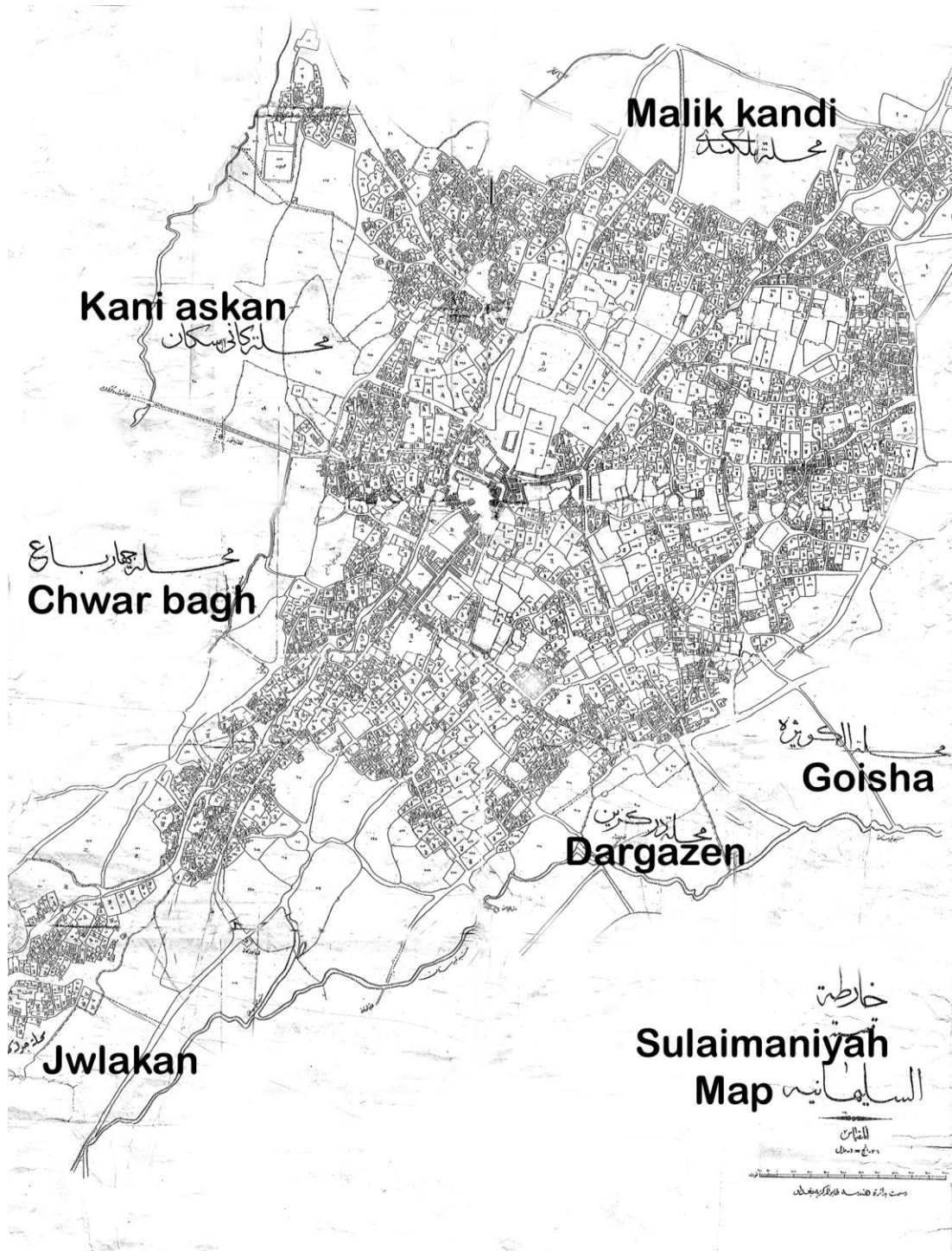


Figure 4.31 Sulaimaniyah map in 1927. Retrieved July 4, 2009, from municipality: Master plan department.

#### 4.2.4 Iraqi rule since 1932.

In the period of Iraqi rule, after attaching the Mosul province to the Iraqi state, kingdom of Iraq was established. From 1925, administration of Sulaimaniyah was called Sulaimaniyah Liwa. In that period, several roads were built by the municipality. New neighborhood of Kareza Wshk was planned. As a reaction of immigration from villages around the city, Wlwba and Qalawa became neighborhoods of the city. Towards 1950s, new settlements were planned. Grids and straight road networks were introduced, especially with the affection of master plan of the city in 1958. From that period on, two distinctive structures were appeared. The first structure, and the bigger one, was the old town. The second one was the new settlements. In that period, the city developed towards the west direction. Consequently, central area of the old city was served by a trapezoid ring road. All other main roads were radiated from it, and then, in all directions, residential areas surrounded the central core.

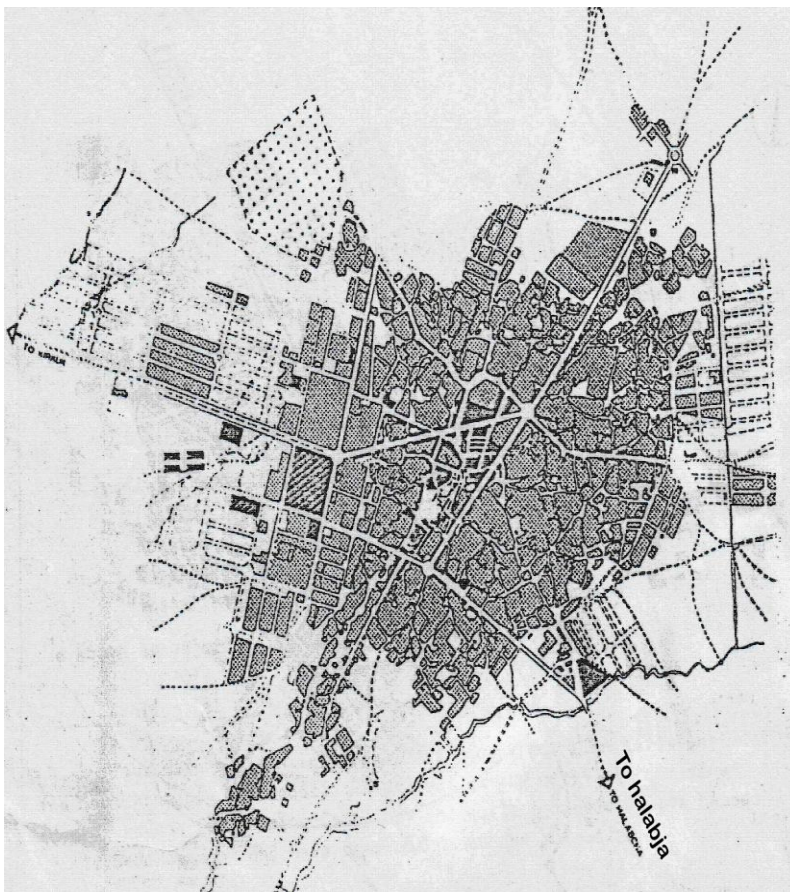


Figure 4.32 The plan of Sulaimaniyah in 1958. (DOX-QA 78, 1958, P.22).



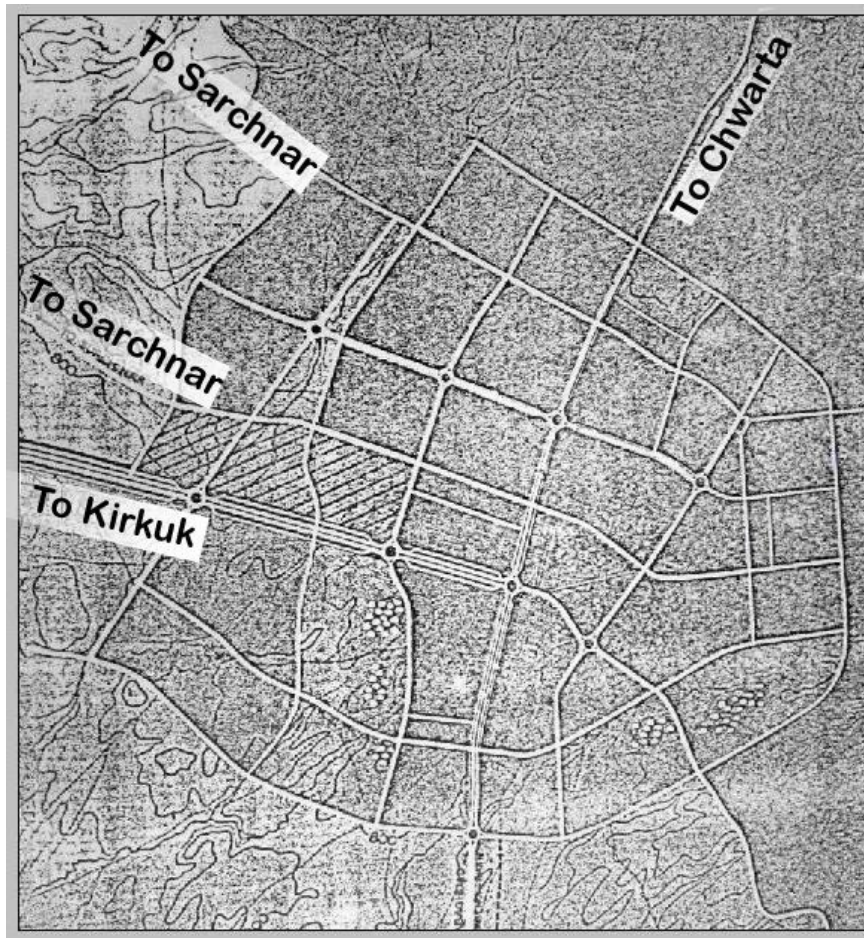


Figure 4.33 New proposed modern settlements around the old city. Sulaimaniyah master plan in 1958. (DOX-QA 78, 1958, P.22).

From 2003, after the Second Gulf War, since 1991 until today, Sulaimaniyah became part of the three integrated provinces Dhoke, Arbil and Sulaimanyah. In that period, new districts were established surrounding the city. Towards north-west, the settlements of Bakrajo, Raparin and Tasluja, were expanded. In addition, the building of new Sulaimaniyah University, American University and International Airport, are affected on the development of the city. From 2006, new master plan by IGCO is in the process to develop the city. The master plan is expected to introduce sustainable city and the development of transportation in addition of the light railway system (LRT) and new CBD around the old city. The demonstration of its implementation will introduce the distinctive morphology to the today's morphology. Furthermore, the new investment planning projects of housing are planned in the surrounding the city. High rise housing, in the new development districts, has been introduced to the



existing urban fabric, besides that, they are distinctive in terms of the ownership pattern of plots and building types.



Figure 4.34 The new investment projects in the surrounding of Sulaimaniyah city. (Author, 2009).

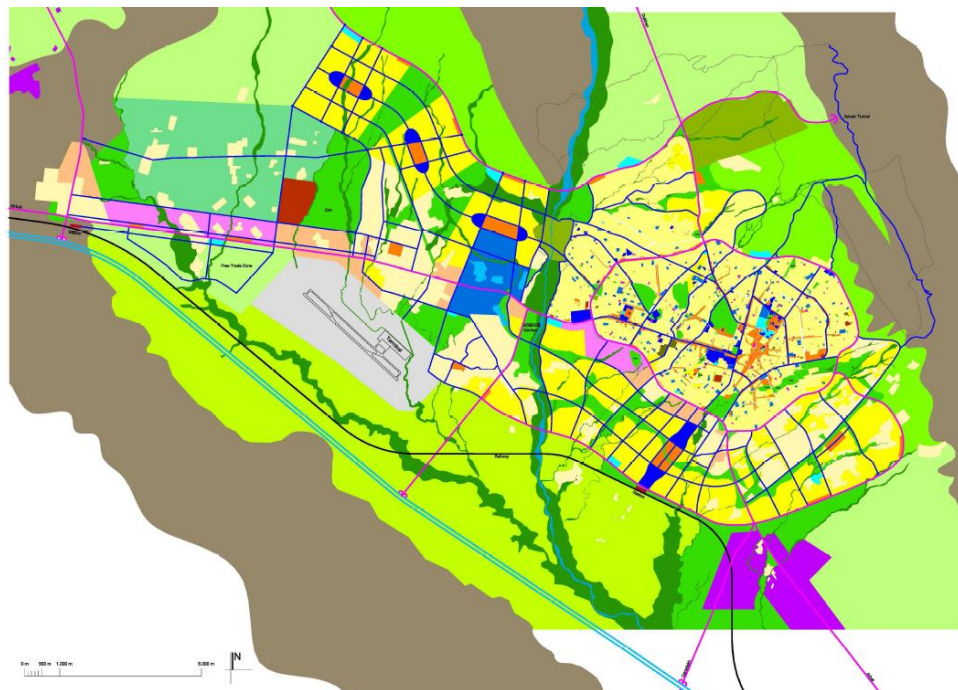


Figure 4.35 The master plan of Sulaimaniyah city. (IGCO, March 2009) Retrieved July 4, 2009 from Sulaimaniyah Municipality: Master plan Department.

### 4.3 Morphological Analysis of the Study Area from the Maps:

The map of the city in 1921 and the RAF (Royal Air Force) image in 1924, illustrate a three dimensional perspective of the city in that period. They show the original morphology of the city. The morphology of the city consisted of the large ownership parcels, which occupied the central part of the city as the authority's ownership. The central part of the city was connected to the commercial center, and then, it was surrounded by traditional residential houses.

The city was connected to the trade centers of surrounding cities by trade routes. These routes were formed by narrow alleys and defined distinctive neighborhoods in the city. The ethnic groups settled in the different neighborhoods of the city in terms of the location of these neighborhoods. The south location of the city was occupied by Jews, east by Christians, and the rest of the city, by Muslims. In addition, rich families or members of the authority occupied large ownership residential parcels, which surrounded central part of the city.

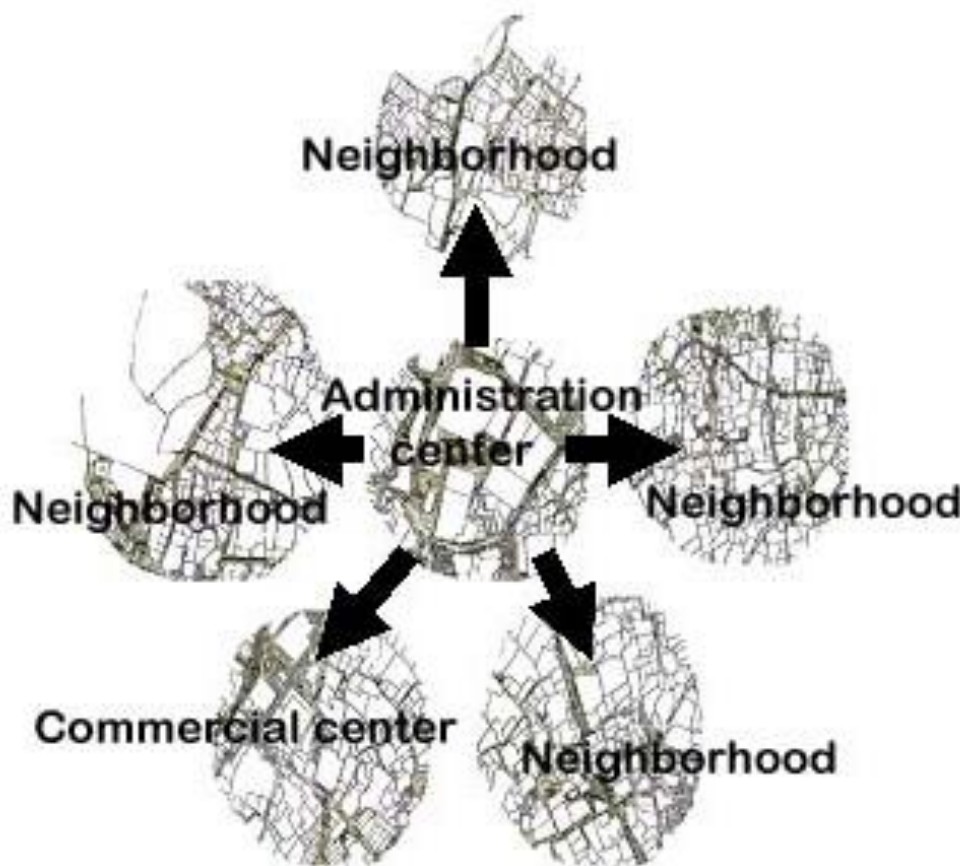


Figure 4.36 The diagrammatic evolution of the city.

In the commercial center of the city, small parcels were occupied by commercial activities. Thus, central part of the city was accommodated by the large ownership parcels of the public administrations. Sara Building in the central part is witnessing that fact. Furthermore, the map of the city in 1927 shows that the residential patterns were distributed based on the routes that led the trade ways. From this perspective, several neighborhoods were distributed according to the direction of the trade routes. The neighborhoods were represented by the religious plots like mosques or churches. The commercial center extended towards the south to respond to the city's attraction towards the nearest trade route to Baghdad.

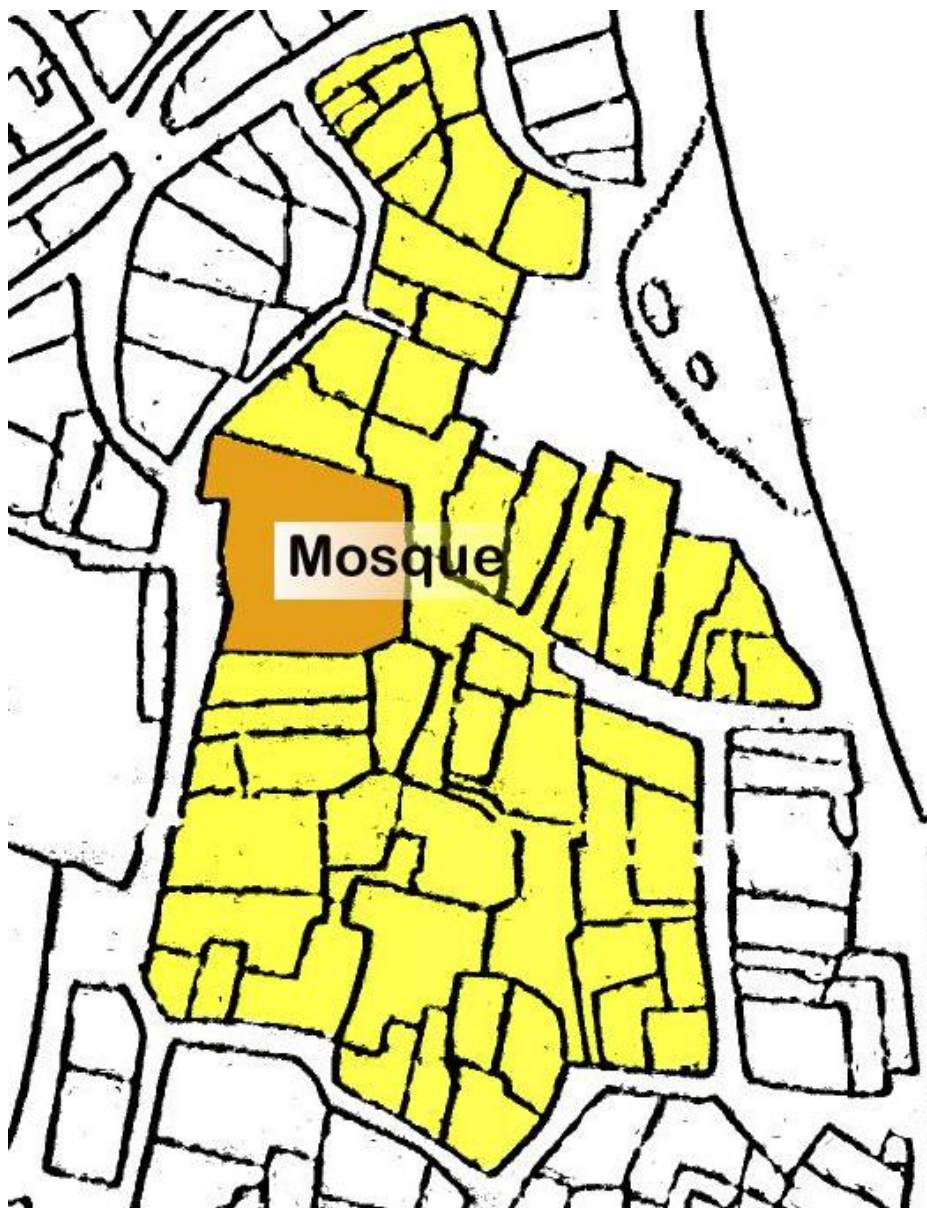


Figure 4.37 The structure of a neighborhood represented by religious plot.

In the early 1930s, the city was introduced to the new regulation as a new way of thinking in terms of modernism. Traditional city faced transformations: several paths were widened to facilitate vehicular transportation. As per history, the development of transportation occurred in different stages.

Originally, transportation depended on the carriage stage within organic routes, and it was based on human scale. The motor vehicles were introduced to the city after the World War I, when the city was ruled by the British. From that period on, expansion of the roads started according to the needs of traffic. Consequently, carriages were replaced by motor vehicles. In addition, the construction of vehicular roads affected the ownership patterns in the old city. The property was changed in terms of blocks and parcels. For instance, the building of roads by the state inside the old city played an effective role to reshape the ownership of blocks and parcels.

Between the years 1920-1921, Sabwnkaran Road was created by widening narrow paths from Sabwnkaran to the Kani Askan neighborhood. Creating the road of Sabwnkaran was the introduction of modernism to the old city. Sabwnkaran Road started from east of the city to the north-west of the city and connected east to the west of the city. In that period, the building of Sabwnkaran Road as the first road in the old city is due to the location of the main activities in the north-west and central part of the old city, and their needs for a street system. For instance, the Great Mosque to the north-west of the city was considered as a facility that was used as a daily activity. Besides that, the administrative buildings such as Sara Building were located in the north-east of the city.



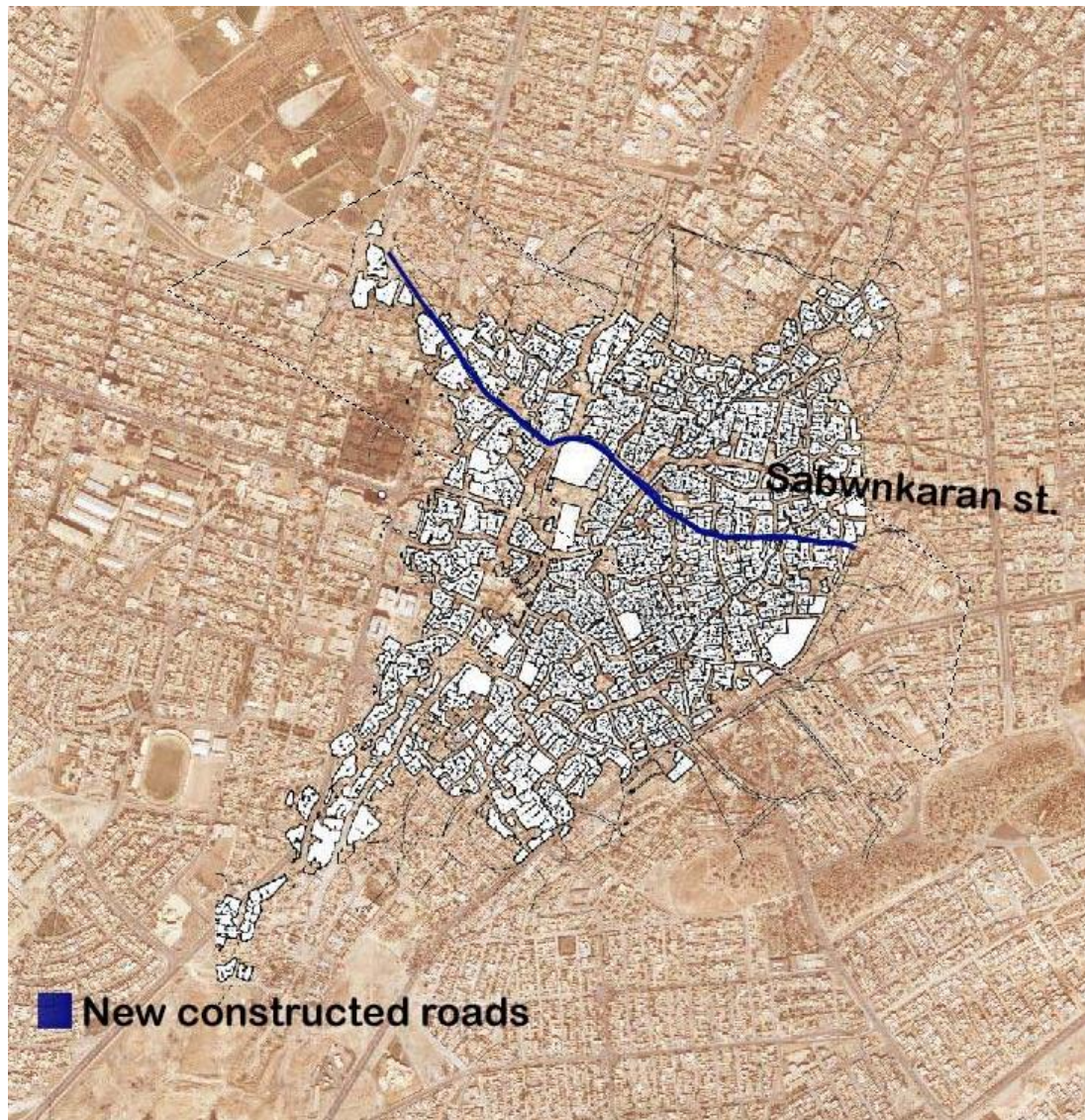


Figure 4.38 The morphological evolution of city in the 1920s. Source: map of the city in 1921.

Gradually, in 1930s, the municipality built Mawlawi and Kawa Roads. Consequently, ownership parcels were redistributed, for instance, with the building of Mawlawi Road, 34 ownership parcels were demolished by the power of the state. Besides that, 19 ownership parcels in Kawa Road were demolished as well. Thus, narrow paths were transformed into the straight roads, which carried the main street system in the recent years.



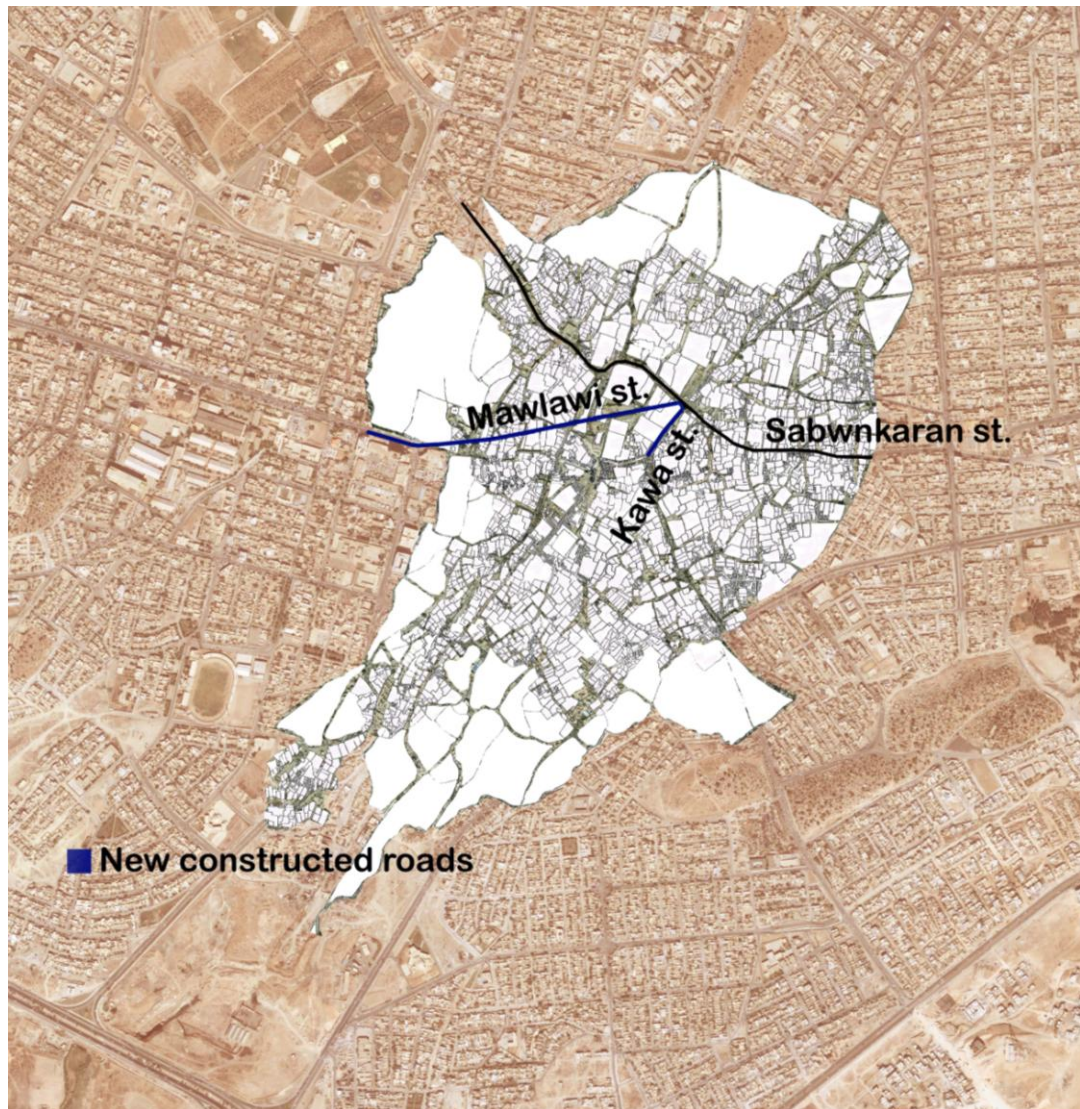


Figure 4.39 The morphological evolution of city in 1930s. Source: map of the city in 1927.

Based on the aerial photograph of the city in 1944, the road network was expanded by the building of Peramerd Road. With the construction of the Peramerd, Mawlawi and Kawa Roads, morphology of the central block was transformed by its subdivision of ownership parcels into the smaller blocks and parcels. Furthermore, in the same period, the new road intersecting both Mawlawi and Mamostayan roads was created. The modern blocks were attached to the old city. The intrusion of the modern blocks in the south-east of the Jwlakan neighborhood is the example of these blocks. This is also observed in the Kani Askan neighborhood with the construction of modern residential block. This block consists of 10 parcels, and is occupied by residential and public ownerships with the characteristics of large ownership parcels.



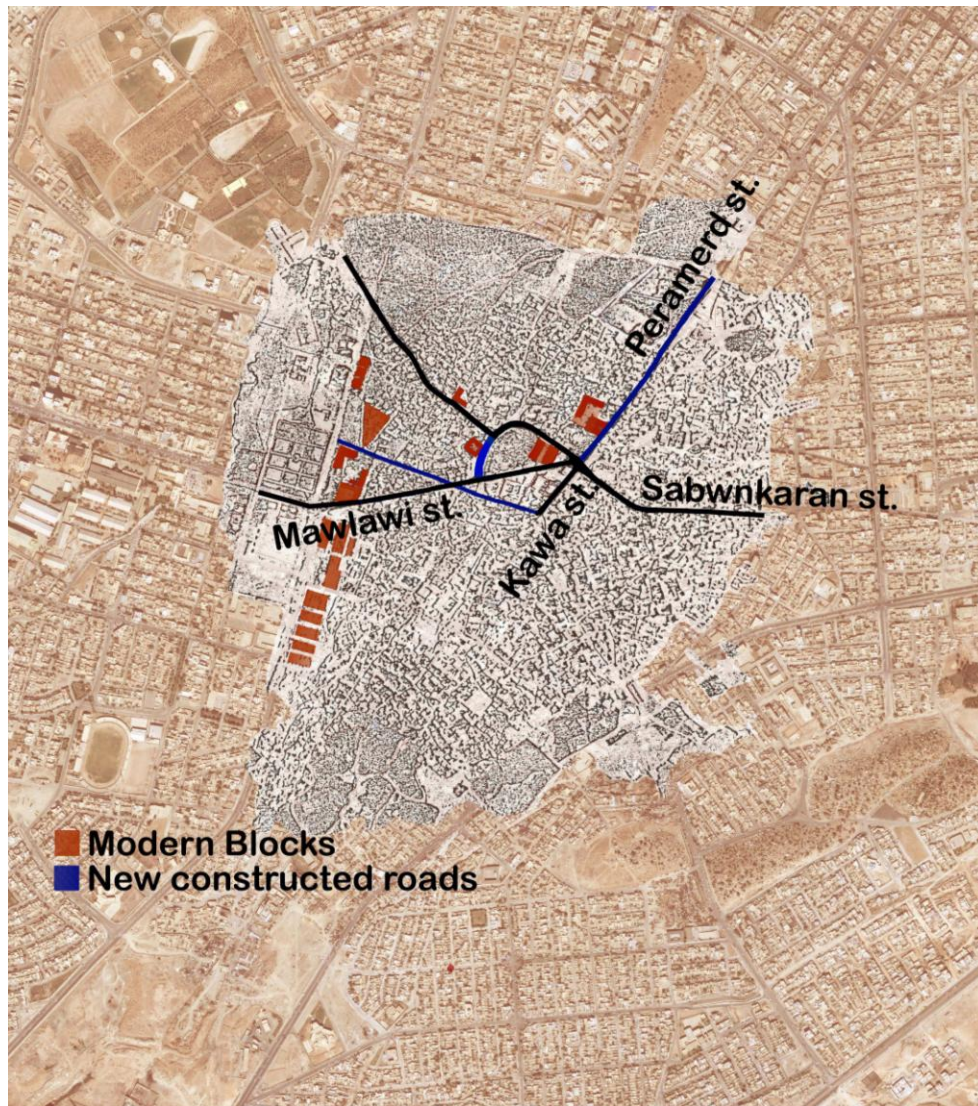


Figure 4.40 The morphological evolution of the city in 1940s. Source: aerial photograph of the city in 1944.

Towards 1950s, Kawa Road was constructed to be a continuous road going towards the south neighborhoods of the old city. Furthermore, several narrow paths were widened, for example the road, which is parallel to Haji Mala Ali Road was widened in that period. In the north-east of Kani Askan, Malik Kandi and Sabwnkaran neighborhoods, new modern blocks were planned and attached to the old city. In 1954, municipality built Ashabaspi: Nali Street. According to Sabir, it was necessary to include part of several ownership parcels into the street. However, people were unhappy with this decision, which was made by municipality, but Ashapaspi Street divided Sabwnkaran neighborhood into two neighborhoods: Sabwnkaran and Dargazen (Sabir, 2005, p.64).



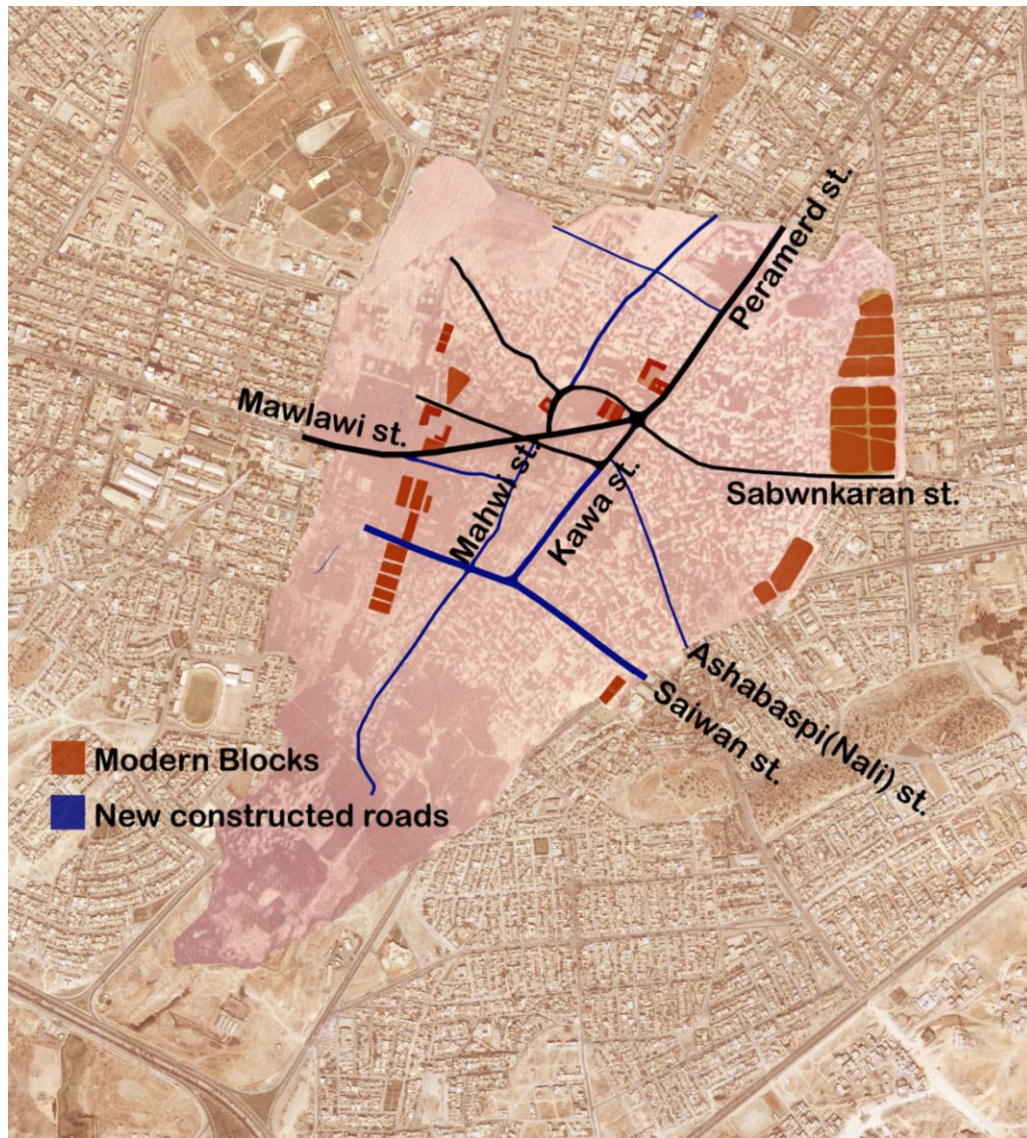


Figure 4.41 The morphological evolution of the city in 1950s. Source: aerial photograph of the city in 1952.

In the 1960s, the street network was further widened by the building of Haji Mala Ali and Goran Streets. Furthermore, Kak Ahmadi Shex Street was built. It ran from the center to the north-eastern part of the old city, parallel to the Mamostayan Street, and connected the northern neighborhood (Iskan houses) to the old city. The building of this street, divided the north-western part of the old city into two parts: Shexan and Kani Askan.



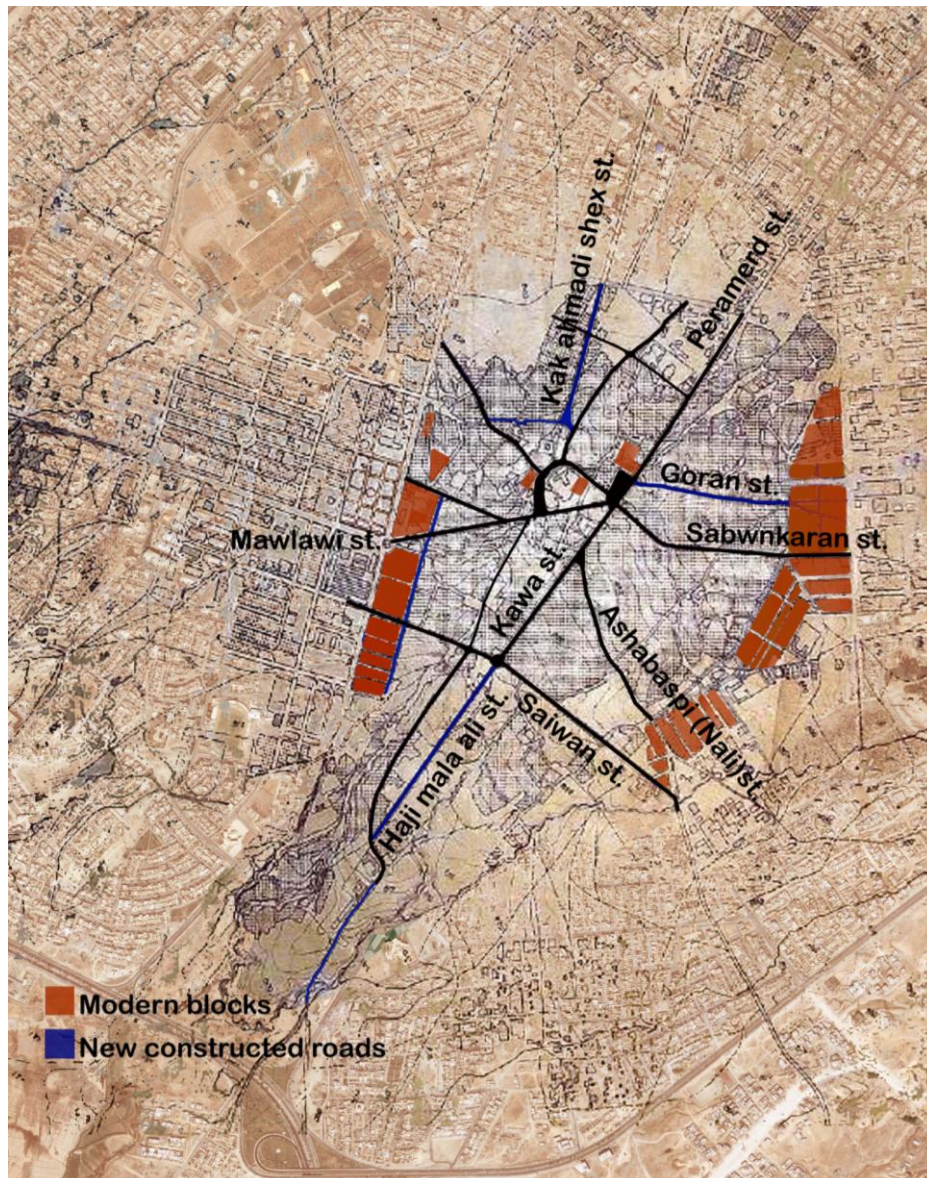


Figure 4.42 The morphological evolution of the city in 1960s. Source: map of the city in 1960 and 1958.

After 1960s, the road network continuously widened, as illustrated by the building of a new road parallel to the Saiwan Road: Sivar road. Furthermore, the modern blocks in the east direction of the Jwlakan district were planned and attached to the old city. The neighborhoods of Dargazen, Kani Askan, Shexan and Malik Kandi were surrounded by the modern blocks as well. The central part of the old city, which consisted of large parcels, was subdivided to smaller and regular parcels. Besides the regular attached blocks in the surrounding old city, the large ownership parcels inside the old neighborhoods were redistributed to the smaller and regular parcels.



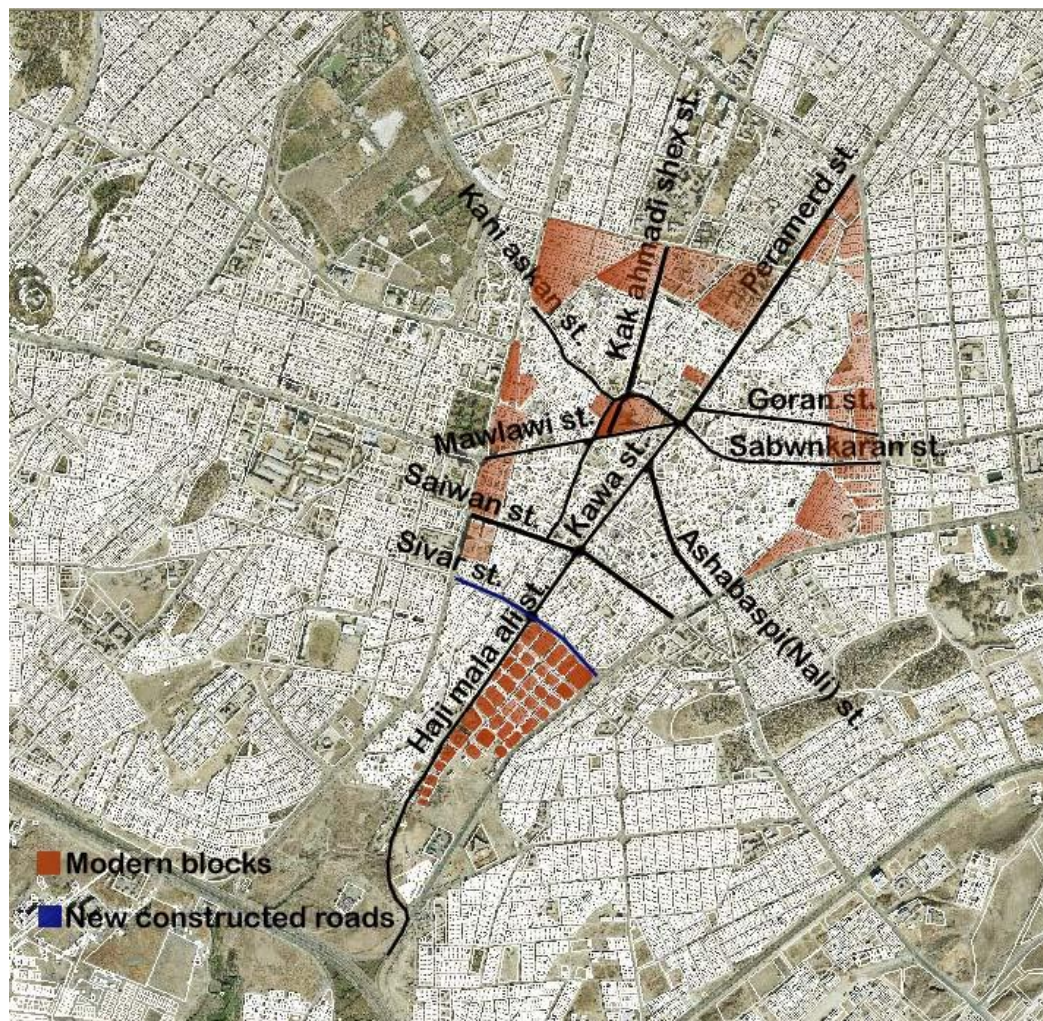


Figure 4.43 The morphological evolution of the city in 2009s. Source: map of the city in 2009.

For short periods in 2009, Mawlawi Street was turned into the pedestrian way. This decision was interrupted by the demands of vehicular traffic to the north-west from the old city. Consequently, Mawlawi Street was returned to be the main street system in the old city. The old city is connected to the new modern neighborhoods by the following streets: In the north direction, Kak Ahmadi Shex connects northern neighborhoods to the old city. Peramerd, Goran and Sabwnkaran Streets are connecting the old city to the north-east of the old city. Furthermore, in the north-west: Mawlawi, Kani Askan, Saiwan and Sivar are connecting old city to the neighborhoods in the north-western direction. Consequently, Ashabaspi and Haji Mala Ali streets are the ways to connect old city to the south-east.

Thus, the morphology of these periods shows that, few intrusions of modern blocks occurred inside the old city, except when the state intervened to built roads. From this perspective, the morphology of the study area is still the same as that of 1920s.

Besides that, the transformation of morphology in terms of the road construction affected the land ownership parcels in terms of their demolition and their transformation from the residential parcels into the commercial parcels, and then large constructed buildings defined the boundary of the main constructed roads. Consequently, the residential neighborhoods, which only consisted of residential function and depended on the commercial center in the old city, were transformed into the mixed- used functions of commercial and residential. This shows the impacts of the road construction in the transformation of the old city.

#### **4. 4 Micro Scale Analysis of the Study Area:**

Morphological analysis covers the study of ownership elements of blocks, parcels, and the structures on them. These elements were illustrated based on the micro scale analysis. In the different time periods, the existence of the study area is evaluated by depending on the ownership elements of blocks, parcels and floor area ratio. The effects of the transformations on the formation of ownership pattern, and then, the morphology of the old city, are also studied. Large ownership parcels and small ownership parcels are illustrated, and compared with the respect of the growth of the city. Central block of the old city and the residential block in the Sabwnkaran neighborhood are taken for this study.



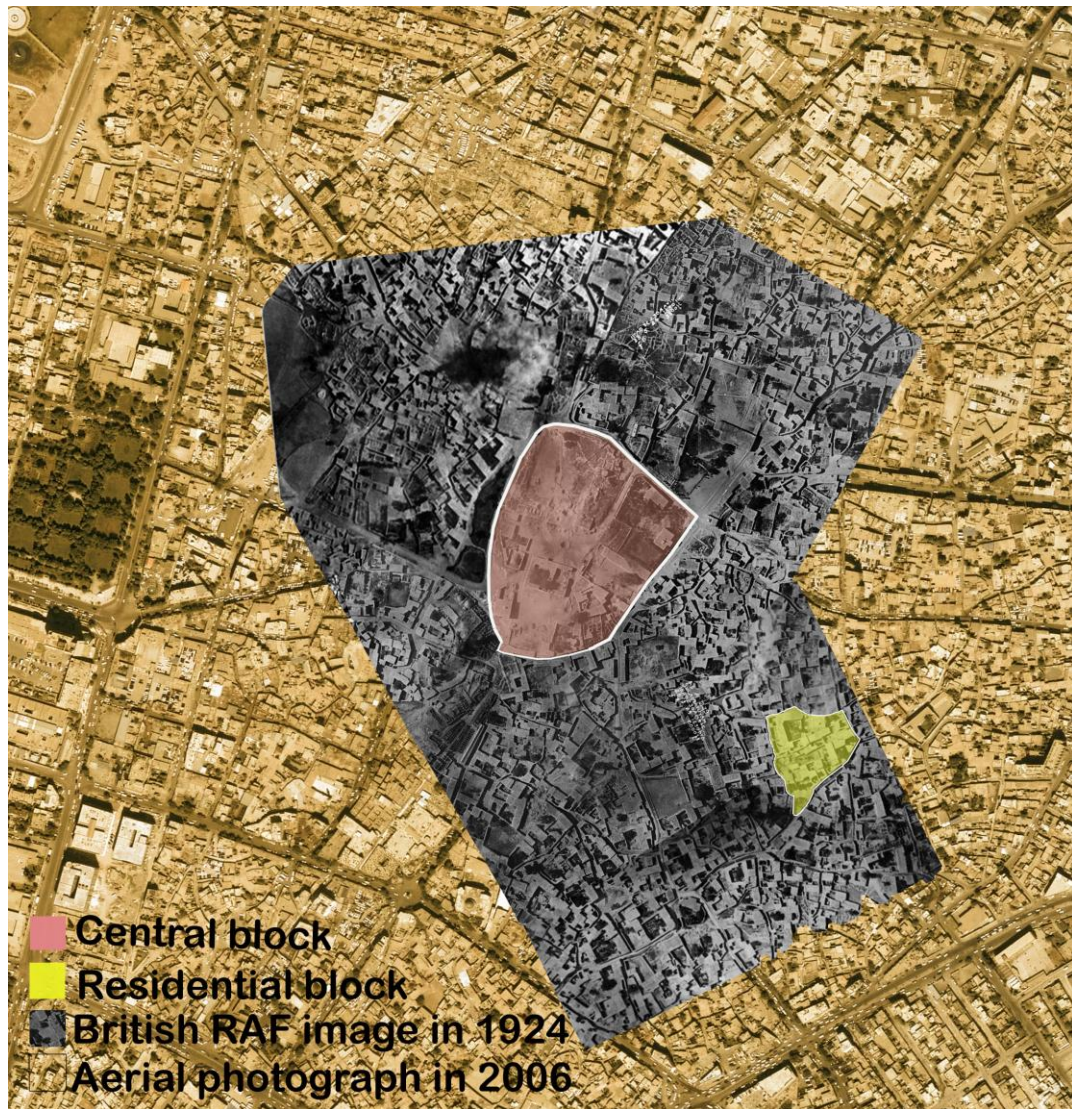


Figure 4.44 The central block and residential block inside the study area. Source: British RAF image in 1924 and aerial photograph in 2006.

In 1927, the central block was functionally distinctive from the other blocks of the neighborhoods. It was mostly occupied by the administrative buildings. This block consisted of the large and small ownership parcels with different types of commercial and administrative buildings. The commercial parcels were smaller than the administrative parcels. The boundary of the block was defined by semi-circular road.



**Block and Street**



**Street and Parcel**

**Street, Parcel and Building**



**Street, Parcel and Building**

Figure 4.45 The urban fabric of central block in 1927.

To the south of the block, commercial parcels were located, and administrative parcels were located in the north of the block. This block was covered by fifteen parcels with one storey buildings. The building coverage ranged from 183.2 until 910.1 m<sup>2</sup> in the distinctive areas from 213.7 until 12536.2 m<sup>2</sup>. From this perspective, the ratio of building coverage per each parcel area ranged from (0.1 to 1.0), see table (4.1).



Table 4.1 The floor area ratio of central block in 1927.

Parcel No.	Plot Size(m <sup>2</sup> )	Total Coverage area on all floors	Floor area ratio
1	12536.2	910.1	0.1
2	2353.3	355.5	0.2
3	2864.2	381.7	0.1
4	3155.6	857.5	0.5
5	348.1	348.1	1.0
6	272.1	183.2	0.7
7	213.7	213.6	1.0
8	534.6	275.2	0.5
9	301.5	301.5	1.0
10	707.4	468.2	0.7
11	655.7	294.0	0.4
12	564.3	348.9	0.6
13	1629.0	851.9	0.5
14	3915.5	630.9	0.2
15	703.1	555.3	0.8



Figure 4.46 The number of parcels of the central block in 1927.

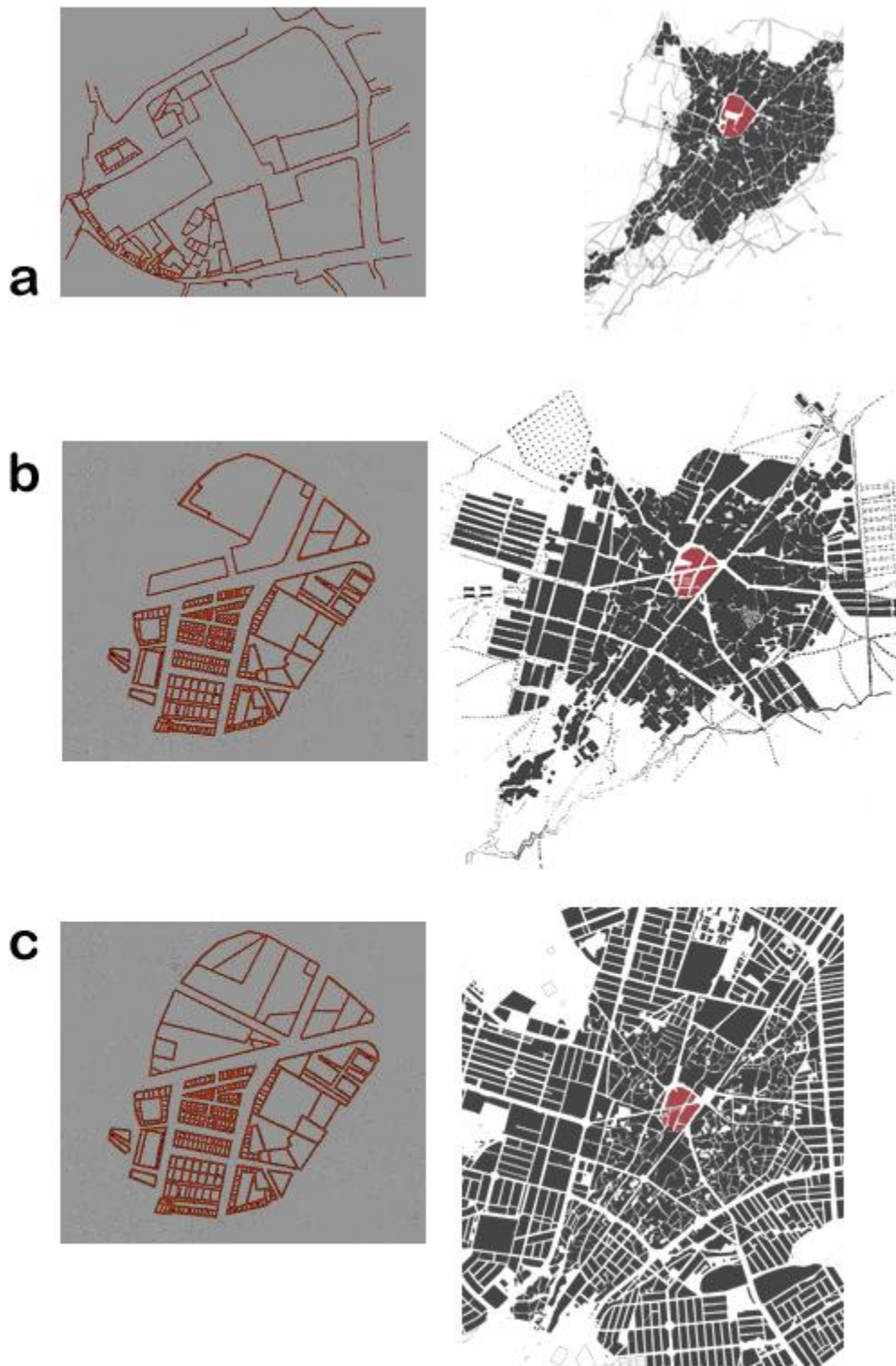
Towards 1960, due to the intervention of the power of the state in the building of Mawlawi Street, this particular block was divided into the several smaller blocks and parcels. The new blocks were turned into the commercial buildings. For example, Faisalya School, which was located in this block, was turned into the Asri Bazaar in 1940s.

From 1960s until 2003, the blocks, which located in the north, were divided into the smaller ownership parcels, and then, open spaces were decreased. In spite of this, all the buildings were attached back to back. Blocks in the south were hardly defined because of the obscure circular ring road, which functioned as a circular road around the block in 1920s. Narrow alleys between the distributed blocks were covered for the purpose of bazaar. Thus, this block shows that central block of city in 1927, was distributed to the smaller accessible parcels. Furthermore, the size of ownership parcels was reduced again because of the Sara Square widening. In that period, the buildings consisted of two-or three storey.

In 2009, the structure of the buildings was changed. North and south blocks were covered by three or four storey buildings. The buildings are mostly erected after 2003 by replacing 1950's buildings. The floor area ratio reached 3.4 from 0.9, see table (4.3). Thus, due to the demands of modernism, construction of the Mawlawi Street by the state, divided large block into the smaller blocks. This fact defined the intervention of state in the changing old fabric of city in terms of the road construction.

Table 4.2 Similarities and dissimilarities of the central block in 1927, 1960, and 2009.

	<b>1927</b>	<b>1960</b>	<b>2009</b>
<b>Similarities</b>		• Commercial parcels	
<b>Dissimilarities</b>	• Administrative parcels	<ul style="list-style-type: none"> <li>• Division of block</li> <li>• Two-or three storey buildings</li> </ul>	• Three- or four storey buildings



**a- The block in 1927.**  
**c- The blcok in 2009**

**b- The block in 1960.**

Figure 4.47 The morphological transformation of central block in 1927, 1960, and 2009.



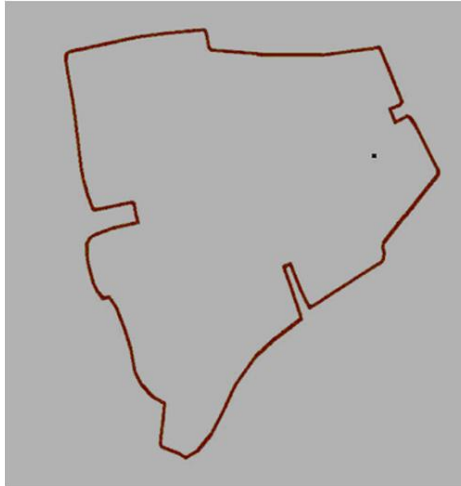
Table 4.3 The floor area ratio of central block in 2009.

Parcel No.	Plot size(m <sup>2</sup> )	Total coverage area on all floors	Floor area ratio
1	2509	4566	2.2
2	1950	3606	1.8
3	1141	1980	1.7
4	1105	1010	0.9
5	1811	1579	1.9
6	1330	2615	2
7	375	339	0.9
8	663	663	1.0
9	722	580	0.8
10	421	381	0.9
11	516	465	0.9
12	1089	861	0.7
13	1375	1082	0.7
14	527	527	1.0
15	1398	2350	1.6
16	995	995	1.0
17	86	86	1.0
18	313	313	1.0
19	1630	5668	3.4
20	2711	4218	1.5
21	1169	1132	0.96
22	2100	7444	3.5
23	747	1412	1.9
24	1370	2740	2.0
25	4172	3850	0.9
26	379	758	2.0

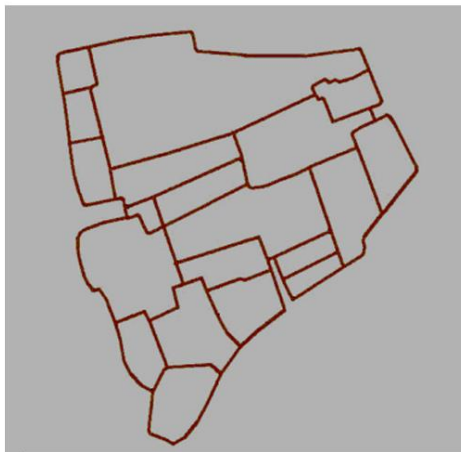


Figure 4.48 The number of parcels of the central block in 2009.

The second area of the study is the residential block, which is in the Sabwnkaran neighborhood. The block consists of small and large ownership parcels, and is defined by narrow alleys.



**Block and Street**



**Street and Parcel**



**Street, Parcel and Building**

Figure 4.49 The urban fabric of residential block in 1927.

In 1927, the block was occupied by the residential ownership parcels. In this block, some parcels, were accessed through cul-de-sacs. One-or two storey buildings were constructed with the coverage building areas ranged from (61.1 until 1112.5) m<sup>2</sup>. The size of the parcels was distributed from (59.8 until 1898.3) m<sup>2</sup>. This organization produced different floor area ratio, which varied from 0.2 to 1.3, (see table 4.4).

Table 4.4 The floor area ratio of residential block in the Sabwnkaran district, in 1927.

Parcel No.	Plot Size(m <sup>2</sup> )	Total Coverage area on all floors	Floor area ratio
1	325.8	176.4	0.5
2	372.5	110.6	0.3
3	99.2	71.8	0.7
4	111.0	61.1	0.6
5	373.8	177.6	0.5
6	680.0	438.4	0.6
7	217.8	128.7	0.6
8	1898.3	1112.5	0.6
9	362.7	148.4	0.4
10	190.2	251.3	1.3
11	59.8	Empty	
12	661.6	146.7	0.2
13	135.6	119.4	0.9
14	133.8	117.7	0.9
15	159.8	169.9	1.1
16	197.3	73.4	0.4
17	308.1	313.9	1.0
18	393.8	183.2	0.5
19	266.9	192.1	0.7
20	311.4	246.7	0.8



Figure 4.50 The number of parcels of the residential block in 1927.

Towards 1960s, the block remained unaffected. The block was still defined by narrow alleys and cul-de-sac. The large parcels in this block were only divided into several smaller parcels by owners. In the block, one large parcel was divided into the smaller parcels, while the rest of the ownership parcels were decreased or increased in the size among each other. This block shows that the property is always surviving and hardly changes even with the measures taken by the state government.

In 2009, however, the one parcel was changed from residential function to the purpose of parking, but the block still remained as a residential block. The size of the parcels was changed: they are distributed from 103 until 1061 m<sup>2</sup>. Furthermore, interior and exterior facades of the houses were mostly changed. However, one storey houses are transformed into two storey houses, but there are six houses, which preserved historical values of the old city. As a consequence, floor area ratio varied from 0.6 to 1.9, see Table (4.6).

Table 4.5 Similarities and dissimilarities of the residential block in 1927, 1960, and 2009.

	1927	1960	2009
<b>Similarities</b>	<ul style="list-style-type: none"> <li>•One residential block</li> <li>•One- or two storey house</li> <li>•Cul-de-sac and narrow alleys</li> </ul>	<ul style="list-style-type: none"> <li>•One residential block</li> <li>•One- or two storey house</li> <li>•Cul-de-sac and narrow alleys</li> <li>•Changes in the size of parcels</li> </ul>	
<b>Dissimilarities</b>		<ul style="list-style-type: none"> <li>•Division of large parcels</li> </ul>	



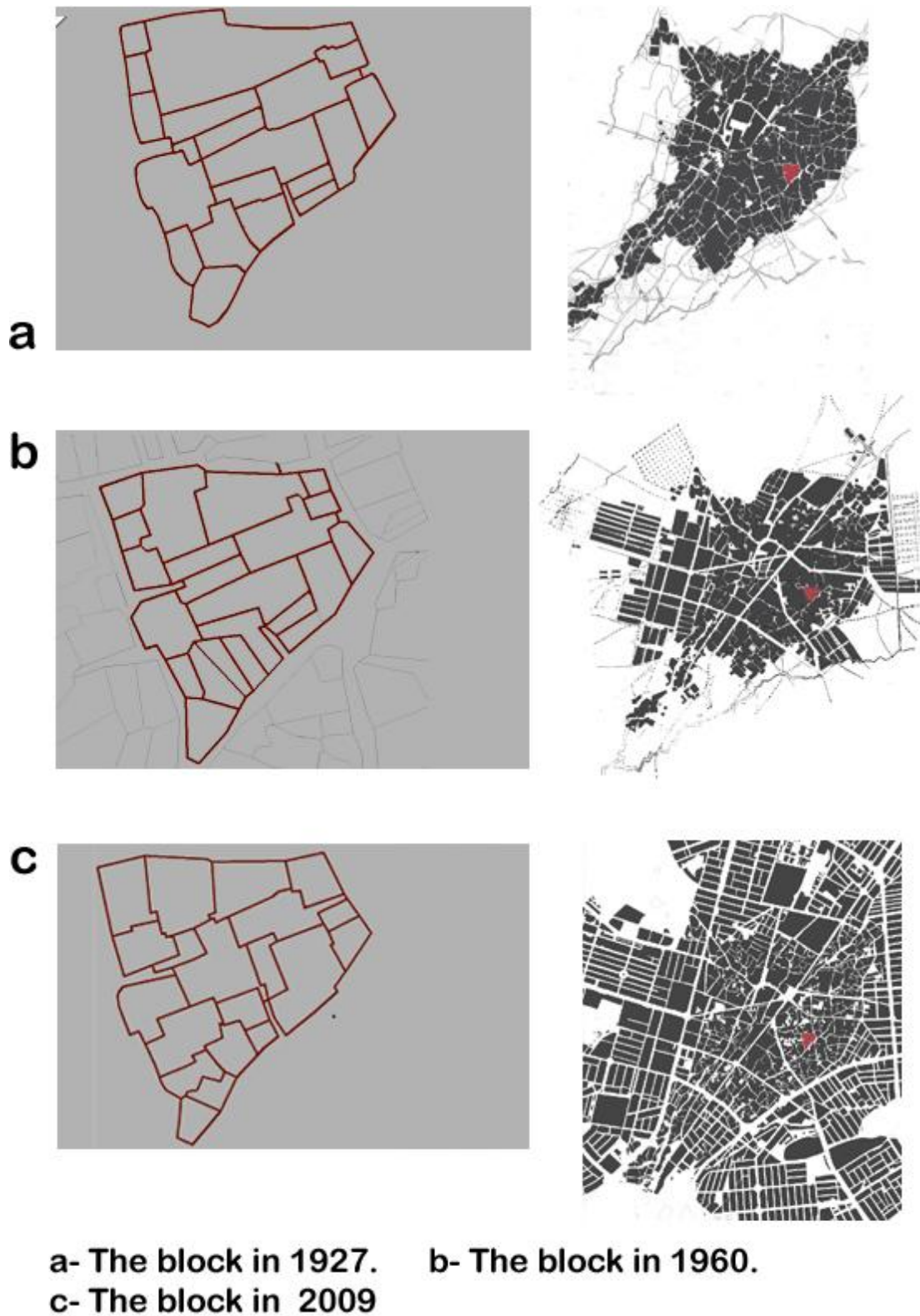


Figure 4.51 The morphological transformation of residential block in the Sabwnkaran district, in 1927, 2003, and 2009.

Table 4.6 The floor area ratio of residential block in the Sabwnkaran district in 2009.

Parcel No.	Plot size(m <sup>2</sup> )	Total coverage area on all floors	Floor area ratio
1	321	460	1.43
2	559	840	1.50
3	744	1328	1.7
4	370	568	1.5
5	117	216	1.8
6	207	186	0.9
7	1061	1296	1.2
8	560	572	1.0
9	766	1126	1.5
10	483	648	1.3
11	577	784	1.3
12	277	436	1.57
13	247	192	0.7
14	203	124	0.6
15	166	316	1.90
16	103	92	0.9
17	225	262	1.2



Figure 4.52 The number of parcels of the residential block in 2009.

The block formation is still remaining without any subdivision, except the transformation of parcels in the case of the land contracts between owners. This block shows that how the ownership elements kept their morphology throughout history except their transformation in the case of the state intervention in the construction of roads. That is why, the morphology of the old city is still surviving and it is separated from the morphology of the rest of the city. Besides that, the transformation of the central block shows that the construction of roads transformed morphology of the city in terms of function. For instance, the administrative function in the center of city turned into the commercial function.

#### **4.5 Typological Analysis of the Study Area:**

Typology is used to analyze the evolution of the building fabric of the old city in both functional and formal configuration. It compares traditional and modern building types in terms of the physical characteristics of building types. In addition, it defines the impacts of modernism, for example, the transformation of traditional building types to modern building types. The buildings, which were constructed before 1920s until 1980s, are classified to different building types. Those, which were constructed before 1920s, are marking the traditional building types. After 1950s, buildings are modern types especially, the buildings in 1960s and 1980s. Consequently, typology indicates the impact of morphological elements on the formation of the building fabric and then, the typological analysis defines the role of typology in the defining morphology of the old city. From the functional perspective, buildings are divided into four types: administrative, residential, religious and commercial types. From the RAF image of city in 1924, the following buildings are observed: mosques and churches as a religious type; houses as residential types; shops, khans, and baths as commercial types and authority buildings as administrative types. The administrative types were located in the center of the old city, and connected to the commercial center to the south of the old city. In addition, residential types surrounded the center of the old city. Religious types were mainly located in every neighborhood. Finally, commercial types were directly connected to the central part. They harbor small ownership parcels, which were mostly arranged in the rectangular shape and streamed towards south direction of the old city.



Figure 4.53 The location of the building types.

The formation of different building types is typically courtyard. In the different administrative types, the middle open space is directly connected to the outside. They were built on the large ownership parcels. While mosques, khans and baths, as a different functional type of building, are defined by the distinctive characteristics of formal configuration. The architecture elements of dome and minaret are the dominant formation of these sorts of buildings.



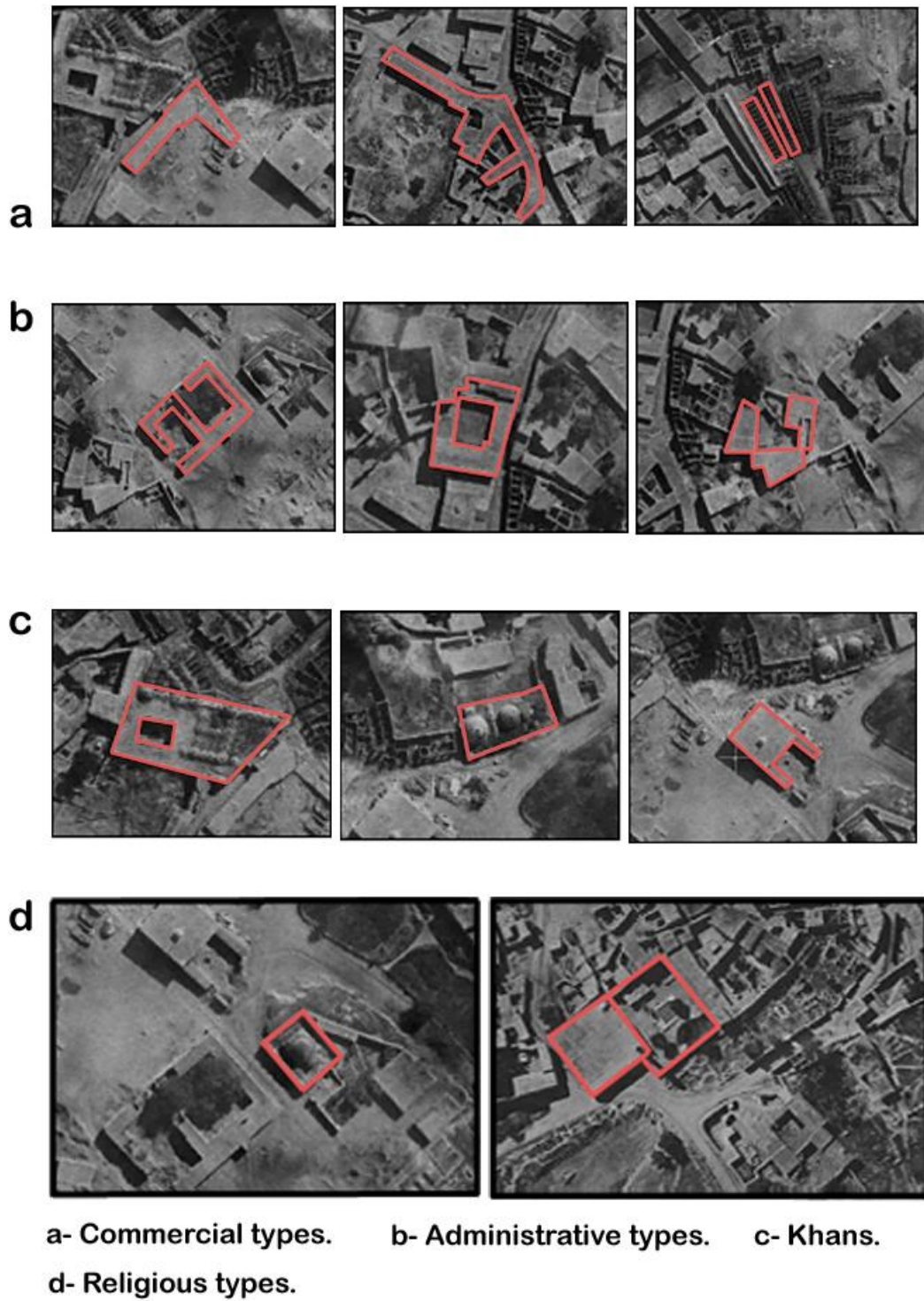


Figure 4.54 The building types in 1924. Source: British RAF image of the city in 1924.

To analyze the formal arrangement of the buildings, residential building types are evaluated in the Malik Kandi neighborhood, which is located in the north-east of the study area. It is the oldest neighborhood in the old city. The constructed residential

buildings are chosen from 1920s until 1980s. The selected period is related to the gradual evolution of the study area towards modernity. Residential types are divided into the traditional houses and modern houses. These types of houses were constructed in the three sequential time periods: from the establishment of the city until 1950, from 1950s until 1960s, and finally from 1960s until 1980s.

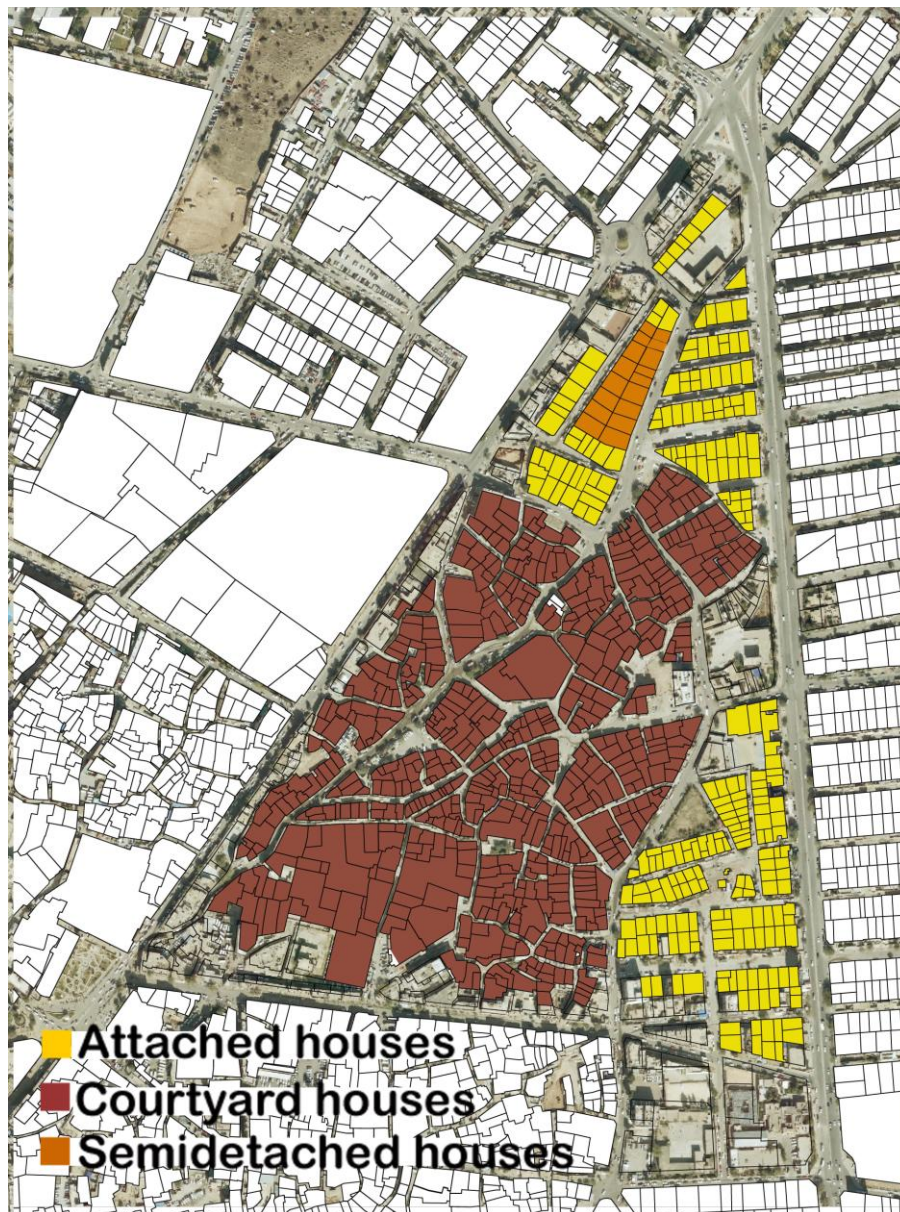
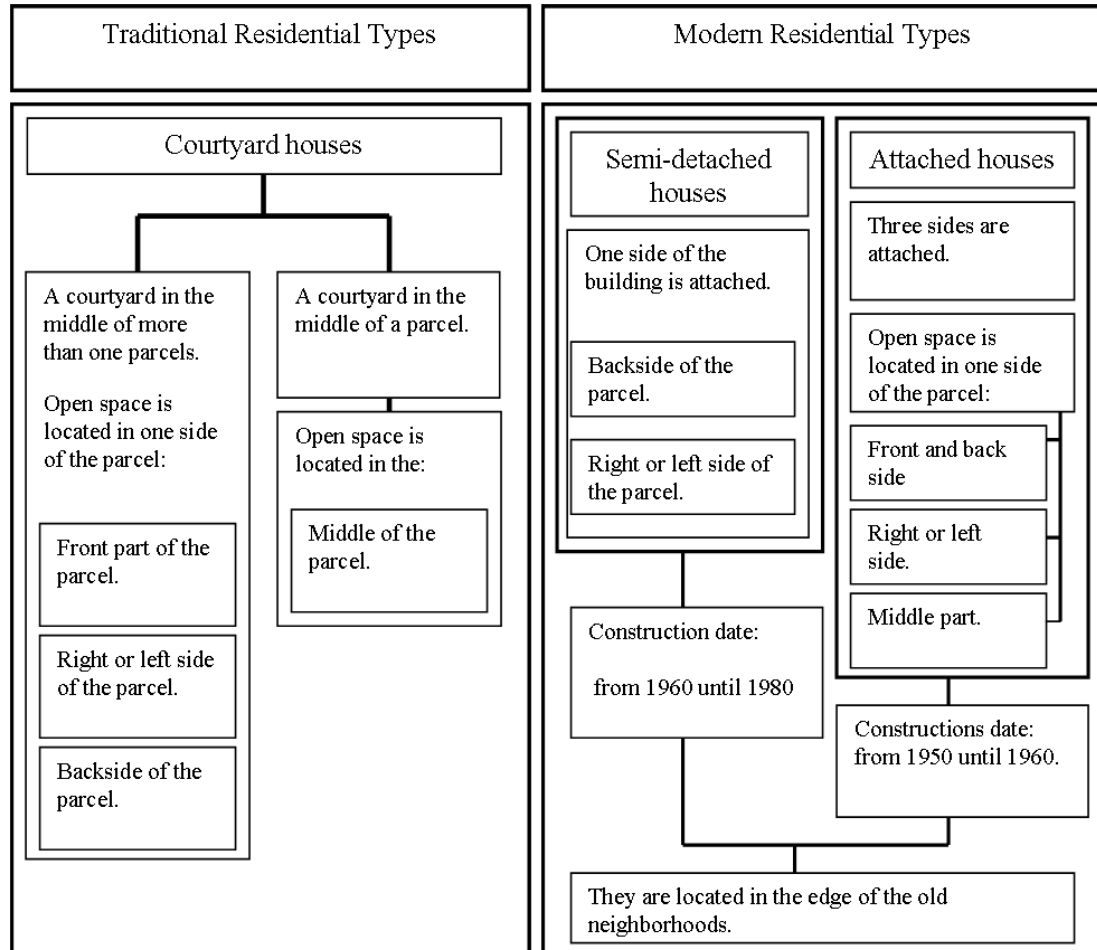


Figure 4.55 The division of ownership parcels based on the different building types. (Courtyard and modern types).

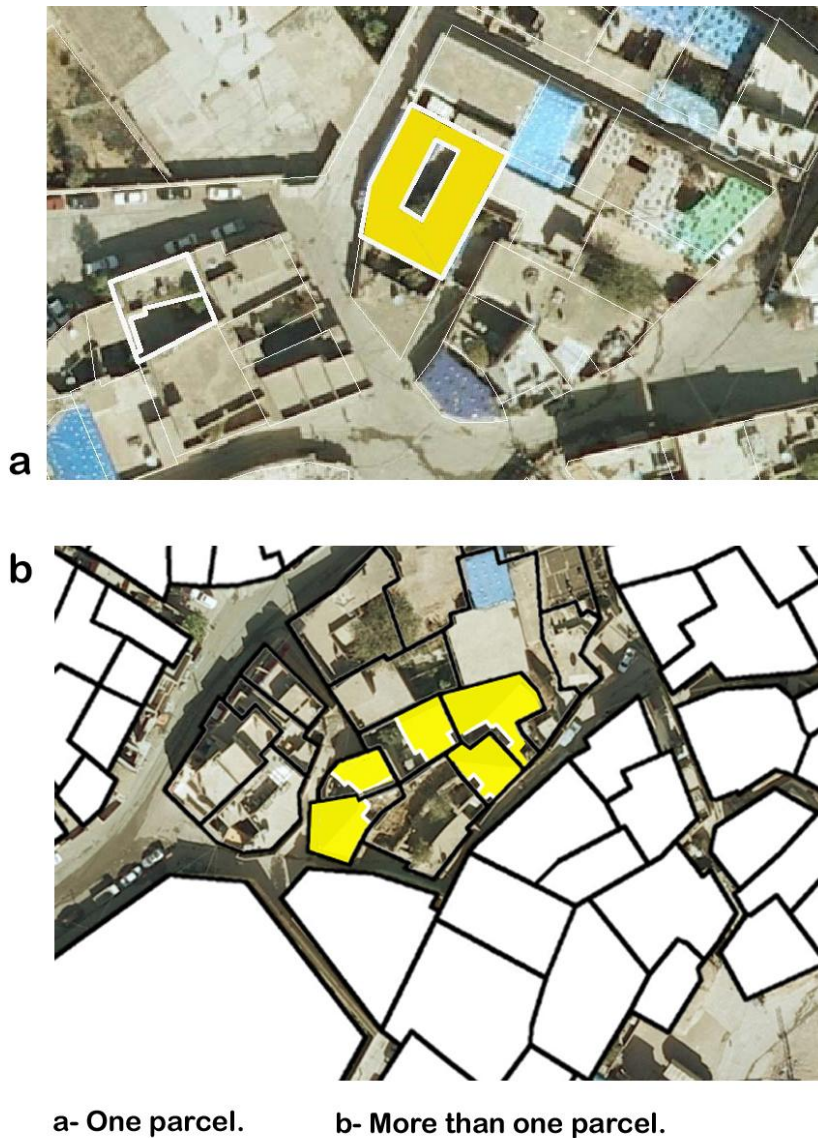
The residential building types are outlined in the following table:

Table 4.7 The classification of residential types



Traditional residential types were constructed, starting from the establishment of the city until 1950s. Generally, courtyard houses were built by a traditional society. Today, they are located in the central part of the neighborhoods. Despite the irregular shape of the parcels; they show a distinctive arrangement of the closed and opened spaces. There are two types of courtyards. In the first type of courtyard, open space is surrounded by closed spaces, and is located in the middle of the parcel. In the second type, the courtyard is shared by two or three parcels and is separated by walls. In this type, open space is arranged in three ways: as a side yard, as a front yard or backyard. The parcels are separated from each other by 1.80 or 2 meter wall as a fence. In short, the location of closed spaces makes the different types of courtyard houses.





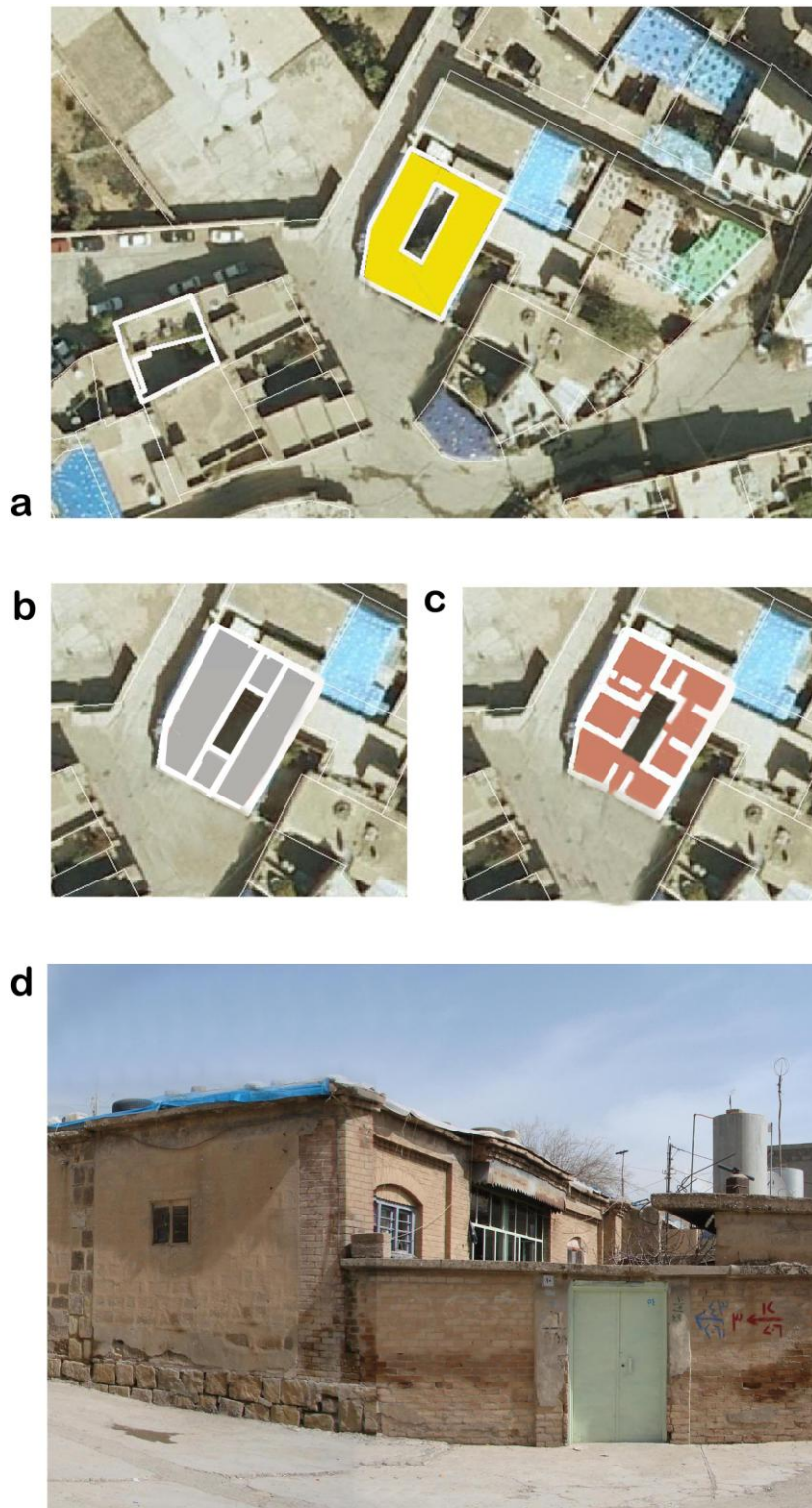
**a- One parcel.**

**b- More than one parcel.**

Figure 4.56 Traditional residential types.

Typically, main functional parts of houses are around the central yard. They are one or two storey houses. The access to the central yard is indirect: it begins from the entrance space, which is in between the two closed spaces as a reception hall for guests: Diwaxan and the main store. The kitchen, service and family part are in the opposite direction of the court yard. The family part has central semi-closed space, which gives the way towards court yard. In the first floor, it has columns, and is called Tarma. Other closed spaces are arranged around it. The middle room is called Aiwan. First floor has large windows and covered verandahs and whilst. Ground floor is used for storage and winter accommodation.





**a- Courtyard in the middle of a parcel.    b- Roof plan.**  
**c- Ground floor plan.    d- Front view.**

Figure 4.57 The traditional residential type (Courtyard house).



Figure 4.58 The functional parts of the courtyard houses (Tarma and Aiwan).



Figure 4.59 A view of the family and service part from the courtyard.

Towards 1950s, new houses were constructed on the regular parcels (as the impacts of modernism in the regulation of blocks). As a result of this, modern types were attached to the traditional houses. This transformation of building types indicates the impact of modernism on the regulation of parcels. According to Günay, in the modern period, real property (parcel and building) are in relation with the control mechanisms of state (Günay, 1999, p.9).



Thus, modernism regulated the shape of parcels. Consequently, it led to the construction of modern building types. Attached and semi-detached houses are the products of modernism. Attached houses were formed in three ways, and thus, they produced three types of attached houses. The first type has the open space in the front and back side of the parcel (see figure 4.60).

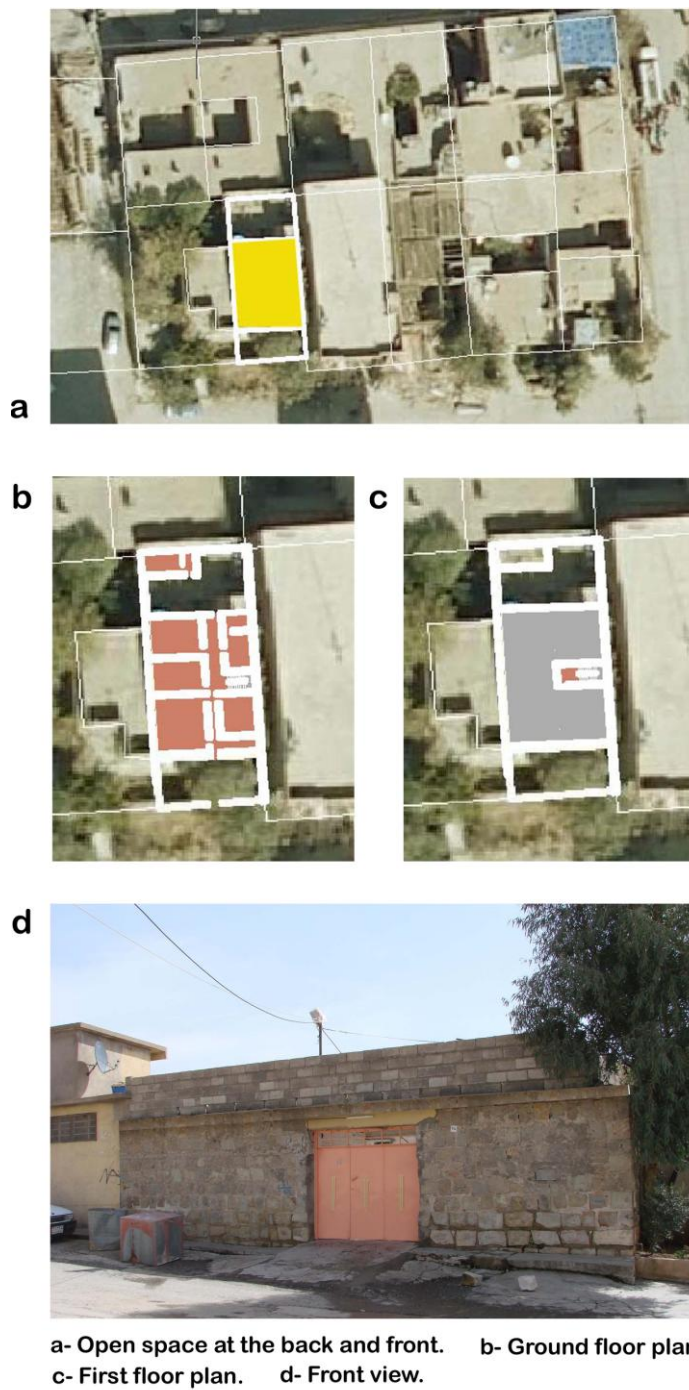


Figure 4.60 The first type of attached residential house (1950s\_1960s).

In the second type of attached houses, the location of open space is in either right or left side of the parcel. In spite of it is constructed on regular shaped parcels, it has the same formation as the traditional houses. While traditional houses were constructed on the irregular shaped parcels (see figure 4.61).

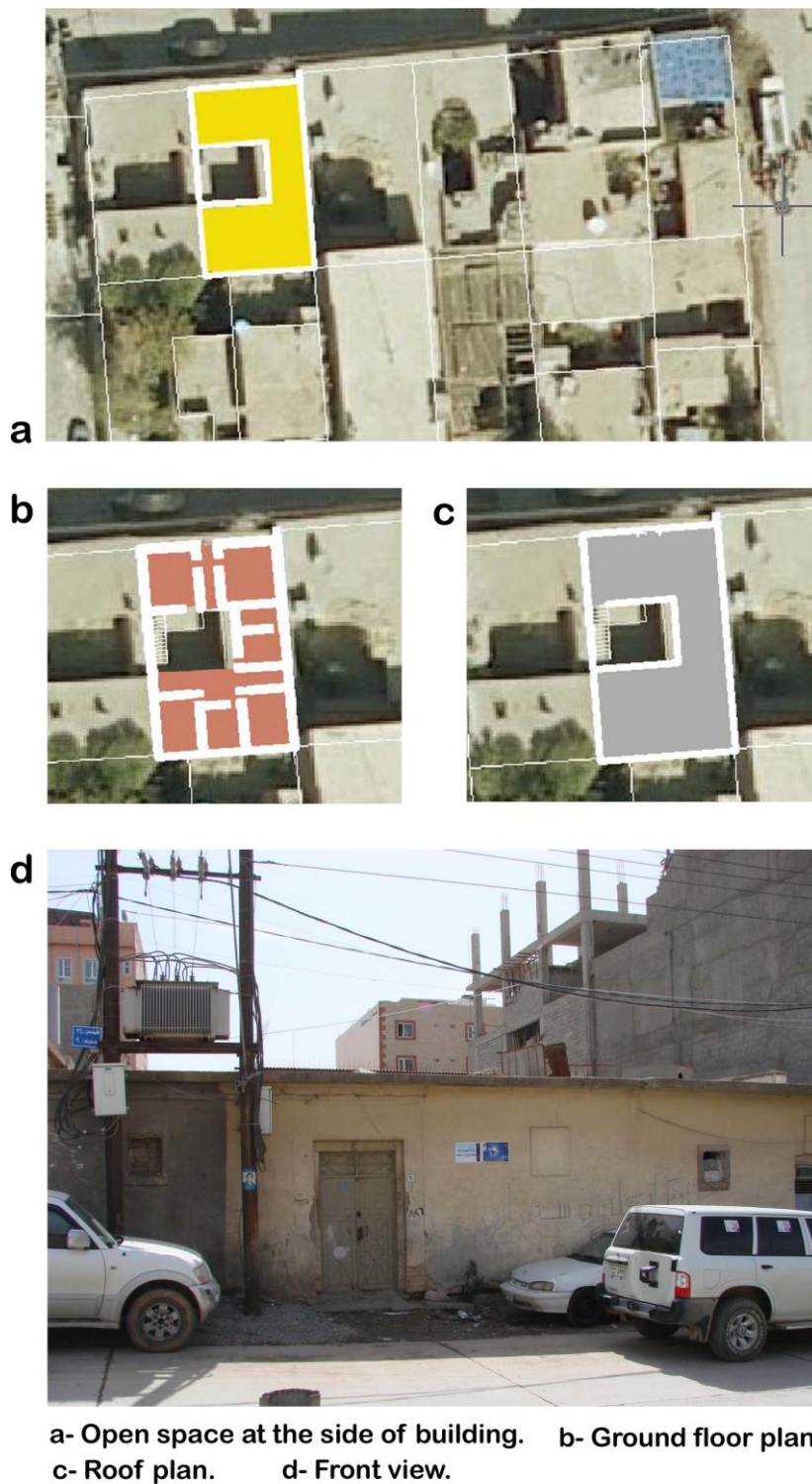


Figure 4.61 The second type of attached residential house (1950s\_1960s).



The third type of attached houses is arranged as a courtyard houses. This type of modern houses is located in the border of the neighborhood. They have similar formation as the traditional houses. Three sides are attached and it has open space in the middle of the parcel. The parcels are regulated: indicate the impact of modernism. Gradual morphological transformation of the neighborhood towards modernity is marked by these types of housing.



Figure 4.62 The third type of attached residential house (1950s\_1960s).

In 1960s, until 1980s, in the north of the neighborhood, new residential houses were built. They are semi-detached residential houses. This type of houses has open space in the three sides of the parcel. In this type, the morphological formation of traditional houses is losing. They are arranged accordance with the regular shaped parcels.



**a- Semi-detached houses. b- Ground floor plan. c- First floor plan. d- Front view. e- Front view.**

Figure 4.63 The semi-detached houses (1960s-1980s).

Thus, in the modern periods, in spite of the regular shape of the ownership parcels, the residential types in the borders of the neighborhood have the same formal configuration as the traditional building types. As a result, these types participate in the morphology of the old city because; they show the gradual transformation of the traditional houses in relation with the straight transformation of the ownership parcels. They were built on the regular shaped parcels and then, they separate the morphology of the old city from the modern types in terms of different building types. In short, constructed traditional houses on the regular parcels are part of the morphology of the old city. From this point of view, the interpretation of old city's morphology is made up of property in two dimensions and the building types on them.

## **CHAPTER 5**

### **DISCUSSION OF THE MORPHOLOGICAL ANALYSIS OF THE STUDY AREA**

#### **5.1 Macro Scale Discussion:**

In this study, the oldest neighborhoods in Sulaimaniyah city are chosen to expose its old fabric in different time periods. It is based on the evolutionary plan analysis to analyze the visibility of the old fabric from its establishment until the recent years. Morphological analysis is the method to define gradual evolution of the case study. The method of Conzen's morphological analysis is used to analyze the study area and to establish the historical evolution of the city. It defines the impacts of modernism on the morphology of the old city. In the first phase of this study, morphology of the study area is analyzed in the macro scale. In this phase, the gradual transformation of the study area (old city), the recent location of the old city, and its connection with the surrounding cities are defined. In the second phase, the study area is examined in the mezzo and micro scale. In this phase, the morphological elements of ownership are analyzed based on the sequential time periods.

The analysis of the study area show that in the past residential pattern distributed according to the trade routes that led to the trade activity. Trade routes influenced the expansion of the city based on the active trade routes at that period. The trade routes to Iran through Halabja, Penjwn, Rawanduz, and to Baghdad through Qara Dagh, affected the city expansion to the south-and south-east. The recent route to the Kirkuk was not attractive as much as the routes of Halabja and Qara Dagh.



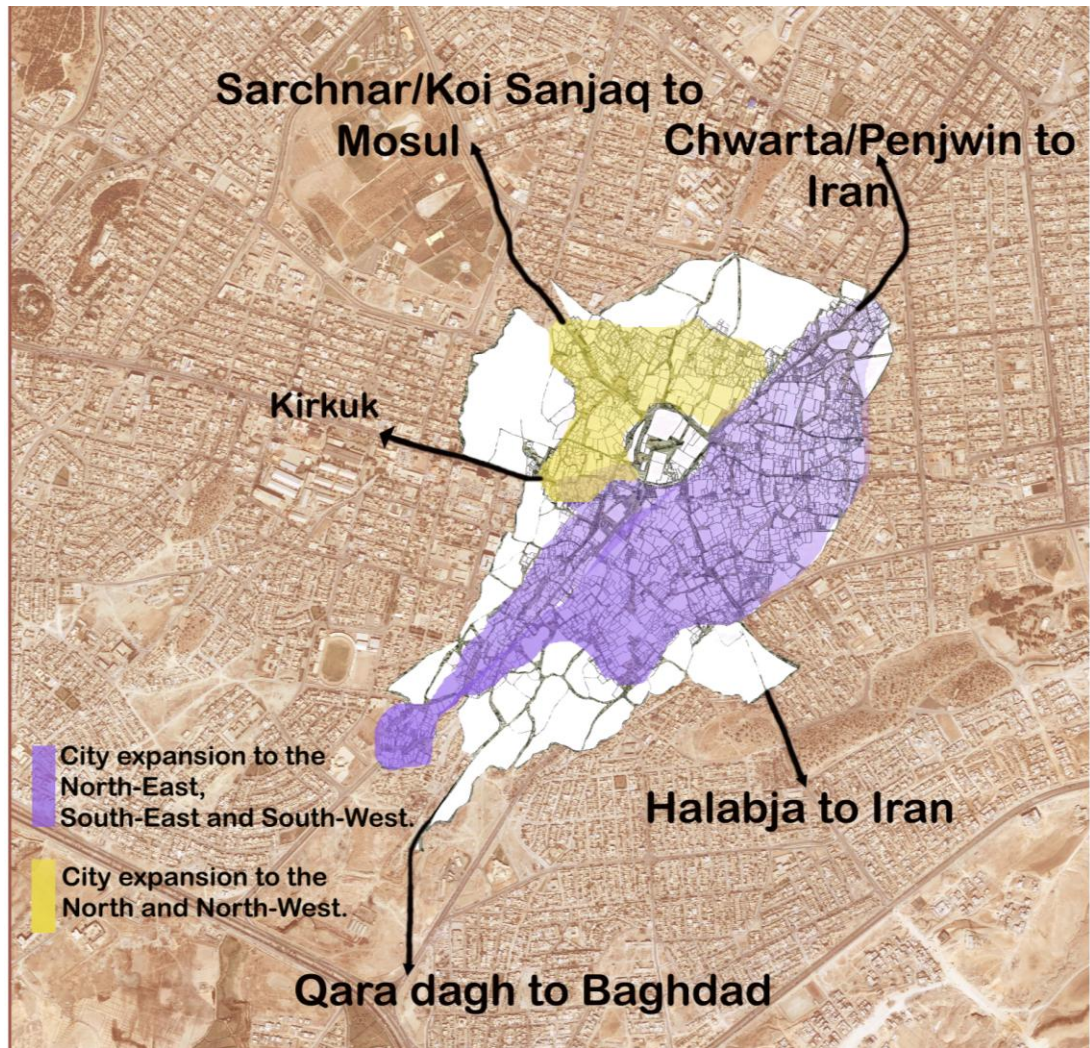


Figure 5.1 The city expansion in 1920s. Source: map of the city in 1927.

After 1950s, the city expansion was attracted by the main highway to Kirkuk to the north-west of the city. The stream of public and administrative buildings along the Mamostayan Street and the highway to Kirkuk marked the city expansion to the north-west of the city. In addition, they mark the impacts of modernism on the evolution of the city towards modernity. Today, the central part of the old city is connected to the modern city through the main streets of Mawlawi, Goran, Sabwnkaran, Kak Ahmadi Shex, Peramerd, and Saiwan. Besides, the services, administrations, and the main commercial center are still located in the old city. From this perspective, the construction of roads affected the city expansion in terms of direction.

## **5.2 Mezzo Scale Discussion of the Study Area:**

In the mezzo scale, the study area (old city) is analyzed in terms of morphology: the physical characteristics of morphological elements are defined based on their organization and connection with each other within the old city. The study shows that before the construction of roads inside the study area, the residential pattern in the old city was divided into the different parts towards the trade routes. In spite of their separation, they were connected with each other by continuous alleys. The connection alleys, between neighborhoods, were long and continuous against the narrow and cul-de-sacs, which defined the fabric of the old neighborhoods (see figure 4.23).

As a consequence, the different neighborhoods were produced based on the directions of the trade routes. In addition, in the past, each neighborhood, in terms of the different locations of north, east, and south, was formed by different ethnic groups. Muslim families dominated the north of the old city, the Jewish dominated the south, and then the Christians dominated the east. The interpretation of the study area shows that the formation of residential building types in the Jewish neighborhood is different. It separated this neighborhood from the Muslims and Christians neighborhoods. The closed spaces in the residential houses are narrow and small.

Furthermore, the physical elements of neighborhoods are studied, referring to the study of Lynch in the image of the city. The Great Mosque and Sara Building are the landmarks in the old city. According to the historical records, and the British RAF image, these two physical elements were visible elements in the old city. In addition, the image shows the wide green area in the center of the neighborhoods, that area could be the Main Garden for the all neighborhoods in the old city. Today, in the north-west of the city, modern neighborhoods were separated from the old city by the gate. The construction of that gate belongs to the period of modernism. It marks the transformation of the old city towards modernity. Furthermore, this study defines the new modern blocks, which attached to the old neighborhoods, as the edges of the

neighborhoods. New blocks, as the edge, they separate old fabric from the new modern neighborhoods. They are considered as a transformation zone towards modernity.

In the past, city was the market town for surrounding agricultural lands. In the geographical location, the city was the active trade center with the cities of Kirkuk, Mosul, Baghdad, and the countries of Iran and Turkey. Political and administrative rules affected the development of the city, and consequently its morphology. In the period of Ottoman Empire, municipality, as the administration office, was established to take responsibility towards the city. In addition, with the introduction of Tapo: Sanad, the land ownerships were organized. In the period of the British rules especially in 1920s and 1930s, morphological transformation appeared in the opening of new roads. Sabwnkaran road, which was opened in that period, introduced modernity to the old fabric of the city. When Iraq was established, the old city faced more transformations. From this perspective, the periods of 1930s, 1940s, 1950s, and 1960s, faced developments in the morphology of the city. In short, the mode of transportation was changed.

The maps are used to analyze the morphology of the old city to show its gradual evolution throughout history. From the map analysis: Morphological analysis proved that the city was built based on the administrative purposes as the authority center, and then, it was developed by the commercial and residential houses. The commercial center developed the central part of the old city towards south direction. The reason of its development towards south direction was the location of the nearest trade route to Baghdad, which was located in the south of the city. In addition, the residential neighborhoods depended on this south of the city as the main commercial center in the city. In contrast, today each neighborhood turned into the mixed-used neighborhood. This resulted from the transformation of the old city in terms of the road construction. For instance, the constructed roads divided the old city into several neighborhoods. As a consequence, the ownership parcels, which defined the boundary of new constructed roads, mostly turned into the commercial functions. This is defined the impacts on the construction of roads on the morphology of the old

city. However, the ownership blocks and narrow roads inside each neighborhood have resisted against transformation.

Thus, the old city has undergone through transformation towards modernity. From 1930 until 1960s, the gradual evolution of the morphological elements occurred in terms of the construction of streets. In these years, the old city was only transformed in terms of the construction of new roads.

## **5.2 Micro Scale Discussion of the Study Area:**

In the micro scale analysis, morphological elements of ownership are analyzed by relying on the two different cases in the study area. These cases show the existing morphology of the old city against transformation. The cases are two different blocks, which represent small and large ownership parcels. The years 1927, 1960, and 2009, are compared to show evolutionary steps of the morphology of the cases. First case is chosen in the center of the city. The second case is a residential block in the Sabwnkaran neighborhood.

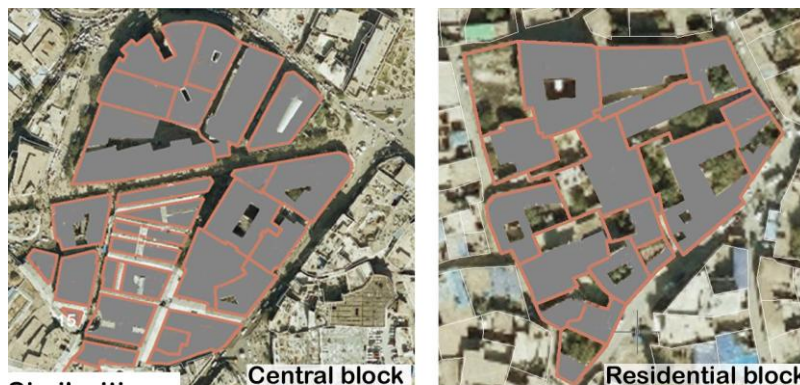
From the morphological analysis of the study area: the central block was transformed by the construction of Mawlawi Street. In 1927, the central block consisted of the parcels, which were occupied by the administrative and commercial activities. The buildings were all one storey with the various floor area ratios: from 0.1 until 1.0. The floor area ratio differs based on the activity units according to plots. When, the central block is compared with its state in 1960s, it is seen that the central block turned into several smaller ownership blocks, for the sake of constructing Mawlawi Street. This change was due to the intervention of the state in the construction of roads and then, the division of the central block. The parcels were occupied by one or two storey of commercial buildings. Towards 2009, the division of blocks into smaller blocks was related to the distributed large ownership parcels. In addition, the floor area ratio reached 3.5 from 0.9., which resulted from the construction of three-four storey buildings. This is also related to the increasing population of the city. Thus, the analysis of this block shows the power of the state, which is limited in the



construction of roads, and resulted from the demands of transportation in the modern periods.

The central block is distinctive from the residential block, which has kept its morphology. In 1960, the block remained without division except the small transformation of the area of ownership parcels. The transformation was related to the land contracts between owners. Towards 2009, the floor area ratio reached 1.9 from 0.6. This transformation resulted from the increasing and decreasing the area of ownership parcels and the number of building floors. In 1927, it was occupied by one or two storey buildings. The size of parcels ranged from 59.8 until 1898.3 m<sup>2</sup>. In the 2009, the residential ownership of parcels was occupied by one-or two storey buildings with the various sizes of parcels from 103 until 1061 m<sup>2</sup>.

The differences between two blocks are comprehended by the fact that the central block was transformed because of the intervention of the state in the construction of roads. However, the residential block shows the power of ownership in the existing morphology of the old city. The building coverage ratio, in 2009 was denser than in the past. In addition, the central block was completely turned into the commercial activities, towards wide and straight roads. This is the opposite of the changes of the residential block, which remained as private houses and surrounded by the narrow alleys.



**Similarities:**

Large ownership parcels were divided into small ownership parcels

**Dissimilarities:**

Several smaller blocks

The straight road

The power of state

The same block

The narrow alleys

The power of ownership

Figure 5.2 The comparison between central and residential blocks

Thus, the central block was subdivided according to the street network, which was constructed by the municipality, while the residential block kept its morphology. This comparison, illustrates the limited power of intervention by the state. In addition, it shows the power of ownership elements to stand against the transformation of morphology. Consequently, the property pattern is dominated power to define morphology, and to show the reasons of the existence old fabric of Sulaimaniyah city.



Figure 5. 3 The south-east of the residential block



Figure 5.4 The northern part of the central block

For further development in this study, Building types are analyzed to define the building fabric in the study area. The study shows the role of building fabric in the defining morphology of the old city. Building types are analyzed by examining the functional and formal configuration of buildings. Based on the British RAF image in 1924, different types of residential, commercial, administration, khans, and mosques were distributed. These types defined distinctive building types based on the functional configuration. The formal configuration of these types is examined in the residential building types in the Malik Kandi neighborhood. The Malik Kandi neighborhood is chosen to study the residential typology and their gradual evolution towards modernity. The constructed residential buildings are examined from the 1920s until 1980s. The selected period is related to the gradual evolution of the study area towards modernity.

Typological analysis provides the opportunity to make comparison based on the evolutionary analyses of traditional and modern building types. Building of a residential courtyard defined the traditional building types. Attached and semi-detached houses are the modern residential types. The traditional type, which consists of court yard houses, is arranged by the location of closed and open spaces. There are two types of courtyard houses. The first type is determined by one parcel. In this type, the open space is located in the middle of the parcel and surrounded by closed spaces. In the second type, the open space is determined by more than one parcel. In this case, Open space is located in the back or at the sides of the parcels. In other words, the produced courtyard is shared by two or three ownership parcels.

The modern residential types were erected in the modern periods, and attached to the traditional building types. In modern types of attached houses, open space is located in one side of the parcel, or is divided between two sides, or is located in the middle of the parcel. These types of attached houses were erected on the rectangular shape of ownership parcels. In spite of this, they have the same arrangement of the traditional building types, because their arrangement of open space is the same as the traditional residential types. This means that they are part of the old fabric of the city,

and then define its morphology. In addition, in the modern types of semi-detached houses, the buildings have open space on three sides of the ownership parcels.



### **Similarities:**

#### **Open space is located:**

Front part of the parcel

Right or left side of the parcel

Backside of the parcel

Middle of the parcel

### **Dissimilarities:**

**Irregular parcels**

**Regular parcels**

Figure 5.5 The comparison between traditional and modern building types.

The comparison of the traditional building types and the modern building types show that the modern buildings have the same characteristics of formal configuration as the traditional types, except their erecting on the regular ownership parcels. This means that they are part of the old fabric of the city and its morphology. These modern residential types were attached to the neighborhood. From this perspective, they are the edge of the neighborhood: they erected on the regular parcels, which separate them from the irregular parcels in the old city. Thus, this analysis shows that the building types are part of the morphology of the old city. Although they are affected by modernism in terms of regularity of parcels, they kept the characteristics of the old fabric of the city. In addition, due to their characteristics, which consist of the regularity of ownership parcels, and the characteristics of traditional building types, the old city is separated from new city.



## **CHAPTER 6**

### **CONCLUSION**

#### **5.1 Findings:**

The morphological analysis of the city in 1920s shows that the old city of Sulaimaniyah was distributed towards the trade roads. Before, the impacts of modernity, the main active trade roads were located in the south, north, and east of the city. The Kirkuk road was not attractive road as much as the Qara Dagħ to Baghdad, Halabja, and Chwarta. After the transformation of city towards modernity, especially with the construction of Kirkuk Road, several roads were constructed and new neighborhoods were planned in the surrounding of the old city. In that period the Kirkuk Road attracted the city expansion towards north-western direction of the city. It was constructed as an alternative road towards Baghdad. In the 1920s, the road that led trade activities to Baghdad was located in the south of city. In addition, the established factories, in the west of the city, were also the factors of its expansion towards north-western direction of the city.

In Sulaimaniyah city, modernity is defined by the modern functions of new administrative system and new commercial functions. After 1920s, the city was adjusted to these new institutions. As a consequence, the power of state displayed this transformation in the forms of building roads, and then the new larger and regular parcels (rectangular parcels) are created to adapt new functions.

In addition, in the period of modernism, city was expanded by the regular (rectangular) blocks and parcels instead of the traditional structure of these

ownership elements. They attached to the old city to adjust modern functions. As a consequence, the city in that period appeared as a two parts: old city and new city (in terms of the new modern function).

Another finding of this study shows that, the city was formed by different functional activities: Before the period of modernity, the city was formed based on the separated administrative center as a core of the city. The residential neighborhoods surrounded the center of the city, which was supported by the commercial center towards south direction of the old city.

In spite of their separation towards the trade roads, the residential neighborhoods were connected with each other by the continuous narrow roads. Each neighborhood was represented by the religious institutes of mosque or church. Besides that, the old city was formed by different ethnic groups. The Jewish family formed southern part of the city, and then east and north of the old city were formed by Christians and Muslims. The formation of residential houses in the southern part of the old city (Jwlakan neighborhood) is different from the rest of the old city. They mostly consist of small spaces and narrow entrances.

The map analysis shows that the city is only transformed in terms of the road construction by the power of state except the intrusion of one regular block in the north-western direction of the city. Other than that the ownership elements of irregular blocks, narrow roads, and cul-de-sacs are kept against transformation. For instance, the comparison of central block and residential block showed the limited power of state in the construction of Mawlawi and Kawa Streets, which resulted from the power of ownership elements in the existing morphology of the old fabric of the city against transformation. This is reflected in the existence of the residential block in the Sabwnkaran neighborhood. The central block was divided into several smaller blocks in accordance with the straight roads. Larger buildings were produced by more than two-storey buildings especially, in 2009, the blocks were occupied by four-storey buildings.

On the other hand, the residential block remains without transformation except the changes of the size of parcels by the land owners. This is not affected the transformation of the block. The block is still served by narrow roads and cul-de-sacs. This shows the existence of morphology of the block in defining old fabric of the city in terms of narrow roads, cul-de-sacs and then irregular blocks and parcels.

The transformation of morphology in terms of the road construction affected the old city. It changed the old city, which consisted of separated functional activities of residential, commercial, administrative structure. For instance, due to this transformation, the old city was divided for several neighborhoods and then turned into mixed use of residential and commercial functions.

The finding of typology is the classification of buildings into modern residential and traditional building types based on the formal configuration. Besides that, it shows that residential houses, which are erected after 1950s participate in the formation of the old fabric of the city and then, its morphology. For instance, after 1950s, the construction of residential houses was on the regular (rectangular) land ownership parcels. Besides their construction on the regular parcels, they have the same formation as the formation of traditional building types.

In the traditional residential types open space is located in the middle or in one side of the parcel: front part of the parcel, right or left side of the parcel, and backside of the parcel. In the modern building types of attached houses open space is arranged same way as the traditional residential types: front and back side, right or left side and middle part of the parcel. From this perspective, the modern residential types, which attached to the traditional residential houses define and separate morphology of the old city from the surrounding modern neighborhoods. In the classification of traditional residential types, there are two types. First type is produced by one parcel and open space is located in the middle of the parcel. It is a courtyard houses. However, the second type, courtyard is produced by more than one parcel and is separated by fence among the parcels. The Open space, which is shared by each parcel, is arranged in three ways: front part of the parcel, right or left side of the

parcel, and backside of the parcel.

Morphological and typological study defined the forces that build up morphology of the old city and the reasons of its existence. The remarkable old fabric and its morphology of the old city resulted from the forces of protected ownership elements and the building types on them.

## **5.2 Conclusion:**

The existing morphology of the old fabric of city resulted from the protected ownership elements by their resistance against transformation. The power of ownership elements of streets, blocks, and parcels are the forces that define the morphology of the old city. In the conclusion of morphological analysis, the comparison of the different ownership elements of blocks in the old city was revealed that the transformation of morphology is only occurred by public force, which reflects itself in the construction of roads. In the absence of the public force, however, the morphology of city has resisted against transformation. The residential block in the Sabwnkaran neighborhood was not interfered by the state in terms of the building roads. As a consequence, the ownership elements are kept and then its morphology. This is the reason of the existence morphology of the old fabric of Sulaimaniyah city. The old city is only transformed in terms of the road construction. Thus, the morphology of the old city is interrelated with the existence of ownership elements by their resistance against transformation, besides the public force. For instance, the public force had not concerned to transform the blocks inside the neighborhoods of the old city. In contrast, the public force interested in transforming the central block was administrative activities took place, which was reflected in the road construction. As a consequence, the construction of Mawlawi and Kawa Street changed the ownership pattern of the center of the old city.

In addition, the analysis of residential and central block also shows that, the core of the city is affected by the transformation due to the location of main activities in the center of the city. This is shows that the public ownerships as administrative center are more concerned than private ownerships (residential) by the public force. In



contrast, the heart of the residential neighborhoods as private ownerships was not interested by the public force in the construction of roads. Thus, the existence of the ownership blocks showed the power of ownership elements against transformation of morphology of the old fabric of city. While, the transformation of ownership block defined the power of state in the changing morphology of city.

Investigation of the existing old fabric of the city by the morphological analysis proved that the morphology of the old city is still alive. The protected ownership elements of blocks are the dominant power to keep this morphology against the transformation and then, the existing power of these ownership elements defines the existing morphology of the old city. Thus, the forces that built up the morphology of the old city and the reasons of its existence are defined through the morphological analysis.

Thus, property marks the morphology of the old city. It is surviving as the morphological elements of blocks without the intervention of the state, which is limited in the road constructions. From this perspective, the morphology of the old city consists of property in two dimensions and the building types on it. The existing morphology of the city is also defined in the study of Goethert (1985, as cited in Gunay, 1999) showed that:

The pattern of land subdivision is one of the more critical planning decisions faced by those designing human settlements. Once established the pattern essentially remains forever and can only be changed at great cost, efforts and political will. The area and the geometric layout pattern effectively dictate the infrastructure networks, which represent the basic capital costs in settlements construction: water supply, sewage disposal, electricity networks, street lighting, streets and side walks.

Consequently, the conclusion means the transformation of morphology of city only requires the public force in the building of roads. Other than that, the old fabric of city and its morphology will remain against transformation by keeping the original traditional ownership patterns.

This study can be further developed by including the morphological analysis of ownership elements of blocks and parcels in each neighborhood of the study area like Malik Kandi, Shexan, Kani Askan, Dargazen, Bazrgani, Jwlakan, and Sarshaqam. The subject of this thesis is explained by depending on the two ownership blocks of the central and residential block in the Sabwnkaran neighborhood .from this perspective, it will be interesting to study ownership elements in the all neighborhoods of the old city. In addition, for further improvement, the study of typology of new buildings, which are erected in the recent years inside the old city, also enrich the framework of this research. The study of building types in this research focused on the limited area in a limited time period (from 1920s until 1980s) in the Malik Kandi neighborhood. A further research can be focused on the building types in the other neighborhoods of the study area in the same period. Moreover, a further study can be concentrated on the morphology of the new modern districts in the surrounding the old city like Majid Bag, Twi Malik, Darogha, Goisha, Saiwan, Khabat, Chwar Bagh, Wais, Shorsh. The building types in these neighborhoods mostly have the same formation as the traditional building types in the old city.

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