IDENTIFYING AND EVALUATING CITY CHARACTER: A CASE STUDY IN BOSHROOYEH, IRAN

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PENGENALPASTIAN DAN PENILAIAN KARAKTER BANDAR: SATU KAJIAN KES DALAM BOSHROOYEH, IRAN

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DECLARATION

I hereby declare that the work in this thesis is my own except for quotations and summaries which have been duly acknowledged.

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ABSTRACT

Cities have been created gradually with the new forms based on the level of economic and political development in their society. Urban forms have been changed in new urban societies regarding their natures and scales. The loss of city character and identity is one of the problems that arise from accelerating urbanism. Currently, Asian countries are moving after developed countries, and they see the solution to the housing crisis only in assimilating and dense building. The aim of this study is to find out the character (physical identity) of Boshrooyeh city in Iran. The purpose is to investigate the presence or absence of continuity in character of the city and its urban tissue. Finally, utilization of the city's typological patterns for continuity of character in destroyed parts and new developing areas were examined. The research strategy included a case study and also a combination (qualitative and quantitative). Urban tissue method -as one of the urban morphology approaches- and main structure theory are also conducted as to define the identifying criteria of character. These criteria were used in two scales; for the whole of city and selected areas (90 Blocks and 298 Plots/Buildings). Assessment criteria of character were also in two scales; macro and micro based on critical regionalism theory and definition of character. The tactics of the study focused on data collection and research documents. Instruments which were used in this research are inclusive of maps (cadastral), photos, movies, sketches, and observation. Typology method, form analysis (blocks, plots, and buildings), and SPSS software were applied for data analysis and achieving the results. The analysis contains two parts; identifying and assessment. The results of the identifying part indicate typology of blocks, plots, buildings, and urban tissues in Boshrooyeh city. The results of assessment part also revealed two features; lack of harmony and contrast in image of the city, and changes in physical urban form. However, some main structures of the city (Bazaar, Main Square, and change from inner to axial), blocks, buildings, and widening of streets were destroyed; it was found that the city character still remains. It was also discovered that if development continues at such a rapid rate, city character and identity will gradually destroy in near future. The main conclusion is despite all the changes in urban spaces, traditional forms can still be used certainly not only to imitate but also for re-interpretation of our understanding of them. Suggestions were proposed for maintaining and sustaining of city character and identity. These suggestions can be used in design process and review of conservation area boundaries.

ABSTRAK

Bandar-bandar telah diwujudkan secara beransur-ansur dengan bentuk baru yang berdasarkan tahap pembangunan ekonomi dan politik dalam masyarakat. Bentuk bandar telah berubah dalam masyarakat bandar baru berdasarkan kepada alam semulajadi dan skala perkembangan perbandaran. Kehilangan karekter bandar dan identiti adalah salah satu masalah yang timbul daripada pembangunan pembandaran yang pesat.Pada masa ini, negara-negara Asia bergerak selepas negara-negara maju, dan Negara Asia melihat penyelesaian untuk krisis perumahan hanya dalam bangunan asimilasi dan padat.Tujuan kajian adalah untuk mengetahui pencirian (identiti fizikal) daripada Bandar Boshrooyeh di Iran, iaitu mengkaji kehadiran atau ketiadaan kesinambungan dalam pencirian bandar dan tisu bandar.Akhirnya, penggunaan corak tipologi bandar untuk kesinambungan perwatakan bandar dalam bahagian yang musnah dan membangunkan kawasan baru telah dianalisis.Strategi penyelidikan termasuk kajian kes dan juga gabungan kaedah kualitatif dan kuantitatif. Kaedah sebagai tisu bandar adalah salah satu daripada pendekatan morfologi bandar dan teori struktur utama juga dijalankan untuk menentukan kriteria bagi pengenalpastian perwatakan bandar. Kriteria ini telah digunakan dalam dua skala; iaitu bagi seluruh bandar dan kawasan-kawasan terpilih (90 Blok dan 298 Plot / Bangunan).Kriteria penilaian perwatakan juga dalam dua skala; makro dan mikro yang berdasarkan teori regionalisme kritikal dan definisi perwatakan.Taktik kajian tertumpu kepada pengumpulan data dan dokumen penyelidikan.Instrumen yang digunakan dalam kajian ini adalah termasuk peta (kadaster), foto, filem, lakaran, dan pemerhatian. Tipologi, kaedah analisis bentuk (blok, plot, dan bangunan), dan perisian SPSS telah digunakan untuk analisis data dan mendapatkan keputusan. Analisis mengandungi dua bahagian; pengenalpastian dan penilaian. Keputusan bahagian pengenalpastian adalah meliputi tipologi blok, plot, bangunan, dan tisu bandar di bandar Boshrooyeh. Keputusan bahagian penilaian juga mendedahkan dua ciri; kekurangan keharmonian dan kontras imej bandar, dan perubahan dalam bentuk fizikal bandar. Walau bagaimanapun, beberapa struktur bandar utama (Bazaar, Dataran Utama, dan perubahan dari dalam kepada paksi), blok, bangunan, dan pelebaran jalan-jalan yang telah musnah; ia didapati bahawa perwatakan bandar masih kekal. Penyelidikan ini juga mendapati bahawa jika pembangunan berterusan pada kadar yang pesat, watak dan identiti bandar beransur-ansur akan mansuhkan dalam tempoh masa yang singkat. Kesimpulan utama di sebalik semua perubahan di dalam ruang bandar ialah bentuk tradisional masih boleh digunakan; bukan sahaja untuk meniru/mengekalkan pencirian perbandaran, tetapi juga untuk menterjemahkannya semula dalam konteks setempat. Cadangan telah dibuat untuk memastikan dan mengekalkan sifat bandar dan identiti, yang boleh digunakan dalam proses rekabentuk dan kajian semula pensempadanan kawasan pemuliharaan.

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LIST OF ABBREVIATION

A	Blocks shape (Trilateral)
B	Blocks shape (Tetrahedral)
C	Blocks shape (Geometric Polygon)
D	Blocks shape (Non-Geometric Polygon)
a	Plots shape (Simple tetragon): whilst its length been less than twice of the width (Close to the square)
b	Plots shape (Tense tetragon): whilst its length been equal or more than twice of the width
c	Plots shape (Polygon): with various shapes
I	Plots with less than 15meters width
II	Plots with more than 15meters width
N	Building position in the north of plot: whilst the yard is located in the south of building side
N-2	Building position in the north of plot: whilst the yard is connected with two or three joint sides of building
M	Building position in the middle of plot: whilst the yard is connected with four sides of building
S	Building position in the south of plot: whilst the yard is located in the north of building side
S-2	Building position in the south of plot: whilst the yard is connected with two or three joint sides of building
W	Building position in the whole of plot: whilst the yard is located in the center of building
N-S	Building position in the north and south of plot: whilst the yard is connected with two separate sides of building
P1&P2	Building period: After Revolution Period
P3	Building period: Pahlavi Period
T	Building period: Traditional
Combination	Building period: Build with two Difference Period

CHAPTER I

INTRODUCTION

3.1 RESEARCH BACKGROUND

The City form consists of some different elements, which have been joined in the functional and spatial form. If these elements have an appropriate spatial organization the strong coherence is created among them. In this case, a right connection forms between the urban space and city dwellers. Urban design is the result of thoughtfully development process. This process as Alexander et al. (1977) said, is the reason of traditional city integration. In the traditional urban spaces this spatial regularity among city elements is the result of thoughtful developed urban patterns (Mahmoudi & Fanaei 2009).

3.1.1 Physical Identity

Whole the city has identity (specific character) and independent that apart from the components formed it. Each element and component has its own identity, and city also own identity. Urban elements and components are independent in their plurality, and city is independent inventory in its unity. The city's identity finds meaning when it is detected city character. Character is rooted in time and continuity. Character also rooted in a set of knowledge, culture and traditions that over time gives the city feature and an identity different from other cities.

3.1.2 Urban Form and Civil Life

Urban from and its elements are admitted, which flows civic life and urban life. This urban form, although the show place of the situational, but of time always has been the transformation and new birth. Therefore, restoration of historical urban tissue is depending on restoration of an overall urban form and revitalization. This act leads to define the urban life, and this life is considered even civil society.

These following questions have been formed in mind environmental design experts for long time, and certainly have also been proposed the methods and

solutions; how can to kept character and identity of the built environment? Can we do regular the abstract concept and conceptual identity, and be developed a way for the emergence of the environment? Can we are measuring identity of the city, and developed solutions to achieve better conditions?However, it seems to be required more extensive studies to achieve a determined process for evaluating and identify the built environment identity. Considering the circumstances and characteristics of each region of the world may be differences.

Usually studied artifact identification is done according to the theories of environmental perception and behavioral sciences. In this type of research artifact identification assessment is done through of interviews with people and analysis their opinions. The purposes of environmental researchers are evaluation of people belongs to the environment, mode shape associated sensory, and rate identity part built environment. Today because of this approach is consistent with theories of participation and intervention residents in the design environment, highly regarded and is considered a democratic perspective.

Although this method is very common and can not in any way it has denied or ignored. Even so, it should be noted the possibility of researcher's interference and influence, consciously or unconsciously, and achieve results that this theories have emphasized by submit comments to the people. In other words, in this method may be covered by people on a person's personal opinions. On the other hand, perception and feeling of people in the environment are usually impressed with a number of factors like congestion, environmental pollution, heat or cold, memories and history of the mental, amount of mental or physical health, age, education, etc.

So it is very difficult and sometimes impossible refining influence of built environment from other influential factors in the minds of people. Thus, search results may not be a major achievement in ways designed to improve the environment. Finally, utilizing an appropriate, logical and fair way of this method requires knowledge of psychology and sociology theories and their application in the interview and survey people.

Another type of research is analysis and evaluation of identity (character) from the perspective based on physical features and researcher's opinion that concerned

directly to the built environment and its design. In this way, physical and form building is considered rather than relying on people's opinions, which is variable and unstable. If the method is already prepared a questionnaire to achieve the desired result was important in this study, harvesting and analysis of physical identity of the city is important.

For this purpose, it is necessary to develop standards and principles to compare the conditions with the ideal situation. Defining an ideal situation is the very complicated and difficult issue, which requires extensive and detailed studies. This method has the greater relative uncertainty, and relies more on environmental design theory - not theory, psychology and sociology. However, like other scientific studies, cannot be definite and unchangeable. In the other words, analysis method will influence the world view and intellectual history researcher.

3.2 PROBLEM STATEMENT

Larkham (2010) points out that, some of the most significant urban problems in the last century have arisen in cases where new urban and architectural forms have been developed at speed and to a large scale, but with little or no reference to existing urban form and context. In today’s world, the main conflict is trying to keep the nation’s identity. Many of the contemporary world crisis has occurred conflict and confrontation of global and local values.

Our current cities grow without the kind of form, for years. Although the longstanding identities of many of them crystallized in their spaces and architecture, and give them quite certificates rational. The outer shape in architecture and urbanism without identity, but absolutely no profit is seeking. In Iran, being a city without identity has been essential for two reasons: first, due to general economic crises that occurred led to excessive growth in urban population between 1956 until today; second, increasing the existing forms of lifestyle (Fakouhi 2008).

Globalization is a phenomenon that in two acts: On the one hand, to increase global awareness and break ties in space (forming a unified world). On the other hand, it allows small communities to attend and the role of nations will rise. However, lot of scholars such as (Ferdowsian 2002; Madanipour 2003)believe globalization is a

process for becoming an American or Western that his influence continues to spread through the communications media.

All the above have led efforts to preserve "Identity" and "Character" of indigenous and local increases and to replace Cold War rivalries (bipolar world). Thus individuals and groups trying to preserve their traditions and values, and this is response to global processes that create a homogeneous and formed lead. Attempt to maintain identity will be expression and analysis in various scientific disciplines with many ways. Architecture and urban design play an important role in preserving and promoting the identity, because it is related to the environmental characteristics of human beings.

From many years ago, a symbol of diversity and local excellence has been considered. Issue or crisis, "identity" in the built environment has been seriously prevalent, especially since the International Style (uniformity style). Particularly, in less developed countries often inherited the best works were built design environment. Thus, one of the main topics was part of a cohesive community identity, according to architecture and urban design heritage of each region and its occurrence in the built environment. In Iran, importance of identity to the extent that the law of the third and fourth development plans referred to the necessity of "giving identity to the image and physical of country cities and villages" (Mirmoghtadaee & Talebi 2006).

It is very unfortunate to see that in similar climatic zones, and not very far from each other, the new cities, or even new residential areas of the old cities in Irandevelop without learning from traditional settlements. Although they were built for the same people with the same cultural background, they are not able to care for the simplest needs of their people. Cultural characteristics and activities of people in each climatic zone are much more important than just designing beautiful houses. Urban planners should always remember that people make spaces and although they may change these spaces, their culture will always remain the same, no matter where they are (Ferdowsian 2002).

Habibi (2008) mentioned, today’s cities are included three areas: 1. old texture that is discrete in terms of physical, and it is rapidly been emptied; 2. margin texture that is completely spontaneous, and it is derived from land speculation; 3.

modern texture that is expensive, and they are also spontaneous and made without regard to the form – space. According to Mirmoghtadaee (2008) urbanization in Iran is leading to gradual replacement of individual houses by residential complexes and apartments. In this way, the use of traditional design principles was lost, while solutions to enhance adoptability in the internal layouts have not yet developed.

The spatial structure of modern cities is more or less similar to each other no matter in which part of the country they are built. Fast development of Iranian cities has produced spaces without region traditions and cultural values. This is inevitable because culture needs time to develop. In the Iranian society, in spite of all rapid social and economic changes, culture still plays an important role in shaping the living environment. In the modern urban planning system of Iran, quantitative needs have overcome the qualitative importance of a living environment (Ghaem-Maghami 1993).

While the growth of unplanned settlements is from the micro to macro scale, this process is inverted in our planned settlements and this causes lack of hierarchical organization among different levels and also loss of connections between them. Technology is the main reason for these changes in the physical structure, during this process, not only products but life itself is being standardized. Settlements are built according to similar principles which produce similar physical environments without respect to geographical, social, and cultural differentiations(Kaya & Bölen 2005).

3.3 AIM OF RESEARCH

To solve mentioned problems in the such as lack of identity and lack of attention to existing urban form and context in new design of cities, the scientific researches utilized usage aspect. The aim of their studies was resolve the issue of nowadays cities. However, the studies with aimed to evaluate or provide the theories are base aspect (fundamental research), and also explain characteristics of objects, nature of phenomena, and relationships between them. This research was looking to find process solutions to give identity to the cities with no imitation of traditional forms. In this way, it tried to returns the character back to the city, to avoid no identity created

in current cities. It also tried to understand the values of traditional patterns, and continue them to the contemporary cities for stabilization city's identity.

The main goal of this research is;

- To determine the influence factors in shaping the character of Boshrooyeh city.

Traditional cities have a specific credit and identity that have followed certain regularities for the physical and functional cohesion, and its main urban form in their historical evolution lives. As Kropf (1996b) believed, city has a process as a whole (including buildings and its residence). City also is interactive between humans and their environment. Trying to identify the character of this process, study the physical aspects is an appropriate basis that can be built upon it the picture of character. Physical essence and its organization are the most tangible and stable aspects.

3.4 RESEARCH QUESTIONS/HYPOTHESES

As noted, the physical features method is very important relies on the theoretical foundations and find reliance point for the comparison and evaluation. Therefore, it is necessary before analysis of the made environmental, criteria are developed for assessment. Thus, the research questions are:

1. Which components make "Boshrooyeh" city's character?
2. How can be evaluating character of "Boshrouyeh" city for its continuity?
3. What suggestions will be present for improvement and promotion of "Boshrouyeh" city's character?

The hypotheses of this research can be summarized as follows:

1. The city character (physical identity) is measurable and could be able to evaluating. To evaluate character required form and physical of city be simplified;
2. The character can be used to improve the new urban design and conservation of traditional areas. It also can still be used certainly not only to imitate, but also for re-interpretation of our understanding of them.

3.5 OBJECTIVES OF RESEARCH

Urban space like other phenomena has components with meaning, function, and form. However, these components are better understandable, if they are more consistent and more harmonious space quality (Khademi 2008). According to Walter Benjamin city is forgotten location, and it is full of deep memories and promotes mortality. But the mortality in all root structures and gives hope for new life and all it takes to dream, then passion is to suppress will facilitate the process of awakening. We should also as architect and urban designer figure out the dichotomy, and with Benjamin instead to sit in sad for loss of ancient cities, try to feature lies in its assessment to figure out. We should choose pattern of curious truancy and review of the city by critically. Like a child with unfamiliar and exotic look (Tajbakhsh 2004).

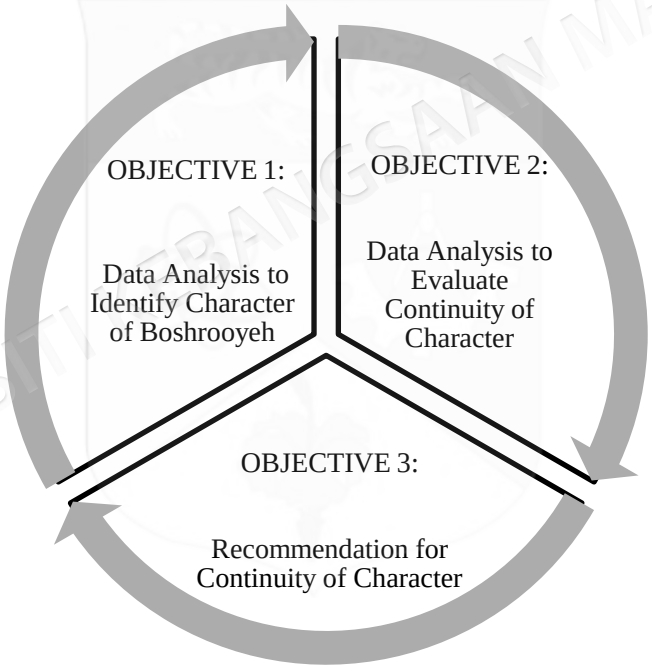

Figure 1-1Conceptual Model of Research Objectives

In order to carry out this study, three objectives have been set to complete the research. Main objectives of this study tried to find responses to questions of research that will be as follows (Figure 1.1):

1. To identify the Boshrooyeh city's character (urban form and its characterization);

2. To evaluate the continuity of Boshrooyeh city's character in a hierarchical process;
3. To suggestimprovement and promoting continuity in the character of "Boshrooyeh ".

3.6 RESEARCH METHODOLOGY

Research methodology is an attempt to determine a logical method of achieving the goal of science or knowledge without which such work would not be possible. In other words, research method is a reasonable and reliable process that is developed in order to prove hypotheses. So that it can be defended, and generalized it in others. In the exploratory stage researcher tries to discover new areas of research. In the descriptive stage also tries to describe special features of phenomena that are interested in by their knowledge (Mirmoghtadaee & Talebi 2006).

Table 1-1 Two Different Methods in Environmental Studies

Method	Subject	Harvest visitors	Theoretical	Result
First	People's feel in the environment	Researcher based on people's opinions	Science theories in environmental design	Analysis of perception and how people feel in the environment. They belong to the amount of identity that might lead to the design guidelines.
Second	Physical features of built environment	Researcher	environmental design theories	Analysis environmental artifact of having distinctive characteristics and unique that could lead to the design guidelines.

Source: Mirmoghtadaee & Talebi 2006

As noted, usually environmental studies done with two perspectives: first, environmental perception and behavioral sciences; second, physical features that concerned directly to the design of built environment (Table 1.1). In this thesis used the second with three methodologies; case study, qualitative, and quantitative.

3.6.1 Case Study Research

In this research chose the Boshrooyeh city in Iran as case study, this consists of both current situation and the historical events of the city. Yin (1994) believes types of case

studies might be; explanatory, exploratory, descriptive or combination of them. This depends on the researcher's purposes (the nature of research question), and is not limited in research strategy that has been considered. He also adds designs can be single -or multiple- case studies, and used methods can be qualitative, quantitative, or both.

It was a field-based study, supported by historical documentation, and official preservation plans. The data mainly came from the historic and current photos taken at the site by author, and gathered from history and official websites. The plans and survey maps were obtained from the local planning bureau. Methods involved in this case study research were mainly documentation research and field observation.

3.6.2 Qualitative Research

The approach of this research has two important aspects: 1. criteria of identification and evaluation of character based on the analysis specialized texts according to compiling researchers; 2. in the study ofcity used urban morphology, which is obtained of merging the two theories (main structure and urban tissue). Physical will be reviewed as the object outside city residents urged. The morphological approach was used to review the development layers of Boshrooyeh.

Qualitative research is especially appropriate for understanding the meanings and processes of people's activities and artifacts. It will be beneficial to costs of the research. Researchers wishing to employ a qualitative research design will find relatively few "road maps" or step-by-step guidelines in the literature; the researcher is thus obliged to exercise extra care and thoughtfulness throughout the research study. Another major challenge concerns the vast amount of unstructured data that must be coded and analyzed, a task that is enormously time consuming. However, in fields such as architecture, the peer review processes of scholarly journals and conference groups tend to give credence to qualitative research, suggesting that it will remain an important model for some time to come (Groat & Wang 2002).

3.6.3 Quantitative Research

In addition to the qualitative (field works) were used quantitative methods for details of study. The SPSS and EXCEL software was used to assist qualitative data converted to quantitative data. This software also was contributed to find difference/similarity, continuity/evolution, and unity/multiplicity (three aspects of identity).

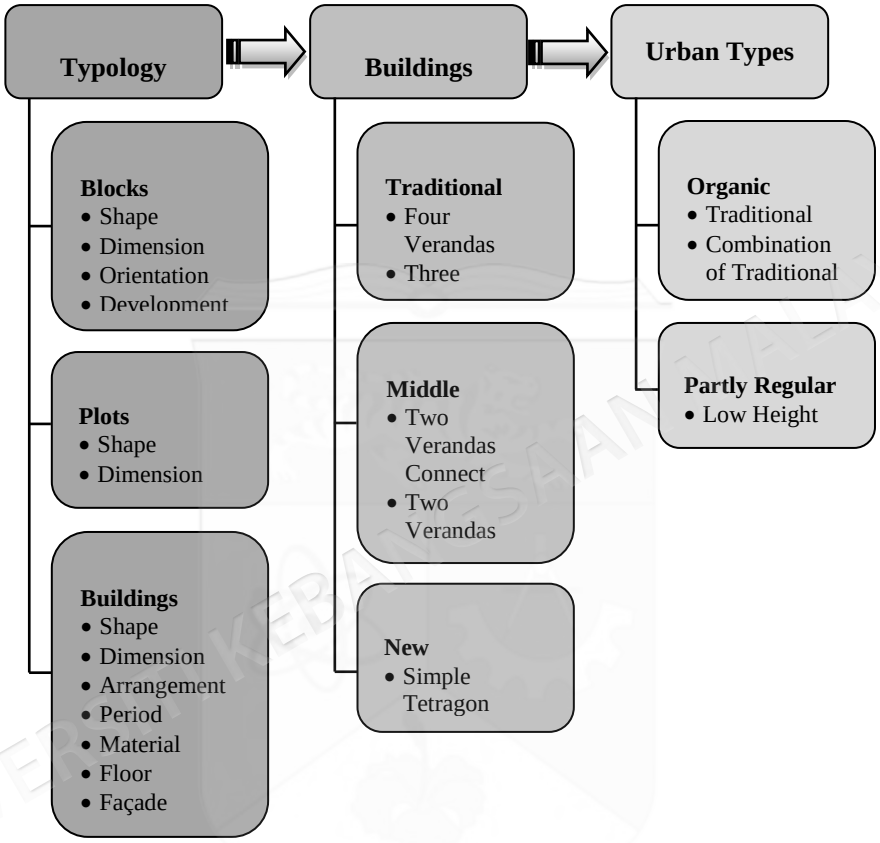

Figure 1-2Conceptual Processes of Typology Studies

All variables of this study were comparing in two sections. In the first section was evaluated typology of 90 blockswhich were obtained from the selected area includes; shape, dimension, orientation, and development layer. Since 90 selected blocks, and the areas behind them were included wide areas, and study generally area was very time-consuming and difficult, so eight blocks selected for detailed studies. Second section was including typology of plots and buildings in selected blocks includes; shape, dimension, orientation, development layer, arrangement and position, historical periods, material, floor, roof, and façade (Figure 1.2).

3.7 SCOPE OF THE STUDY

The scope of this study is drawn out to analysis the character of cities and its components. The most important effort in this study is develop thecriteria that can be identified and evaluated identity in the city. These criteria are an inference through the study and analysis of architecture texts and urbanism texts. The development of these criteria is specialized in analysis of city character that will be done in this research.

Some researchers may have criticized this method, because they believe values of the city (such as identity) should be extracted from residing in the community and based on their opinions. In response to them should be mentioned that research based on professional opinion (or observer) in Architecture and Urban Development has a long history. This method is used in most studies about the city and its features done. The very famous sample is "A theory of good city form". Lynch (1981) had inference in its main topics of good city form through analysis of texts and personal experiences.

Another point should be raised here is strictly physical perspective research. This study just refers to the review of the form and physical city. From this opinion will follow Urban Morphology views. By definition, meaning of urban morphology is "science of form". Its work also to review “shape”, form, and external structure or practices is sorted. Urban morphology is a systematic review of form, shape, map, structure and functions of cities built tissue. Origin and evolution style of cities built tissue over time, too.

According to Bacon (1967), form of the city has been achieved from voluntary actions of people, and caused by interaction between human and environment. In this interaction regularly human are changing and physical was unchanged. Physical also has long life more than their human. Physical is a physical embodiment of dreams, desires and human reactions. Systematic study, it could be a way to identify goals and motivations that have shaped it. Therefore, study on physical of a city cannot know non-human approach to the city, as it can be realizing the ideal form of their city from the study by human desires and aspirations. The study on form of the city also can make us aware of the demands of residents.

3.8 BENEFITS OF THE STUDY

Challenges for small historic cities and counties such as Boshrooyeh include the fragility of the cultural identity of the city and its people.A common and shared vision on how Boshrooyeh people wish to have their city development and changed, from now would be useful.This would also facilitate the essential co-ordination which remains a persisting challenge for this city, as seen all over the world. Without co-ordination and a vision for the future, the risk for undesirable change to the built heritage, cultural values, economic growth areas, security, land-use, and social order could occur (Taniguchi 2009).

The result of this work should assist in maintaining the quality of historic cities, and should help to create new towns that respect social needs, cultural values of the Iranian people. Ferdowsian (2002)has been determinedthe principles and design tools that could bring better quality to the life in modern living environmentswith the help of this recommendation: 1. give the dependency feeling to the urban; 2. use the traditional values to nowadays lifestyle to recreate socio-cultural identity; 3. to meet the special social needs of life in urban planning.

The study will first of all help urban designers to better understand the criteria that must be met and the characteristics that the cities must have character. This includes those that are involved in: 1. the architects and designing of cities which include those in both private and public practice; 2. Scrutinizing proposals for endorsement which mainly involve those in the local authorities;3. Preparing guidelines for the development of cities which include those in all levels of authority.

This research also should lead to the adoption of new strategies and solutions which include the identification of new methods or a revamp of the existing planning standards for cities, which have an implication on character cities. In general, a greater understanding of the subject and an application of the right concepts and more appropriate measures and standards will help create more cities with character in consistent with a developed society.

3.9 OVERVIEW OF CHAPTERS

This thesis is divided into six chapters. The study has tried to conduct a pattern that each chapter acts as the integral part of the final report of the study. First chapter provides the background, problem statement, research questions (hypothesis), aim (goal), objectives and a brief description of its methodology, scope, and benefits of the study.

Second chapter begins by reviewing of previous study which covers the following subjects: criteria of identification and evaluation, meaning of character and physical identity, explain of identity and physical in general and specific semantic domain, relationship between character and physical identity, urban morphology schools, and urban tissue.

Third chapter presents history of “Boshrouyeh city” and introduces principles of regional traditions Iranian architecture. This chapter also discussed about urban development in the Islamic period of Iran. In Boshrooyeh section also natural and manmade elements, history and structure of the city, and components of urban tissue is presented.

In chapter fouris described the research procedure and methodology approaches conducted to provide this research. This chapter have discussed about research design and data collection. In this chapter also determination of selected areas, selected blocks, and number of plots and buildings will describe in detail. This chapter describes the research procedure and methodology approaches conducted to provide this research.

The purpose of chapter five is to illustrate the findings of the study and provide discussion based on the findings. This chapter presents the results after data analysis, and provides a discussion on the finding and suggestions for improve and promote character of the "Boshrouyeh" city.

Finally, chapter six presents the conclusion to the whole study, and contribution section is outlined. This chapter is summarized of the general and main

objectives of this research. Indeed, in this chapter discussed about the research limitation and suggests for future research.

CHAPTER II

LITERATURE REVIEW AND FRAMEWORK DEVELOPMENT OF CHARACTER

4.1 INTRODUCTION

In recent years, there has been an increasing amount of primary literature for the effective role of appropriate urban spaces; active, dynamic and live in the community are production, strengthening and development(Mumford 1961; Geddes 1968; Rapoport 1977; Lynch 1981; Cullen 2003; Bacon 2007; Bentely 2008).

The following reasons are successful restoration efforts and strengthen the urban spaces of expression: a. overcome the originality in recognizing, analyzing and designing urban spaces, b. unilateral tendencies of psychological growth of low paying attention to social context, c. Lack of effective social agents to identify the exact content and form of urban space, d. Insufficient definition of the existing urban space.

It is a dramatic change in urban form occurring throughout a large modern country can be observed within a period of less than 10 years. Some of our most significant urban problems of the last century have arisen in cases where new urban and architectural forms have been developed at speed and to a large scale, but with little or no reference to existing urban form and context(Larkham 2010).

The amount of published literature injournals and books and the occasionaldissertation on various aspects of theIslamic city are notfocused enough to be directly useful asbuilding blocks for the construction oftheory(Hakim 1998). As Moudon in (1997a) said, researchers in urban typology and morphology believe that the relationship between individual cells of the urban fabric has changed from one of dependence on the city as a whole to one of autonomy and dissociation: individual

buildings in historic and traditional cities exist in relation to one another; buildings in contemporary cities stand alone and only share a street with their neighbors.

As a general explanation, literature on the concept of character and urban morphology are reviewed in three main sections. At the first section are presented definitions of character, physical identity, and urban form. In second section are stated the urban morphology, its schools and methods. In final section are reviewed and discussed about previous researches in urban morphology.

4.2 DEFINITIONS OF CHARACTER

In terms of psychology, character means set of feelings, thoughts, emotions, etc of everyone. Every character have two bases: unity and identity (Arefi 1999). In Oxford dictionary(Hornby et al. 2005), character means spiritual or moral qualities which distinguishing a person, group, nation, etc. from others. Character also is include all features that defines a thing, place, event, etc, and to distinguish it from others.

Character is a word which usually used along with identity and sense of place, and also considered to be synonymous with them. However, it should be noted spirit or sense of place is an intuitive concept, and often is related to people's perception of the environment. On the other hand, character in the literature on urban design is a functional concept, and be related to measurable characteristics.

In the pamphlet CABE (2000), character is one of the goals which is to preserve and create through urban design. Shape features of place and its residents are effective in the special character and sense of identity. These features are included; landscape, building traditions, materials, patterns of local life, and other factors that may place different.

According to Kropf (1996b), cities have described with character as adjective. So, it concerned to the researcher,and also observed. Character is the same features that different it by others. Unique and distinct cities have a special combination of appearance features, which make the city's identity. These appearance features also make city character. Therefore, character and identity are two words to express one concept. Character understanding is not intuitive, and is more concrete tools for

analysis and description. Its physical aspects are superior, and mainly. It is concerned to city shape (particularly in historical city).

A further difference between character areas and morphological regions concerns their scale. Morphological regions are typically seen to form a hierarchical structure, in which small-scale regions sit within a series of larger regions of increasingly generalized character. Characterization studies, on the other hand, rarely recognize character areas of different scales and generalities of character(Kropf 2006).

4.3 DEFINITION OF IDENTITY

Totally, all landscapes have particular characteristics that differentiate them, and which give them unique identity and value(Wharton 2005).Based on extensive literature review in the concept of identity is revealed the division of identity into three main concepts:

Difference/Similarity: Identity derived from Latin word “Idem” that means “Sameness”, and has similarity with concepts such as “Likeness” and “Oneness”(Hornby et al. 2005).Identity is defined via “Similarity”, it means via similarity with people like us and via difference with people does not like us (Woodward 2004). Identity is one of the important qualitative characteristics and physical evaluation criteriaof city;

Continuity/Evolution:There are two interpretations of the identity; views of nature and essence of objects (determine “being own”), and views of identity becomes "being same". Art work like organisms lives in time and be changed, and its identity becomes apparent at a time it passes (Rahimzadeh 2000). Each place must maintain their identity through inner change and transformation; it means stay "same" without to be “sameness"(Norberg-Schulz 2000);

*Unity/Multiplicity:*Identity sense is man feeling tocontinuity of their mental life.Oneness and unity always makes sense in their mental cases in the face of conditions external changing(Kardan 1993). Unity in multiplicity is a principle of Iranian Urbanism and Islamic philosophy (monotheism). Consequently,

"Difference/Similarity" meaning fields defines the identity and the two meaning of "Continuity/Evolution" and "Unity/Multiplicity" defines its terms and conditions.

There are two methods in the study of identity built environment. The first method is according to the theories of environmental perception and behavioral sciences. The Lynch's book (Image of the city) is the most famous example of these studies, which is done based on the Gestalt's psychology principles (Daneshpour 2000). The second method is purely physical, and based on researcher's observations. This approach has a long history and an example it can be seen in the travelogues (Mirmoghtadaee 2004). Identity has highest degree of standards in urban physical quality. In any place that you need to maintain identity through internal change (Norberg-Schulz 2000).

4.3.1 Definitions of Physical Identity

The important factor that makes a different place and it gives meaning "Own" is physical identity. Physical identity means differentiation of the city shape that in every city are variety and unique (object is related only to the urban form).Physical approach to the concept of identity is an approach has been less noticed that means identity or differentiation of physical elements and palpable (Mirmoghtadaee 2006). The significance of this approach is that reduced complex and ambiguous points of identity, so it is simple, tangible and measurable.

Mirmoghtadaee (2004) explained a physical identity as attributes that decentralized the city object and will unfold similarities with his own. These attributes must be a way in which the city object is changing, evolution with time and lead to genesis of a total. Three conditions of attributes that forms the city with good identity are including: 1. Distinguishes it from other and similarities with its own (the main principle) 2. Maintain continuity through change 3. Maintain unity through multiplicity.

4.3.2 Definitions of Urban Form

Form means body and corpse, and it is opposite of spirit and soul. Form finds value with spirit and without that is not important enough. So, form is valuable

because is habitat the spirit. As Bahreyni (2009) said; town's shape is a fundamental pillar of urban design, and in fact is a container allows the urban activitiesoccur in it.

Town's shape can be considered by urban form in the specific semantic domain (architecture and urban design). Lynch (1960) expressed that city form is physical manifestations and observable of the city. Lynch alsoin (1981) declared that the biological complex (physical environment) is a spatial pattern concept of large physical elements, static, and continual in a city, as buildings, streets, equipment, hills, rivers, and maybe trees.

Urban form is effect of human desires and activities. City fabric is not only the build document, but also is living document in which people have lived. During the communities' life, activities and needs are willing to change. This change provides base for growth and transformation in urban form. City as a whole (include buildings and its residents) is a process. For identifying the character of this process, study of physical aspect is appropriate. Buildings function changed more than their structure. Physical nature and its organization are a strong point to begin, because they are more intuitive and consistent(Kropf 1996b).

Urban form is obviously a major constituent of 'character', that rather elusive concept so important in much conservation planning and design, but also with much wider relevance in non-protected areas. In reality, even detailed character appraisals based on morphological analysis at the level of individual plots and buildings can founder at the stage of an individual planning appeal (Larkham 2010).

Urban design is concerned with the physical characteristics of the city. As conclusion in this study the character was defined as physical attributes of the city that has its own identity and characterized. These attributes is changing with time and lead to genesis of a total. In this way three main concepts will be defined to understand the character of the city such as difference/similarity, continuity/evolution, and unity/multiplicity.

4.4 SPATIAL REGULARITY AND ORGANIZATION

“In order to understand the dynamic quality of urban living, we must look at the urban environment as a complex system.”(Kaya & Bölen 2005)Urban scholars and professionals research is almost exclusively concerned with historic city cores and small historic towns(Moudon 1997a).In countries and regions with a long history are often described as 'organic’; their layouts having been, or appearing to have been, generated naturally rather than being consciously man made. Generally based on pedestrian movement, and strongly influenced by local topography, they were built as integral parts of the immediate area rather than as through routes, and evolved and developed with use(Carmona 2003).

The City form consists of some different elements, which have been joined in the functional and spatial form. If these elements have an appropriate spatial organization the strong coherence is created among them. In this case, a right connection is formed between the urban space and city dwellers. Urban design is the result of thoughtfully development process. This process as Alexander (1977) said is the reason of traditional city integration. In the traditional urban spaces, most of the times, this spatial regularity among city elements is the result of thoughtful developed urban patterns. “Old trees, old houses, and old places in urban places as well as parks are all symbols of survival. They remind us of those who lived before and those who will live after us...”(Berglund 1998).

This is particularly obvious in cities in the Middle East, where single buildings are an integral part of the general fabric, and where urban neighborhoods have traditionally organized their functions and services in relations to the whole(Ghosh et al. 1996). Public open spaces are the most fascinating parts of historic cities. The hierarchy is a movement from public space to private space. The square is the most distinct element of the urban structure. Traditionally in Iran's gates were separate semi-private and private parts of the network from the public spaces.Therefore, the traditional design system of historic cities in Iran has never allowed a direct connection of private and public spaces.

The total context of the city’s skeleton area is often consistent and organized. Its vicinity with various contexts and its increase spatial quality leads to more

balanced access of inside the city to the skeleton area, in comparison to all other places of the city in terms of distance. Moreover, city region access to the vertebral column of the city directly or through the main rows and connect to all other elements(Mahmoudi & Fanaei 2009).If known that physics of urban space is its form, and operation in space is its content then is not feasible absolute separation of form and content in the urban space.

In the concept of public area as a factor in city organization Krier (1996)noted that public area includes all the public memorials and buildings, which form the skyline and vertical façade of the city. They are connected by streets and squares. Public areas are placed into the private area and create one appropriate environment for living, working, commercial relationships, health and security. These private areas create the horizontal form of the city. All the public spaces do not have the same value and in the historical cities with the traditional form, the private space follows the public space(Mahmoudi & Fanaei 2009).

4.4.1 Urban Space Content

Previous studies have done great researches for keeping alive the urban space concept such as (Mumford 1961; Geddes 1968; Sitte 2006). Their inference was that urban space is a part of city construction that had a harmonious whole, continuous, and enclosed poster of the framework (physical respect). This space should be including discipline and beauty, and organized for urban activities. In addition, have a social environment that is containing a set of relationships between people. Urban space studies are done not only through its features of form cognitive beauty, but also through its features like content.

Urban activities' system is the most important aspect character element and content of urban space. It can be analyzed only by recognition of a discipline pattern and fundamental links between them, and used to production planning in urban space. These can give to a space character and spirit: components, specific elements, and human activity (Figure 2.1). In conclusion, urban space form is an incarnation, manifestation of attitudes, and people's civic beliefs. So it cannot be the specific geometric format.

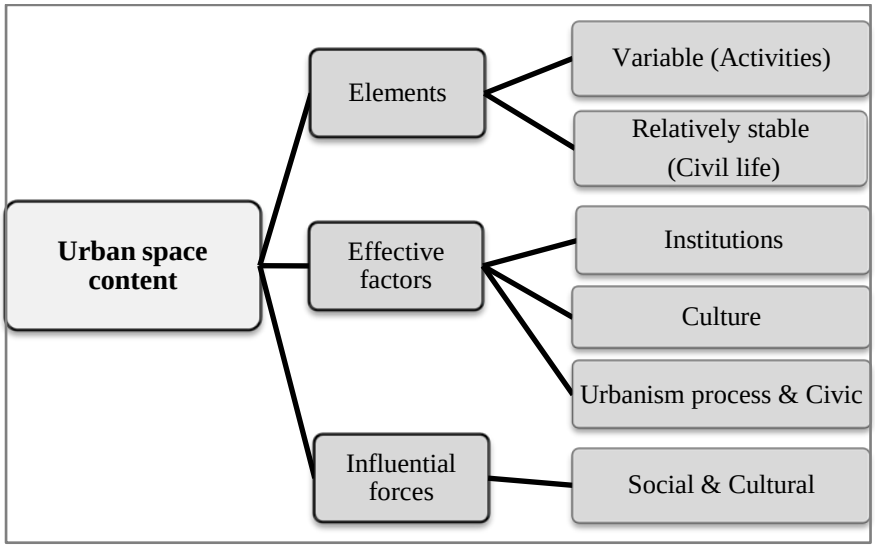

Figure 2-1Content Knowledge in Urban Space

4.4.2 Image of the city

In (1960), Lynch studying the urban landscape and view values discovered the meaning of image, the interactive effects of the body form and people's perception of this form. Lynch pointed out the most characteristic urban elements of these mental representations: 'paths, nodes, edges and landmarks' and considered five basic criteria for designing: Vitality, sense, fit, access, control, efficiency and justice. These characteristics contain a certain skyline, a specific spatial structure, developmental pattern and special use of the places.

A "good" city, at least in the part of the world which has a history, contain a permanent elements, form, and construction that make a mental picture and image in addition to their capability of being changed along the socio-economical changes (Mahmoudi & Fanaei 2009).Molavi (2005)highlighted, it is no doubt an objective perspective on beauty overcome the mental aspect. In the content of urban spaces, Molavi expressed that numerous camping tourists in historic cities are obvious evidence of aesthetic beauty of consensus about these cities.

4.5 PHYSICAL ENVIRONMENT

Human society as a capacity to think and reason, foundation the manufacturing system value with time to the community and knows then it's bound together. Physical system, the mental and real, are in this category. Accordingly, a man made physical

environment’s features is continuing its function in valuable system space of physics, that will be achieved the construction of social relations (Hillier 1989).

Barghjelveh(2004), considering the general systems' theory and offers experimental systems (real) including: non-living and living, and abstraction system (subjective). In addition express value systems have two types: single and physical. As a result, the role of physical environment is essential in defining ongoing assessment of community’s values foundations.

Barghjelveh also explainedthe research program and offered theTable 2.1. In line with structural analysis, communications analysis, and strategic information analysis mentioned to specific planning, strategy planning, and strategy framework of case study physics. To conclude these mentioned components will propose the significance of identifying the macro system in the city and design.

Table 2-1Understanding, Development Stages, Analysis, and Identifying of Macro System

			The Ultimate Goal				
Macro Identify		Select Information	Contact System Information	Structuring Information	Manage Information		
	Macro Identification	Strategy in identification large-scale project	Strategy Planning in identification large-scale project	Scientific planning in identification large-scale project	Study Program		
		Structural Analysis of Information	Communication Analysis of Information	Strategic Analysis of Information	Manage Information		
	Macro Analysis			Macro Identification of Physics Net Plan	Macro Identification of Physics Strategy Planning	Macro Identification of Physics Strategy	Study Theory

Scholars such as (Molavi 2005) to find common standards of aesthetics refers to the physical sector of urban space and its form features. In this way, suggest to the separate the physics of urban space for analysis of form features and its constituent elements.As highlighted by Sheppard(1987), these are form features in urban like closed rate, exist axis, peak and down rate, skyline shape, exist or not exist of congruence, and similarity in the building facades’ regenerator urban space.

Likewise, morphological theory describes the historical process of development in the city form and its spatial consequences. This theory tries to present institutions and social forces that give shape to an environment(Rofé 1995).Some related methods of evaluating urban space are: Chaos theory, Fractal Geometry, Cellular Automata, Fuzzy Logic, System Theory and Space Syntax. These subjects lead to understand urban via looking from different point of view based on complexity and fractal geometry in urban design and architecture(Kaya & Bölen 2005).

Urban morphological analysis and the methodology of landscape characterization in many ways share much in common. Both are concerned with assessing and understanding form, function, cultural influences and 'time-depth'. Whilst the language used to describe components may slightly differ, both can provide a baseline of evidence or statement of current character and condition and both are usually undertaken as a precursor to developing policies, strategies, action plans or design principles for the future development, conservation or management of an area or neighborhood(Wharton 2005).

4.6 URBAN MORPHOLOGY

Urban morphology is the study of city appearance, its gradual formation, and the interaction among components of the tissue that defines specific compounds and urban faces, such as streets, squares, and other public spaces. Urban morphology is divided among several fields of knowledge. Its theoretical aspects are related to urban geography, history, and architecture. Urban morphology is one of the constitutive elements and is important to urban development. It is also affected by urban planning and urban design.

Urban morphology is the study of the form of human settlements and the process of their formation and transformation. The study seeks to understand the spatial structure and character of a city by examining the patterns of its component parts and the process of its development. This can involve the analysis of physical structures at different scales as well as patterns of movement, land use, ownership or control and occupation. Typically, analysis of physical form focuses on street pattern, lot (or, in the UK, plot) pattern and building pattern, sometimes referred to collectively as urban grain. Analysis of specific settlements is usually undertaken

using cartographic sources and the process of development is deduced from comparison of historic maps(Wikipedia 2011c).

Larkham (1997)states, the base of urban morphogenetic in British countries founded by Conzen, and his ideas were taken from Schlüter (German-speaking countries). Morphogenetic means studying of process that is led to the formation and deformation of built environments (Moudon 1992a).This approach focuses on the transformation process of city making (street plan, land borders, parts, and structures). Awareness of the historical background is required to describe the process of sameness or differences in urban areas(Rofé 1995).

In 1960s and early 1970s, research on urban form was less susceptible than many branches of geography to the ‘quantitative revolution’. Nevertheless, this was a period when various quantitative methods were developed. Studies applying them were largely morphographic, describing physical forms rather than analyzing their origins and development. Larkham(2006) describes that the number of researchers with a historical perspective on urban formgrew very slowly.

Urban morphology is science of the form and shape of settlements. Madanipour (1996) also stated that morphology is investigated of systematic form, shape, map, structure, and approaches of synthetic tissue in cities over time. Appreciation of morphology helps urban designers to be aware of local patterns of development and processes of change. Urban morphology is one of the most important physical approaches to the city. As a result morphology as the form science investigates form, shape, external structures, and arranges the manner.

Carmona (2003) stated that initial work in the field focused on analyzing evolution and change in traditional urban space. The study of urban morphology seeks to understand the spatial structure and character of a city, town or village by identifying the patterns of its components and the process of its development. This study can involve analyzing physical structures at different scales.In recent years, Moudon (2000) argued that urban morphology focuses on city studies as a physical environment, but will establish to implicitly link between the space elements, material, social, and economic forces of the city.

Morphological structure is the result of dynamical processes related man, so morphological structure gives clue about life of communities(Kaya & Bölen 2005).The primary concern of urban morphology is the structure of urban form. So, if an understanding of internal structure is essential to successful 'manipulation' of a material, urban morphology is essential to urbanism and urban design(Kropf 2010).It has rightly been suggested that knowledge of urban form (urban morphology equals the study of urban form) is one of the essential things an urban designer should know about (Moudon 1992b).

Special attention is given to how the physical form of a city changes over time and to how different cities compare to each other. Another significant part of this subfield deals with the study of the social forms which are expressed in the physical layout of a city, and, conversely, how physical form produces or reproduces various social forms. Urban morphology is also considered as the study of urban tissue, or fabric, as a means of discerning the underlying structure of the built landscape(Wikipedia 2011c).

The historical cores of the towns were examples of the tracing of the historical development of urban form that to become a core feature of urban morphology(Whitehand 2007).The primary concern of urban morphology is the structure of urban form. So, if an understanding of internal structure is essential to successful ‘manipulation’ of a material, urban morphology is essential to urbanism and urban design(Kropf 2010).

The organization and development of the fabric are not random, but follow laws that urban morphology tries to identify. In the systemic organization there is interdependence between part and whole, which is between building type and fabric. It helps us to understand not only historical urban fabrics, with which most morphological studies have been concerned, but also the analysis of modern urban fabrics, an issue that has rarely been addressed(Levy 1999).

Mugavin(1999)believed, there are two predominant philosophical authors who have much to say that is relevant to urban morphology; Foucault and Lefebvre.Foucault suggests: space and place are ever-changing historical entities.According to Lefebvre, what is needed is a 'unitary theory’ of space that

encompasses the physical, the mental, and the social.A range of different methods is used within the sub-field of urban forms, including spatial and configurational analysis. Patch analysis, network analysis, statistical analysis, capacity assessment and valuation. Labels that may be applied to this range are quantitative urban morphology, urban mechanics and dynamics, environmental performance and configurational dynamics(Kropf 2011a).

Carmona (2003)has stated the richest combination studies in new morphology are indebted scholars such as Conzen (1960), and Whitehand (1992).Morphologists showed that settlements could be seen in terms of several key elementssuch as; land uses, building structures, plot pattern and street pattern to be the most important. Carmonaalsoemphasized the difference in stability of these elements. Buildings and particularly the land uses are usually the least resilient elements. Although more stable elements like the plot pattern changes over time as individual plots are subdivided.

A morphologic system is one form of urban planning. According to Carmona (2003)this system can be divided into three important sections: elements that give shape to the structure (element organization), elements that are regular (facilities), and components (road networks, segmentation, and body). Components also are classified into five sections includes:

- A *plan or map* shows the general forms of an urban complex or macro form; a general map of the city shows the organizing network plan (road design).
- A *plot pattern* is associated with the ground separated into small and large pieces for allocation or a specific user; it is used as supporting tissue.
- The *frame or building textures* is composed of buildings, including their antiquity, style, height, and whether they are in empty urban spaces or public spaces. These combinations of diverse and complex buildings, which may be full or empty, create the structure that can be called urban fabric.
- *Land uses* determine the performance of different parts of urban land. Compared with the other key elements, land uses are relatively temporary. Incoming uses often lead to redevelopment and the creation of new buildings, to plot amalgamations and, less often, to subdivisions and

changes in the street pattern. In contrast, displaced land uses are more likely to relocate to existing buildings in older areas and, rather than redeveloping them, to adapt and convert them.

- The *site* is a major component of the form and is determined by studying the status rippling, current water flows, and vegetation.

The urban landscape as a vast reservoir of experiences passed down by previous societies became recognized as an educative source and therefore not lightly expendable but something to be assessed, learned from, sometimes conserved and, not least, used to inform the creation of new urban landscapes. Especial attention was devoted to the way in which particular parts of the urban landscape had taken on different degrees and types of historical expressiveness. These differences were embodied in the urban landscape units that urban morphologists were recognizing (Whitehand 2009).Conzen also argues from Lefebvre and states: 'each society produces its own urban landscape, working into the detailed configuration almost every assumption, objective, skill, and preference of the society at large'.

Therefore, urban morphological research provides an excellent basis from which to develop on approach to understanding and managing places (Oliveira et al. 2011). The field of urban morphology, with its rich knowledge about the evolution of cities in various ages and in different urban cultures, could add most valuable insights into such a catalogue of rules and help develop rigorous scientific criteria for their evaluation. The linking of specific case studies and the evaluation of rules would help to bridge the gap between academic studies and urban planning and design practice(Tieben 2011).

4.7 URBAN MORPHOLOGY SCHOOLS

The research in the history of urban typology and morphology has identified three basic schools of thought which continue to shape the field, providing different perspectives not only on the city and the urban landscape, but on the value and purpose of analyzing them(Moudon 1997a). These three schools are; German school, Italian school, and French school of urban morphology.

4.7.1 German School (Conzenian)

Larkham(1997) believed thatthe most flourishing tradition of research in geographical urban morphology was the German tradition of morphogenetic, which was introduced by Canzen (1960) to Great Britain.Itwouldexplain the distribution of cities form such as the concepts of fringe belt and burgage cycle. Larkham based on Canzen research, stated that management of historical landscape in cities considers three divisions: building forms, city map, and land use.

City mapis divided into three components; streets and their discipline in a classification system, plots and manner of assemble them in the blocks, and map of buildings in the blocks. The combination of building forms, city map, and land userepresent morphological areas. The land uses, building structures, plot pattern, and street pattern expand on Conzen's four morphological elements(Kristjánsdóttir 2001).

The Birmingham group developed ties with the British planning profession, mainly in the area of urban conservation, an interest directly related to Conzen’s ideas on townscape management(Moudon 1997b).Urban geography in Germany is unique inasmuch as there was a period of three decades at the beginning of the twentieth century during which researchers focused their research on urban morphology. In analyzing the layout and the building fabric of towns their most important tool was the town plan(Hofmeister 2004). British school is using six levels of resolution; streets, blocks, plots, buildings, structures, and materials (Oliveira 2006).

a. Fringe belt

According to Larkham (1997), fringe belt means periods of slow change or even the rest in development areas has been built. Fringe belt shows the combination of new types is changed in the city’s border, and is an important morphological area.Conzen divided them into three categories: Inner Fringe Belt, Middle Fringe Belt, and Outer Fringe Belt (Figure 2.2). Each fringe belt is a permanentdomain that defines a gap in the growth of residential areas(Kristjánsdóttir 2001).

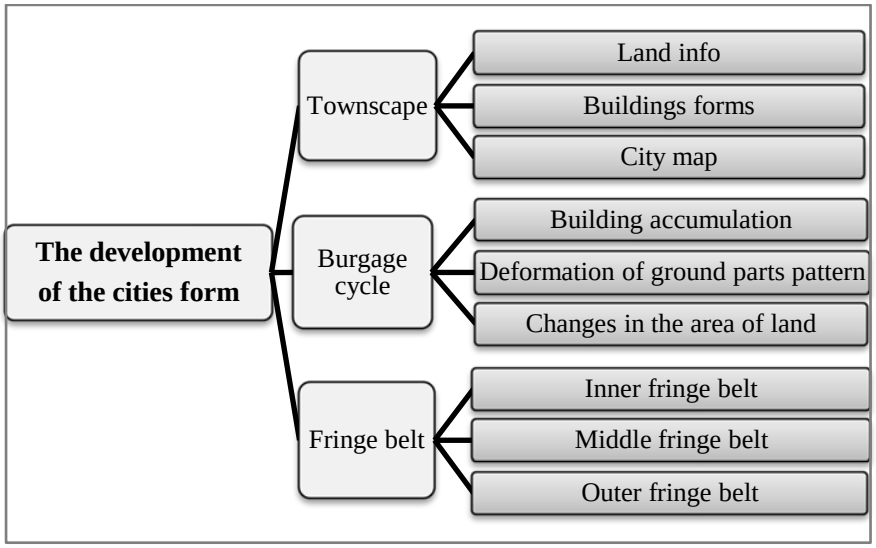

Figure 2-2Larkham(1997), Kristjansdottir (2001), and Rofe's (1995) Views Influenced of Conzen

A fringe belt is a zone of largely extensive land uses that is formed at the edge of an urban area during a pause in outward residential growth. Each fringe belt (and a town may have several) has distinctive features in terms of plan, building form, and land and building uses(Larkham 2006).The fringe-belt concept (Figure 2.3) was first recognized within Berlin by Louis (1936), one of Conzen's mentors," but was developed to a far greater degree of sophistication by Conzen in his studies in English city(Whitehand 2001).

A fringe belt is a product with large variations over time in the speed of extension of towns and cities. It comes into existence during a period of very slow urban extension, often owing to a house-building slump (and associated reductions in land values) or a topographical or other geographical obstacle to housing development. This is later embedded within the urban area and becomes a significant element in its historic-geographical structuring. The fact that little attempt has been made to explore fringe belts in relation to plan making and development control exemplifies the neglect of urban landscape units in urban planning, as distinct from their place in the study of urban landscape development(Whitehand 2009).

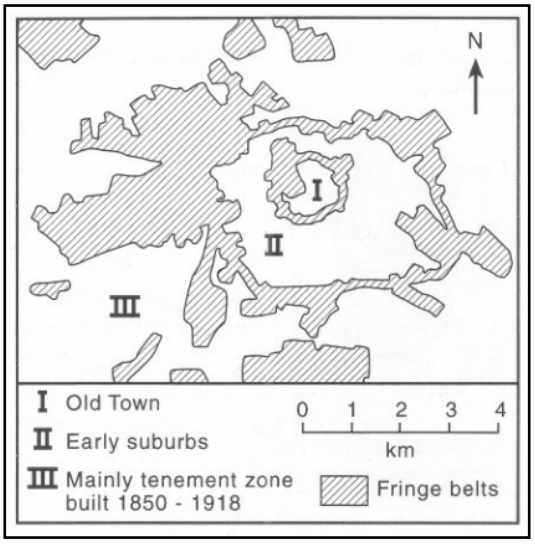

Figure 2-3The fringe belts of inner Berlin, 1936
Source: Whitehand 2001

b. Burgage cycle

Burgage cycle means gradual filling of plots, reaching to the maximum level of infrastructure, and finally leadsto emptyand prepare them for new development(Larkham 1997).Thus, with the growth of city will change blocks and plots patterns in several ways; accumulation of buildings (with the increaseoccupy the ground level or building height), setbacks of buildings (with the demolishsome of the buildings that have become a barrier), deformation of plots pattern (with the separation or integration), and in area of plans (self-consistent or additive)(Rofé 1995).

Canzenabout the historical landscapestated that city map, building forms, and land uses are three aspects of management. On the other hand, he mentioned these three aspects with a site at the most local level combined and make the smallest homogeneous areas of morphology (urban landscape cells). Urban landscape units arise with putting together these cells. They are together in different levels, and make the hierarchy inside the city. These are all effective in the crystallization of physical and historical of the city (Larkham 1997).

4.7.2 Italian School (Muratorian)

Muratori in the 1950s the founder of Italian school is studied on typology of houses and its location in the city. Muratori's argued that city is a physical embodiment of cultural development. In this way was used Cartography with two aspects: cultural-historical map (Typical features of a period) and reconstruction of structural - historical houses (Koster 2001). After the death of Muratori, his method was refinement efforts with one of his students Caniggia.Cataldi (1998)presented another concept by Muratori, designing in stages; an architect can present a set of solutions for the same project, which may not be different alternatives to choose from but distinct stages in a single urban process, according to a number of given assumptions on the evolution of the urban form.

Caniggia has done researches with the aim of understanding the built form through the historical process of shaping cities, including: elements (buildings), element construction (urban tissue), construction systems (regions and territories), and system organism (whole the city). These components make a hierarchy for spatial relationship research through synthetic elements (Kristjánsdóttir 2001). Italian school is using four levels of resolution; streets, blocks, plots, and buildings (Oliveira 2006).Italian architects such as Caniggia, Cataldi, Maffei, Corsini, Maretto, Strappa, Aymonino, Petruccioli, Argan, Cervellati, Secchi, and Rossi were under Muratori's influence on their professional development and continue his tradition (Moudon 1997b; Marzot 2005).

Caniggia also points outto the existence a leading type in the typological process. Leading type is a residential unit, which not limited by the surrounding urban tissue and created in one of the city's development layer. Form of residentialunits that have been create in the same period are similar, and with those that have been create in other period are different. Thus, for each period of city development is exist a basic type (residentialunit), which introduce the culture, religion, law, technology, and economic conditions of that period. Therefore, the whole city can be divided into different areas based on the basic residential units. Each area has its own character (Kristjánsdóttir 2001).

a. Definition of type and the concept of typo-morphological analysis

Type is known through special morphological composition that supported internal organization, and relations with the structures and adjacent spaces. Function has no effect in type, because buildings mayhave to changeover time without the typological changes. Individual buildings (even rooms), streets, blocks, and total city area maybe pertain to a type. Typology in a certain scale is determinedby the specification of smaller scale elements, which exist in the same environment(Scheer 1998).

According to Rossi the building type was conceived as a constant and archetypal configuration which persists through space and time as a design tool. Consequently architecture became the historical interpretation of its permanence and stability. This led progressively to the identification of the building type, in the Italian debate, as a matter that seemed unchangeable and independent of the different methods used(Marzot 2005).

Nowadays, the aim of Italian school is to promote and develop the typo-morpholoigcal research that applied to the preservation and restoration of the built heritage. One of the main features is the use of urban history as a means of recovering the sense of continuity in architectural practice(Pinho & Oliveira 2008).

Urban morphology has a dialectical relationship with typology. Their relationships are classified under "typology by morphology" and "morphology by typology"(Hwang 1994).One of the best ways to express typo-morphological modification is to compare it with water: The nature of water never changes, only its form. In its liquid form, it assumes the shape of its container, anchored to it by the pull of gravity.

Typo-morphological analysis can contribute to better integrate new interventions in the historic continuity of the city through different means: 1. studying the different town plans from several periods; 2. working sequentially to discover the rules that contribute to the evolution of the urban tissue; 3. establishing the evolution stages and deciding, which reinforce in order to build the most adequate connections with the existing city(Corsini 2001).

From the point of hierarchy the system of morphological analysis regards the street system, plot pattern and buildings pattern as an integral part of the town plan which took form and was transformed in the process of urban evolution. Typo-morphological approach took elements, structures of elements, organism of structures as the components of the urban structure when applied to individual buildings and towns. The morphological subdivision is usually adopted by geographical researchers, but the typo-morphological subdivision is taken by architectural generation (Figure 2.4).

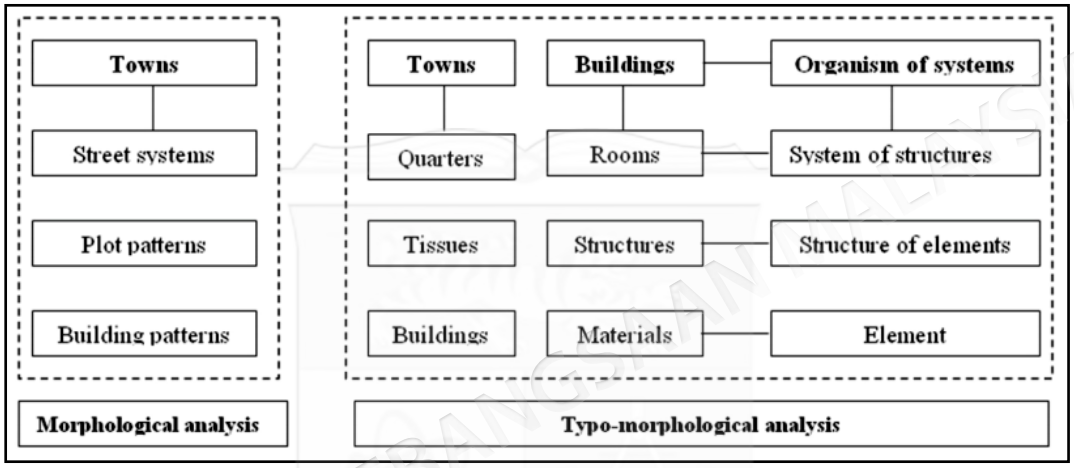

Figure 2-4Hierarchical Level of Urban in the Morphological and Typo-morphological
Source: Sima & Zhang 2009

4.7.3 French School (Versailles)

The French school has generated extensive methodological knowledge for the analysis of urbanization processes and related architectural models. Much emphasis is placed upon the importance of built space for sustaining social practices; the relationship between the built landscape and the social world is dialectical, with both shaping the other. Their tool for analysis Urban Morphology has some theories like; space syntax, figure and ground cities, and three theories of urban spatial design: figure and ground, linkage theory, and place theory (Wikipedia 2011c).

In France, architects such as Panerai, Castex, Boudon, Chastel, Panerai, Darin, and Bonillo together with sociologist Lefebvre and DePaule founded the School of Architecture in Versailles. Like the Italian School, the French School rose out of a reaction against modernist architecture and its rejection of history(Moudon

1997b).French school is using six levels of resolution; streets, blocks, plots, buildings, structures, and materials (Oliveira 2006). Furthermore, the "Laboratoire de Recherche" (the main French School that founded in 1973) is still a European reference source in the study of territories, urban morphology, urban tissues, building typologies, and architectural analysis(Pinho & Oliveira 2008).

4.8 FORMALISM

More effective and more successful urbanism and urban design will only come from a better understanding of urban form as a material with a range of handling characteristics. Urban morphology is not a formalistic diversion. It is at the root of urbanism and urban design(Kropf 2010).We should be learning from past forms. Let us put the lessons of urban history and urban form back into urban design, to help create the high-quality, vibrant, places we all know are needed(Larkham 2010).

Although the need for a close relation between knowledge of urban form and its application in urban design may be self-evident, what matters for practical purposes is the nature and application of this relationship in actual towns and cities(Whitehand 2009).In the case of urban morphology the outcome is an immensely detailed testimony to past events and maybe a more reliable guide to process than ostensibly more direct records of the decisions involved. Urban forms are a direct outcome of processes and in a real sense the embodiment of the attitudes pertaining at the time and in the place of their creation(Whitehand 1977).

According to Conzen (1966), by the middle of the 20th century the implications of the patterns recognized and explanations offered were being considered in relation to prescriptions of urban form, particularly townscape conservation. An important basis for urban landscape management was the urban landscape units (or morphological regions) identified from systematic survey and analysis of the historical development of towns and cities(Whitehand 2009).

Considerable attention has been paid to the architecture of individual buildings and urban areas. However, the majorities of these studies are not of architectural style, but explore style as a manifestation of the processes of creating form. The computer-aided research on urban form are three categories;1. to do with the three-

dimensional form of urban areas, and is particularly concerned with aiding geometrical composition, 2. primarily concerned with the analysis of physical structures, especially individual structures, 3. the accent is upon urban areas, or land-use parcels, as physical configurations, especially as represented cartographically (Larkham 2006).

Form, resolution, and time constitute the three fundamental components of urban morphological research. The smallest cell of the city is recognized as the combination of two elements: the individual parcel of land, together with its building or buildings and open spaces. The characteristics of the cell define the urban form's shape and density, as well as its actual and potential use over time(Moudon 1997b).

4.9 URBAN TISSUE METHOD

The primary task of urban morphology is to identify and describe the common elements and generic structure of urban form.The most active sub-field in urban morphology is concerned with describing and explaining the common developmental regularities in the growth and transformation of individual settlements (or individual elements).A core sub-field that builds on both systematic and developmental urban morphology is concerned with describing and explaining the diversification of urban forms over time as a coherent process in relation to human purposes and specific locations and situations(Kropf 2011a).

It can be seen in Figure 2.5, Kropf (1996b) suggested a method to find urban tissue and city character from combination Canzen (1960) and Caniggia's (1984) views. Urban tissue is composed of all the physical components. Urban tissue alsois an organic whole that can be observedat different resolution levels. At the most general level, urban tissue is defined as an arrangement of streets and blocks. A tissue with details is describing by its components and their organization. Position, outline (plan), and internal arrangement are characteristics that used to describecomponents. Types are determined by their outline (plan) and if required by their arrangement.

Whitehand (2002; 2003) mentioned numbers of similarities between Conzen's (1970) and Caniggia's (2001) approaches: 1. concerned with cities as historical phenomena;2. in a manner and to a degree that contrasts with the dominant descriptive

approaches;3. recognized cycles in development and focused on periodicities on the creation and adaptation of physical forms;4. privileged the predominant forms in the landscape (Table 2.2).

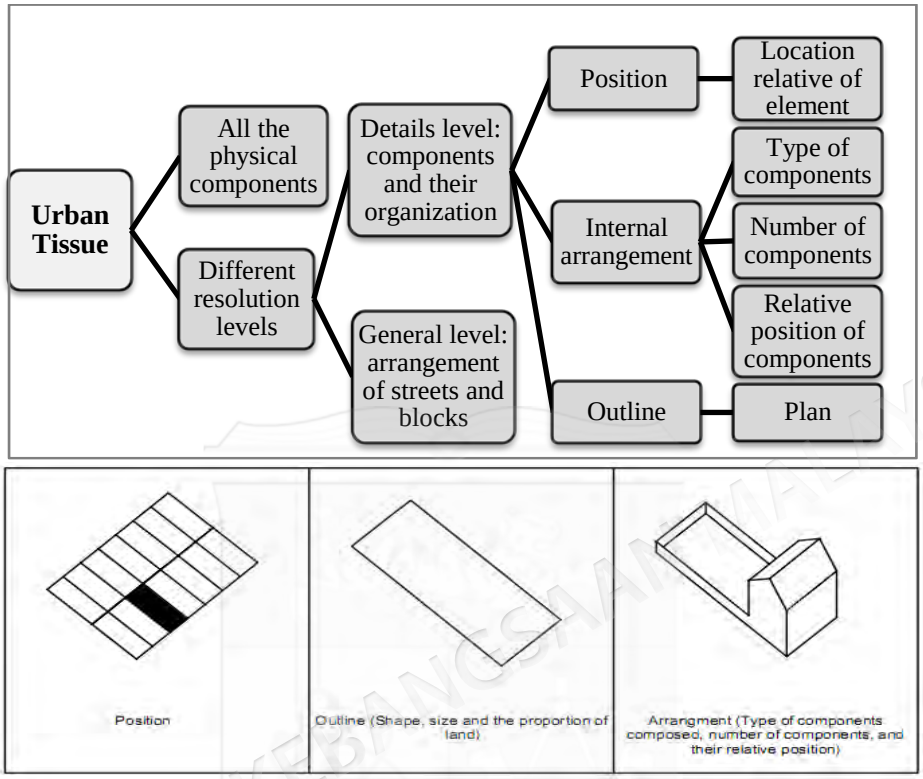

Figure 2-5Characteristics that are Used for Describe Urban Form Elements (Author), and in This Example, Features Has Been Introduced a Piece of Land
Source: Kropf 1996

Table2-2: Synthesis of the Conzen and CaniggiaPerspectives

Theory (distinctive features, lines of research)	Concepts	Methods, tools, and software
• Tripartite division of townscape - town plan, building fabric, land use • The conceptualization of historical development • The historical reconstruction of the physical form of urban areas • The agents responsible for urban transformations • The relationships between urban morphology and planning • Urban micromorphology - building typology	• Morphological region - urban tissue - levels of resolution - design area • Fringe belt • Morphological period - typological process • Burgage cycle • Morphological frame • Type	• Morphogenetic method • Town plan analysis • Cartographic redrawing • Metrological analysis

Source: Pinho & Oliveira 2009

The structure of urban formis the product of a social/cultural process and the structures at different levels correspond to distinct cultural habits, from the more generic.And while the generic structure of levels remains relatively constant across cultures, there is immense variation of specific structures (both between and within cultures) corresponding to differences in social habits(Kropf 2010).

Kropf (2010) alsoexamined a city as a whole (building and its residents) and as a process as a balance between humans and their environment. A suitable method for recognizing the process character is to study the physical aspects of the city that can be used to build a general character image, because the physical aspects are the most sustainable (Rofé 1995).Nevertheless, to defining the urban character the procedure is based on the following components;

1. *Typology:* Characteristics can be based to identify the number of existing types of each element. It means for each element (such as plots or buildings), samples that have similar position, outline (plan), and internal arrangement are placed in a group, and are identified as a type.
2. *Method to identify and classify of types:* The samples can be similar if their irregularity in shape, dimension, scale, position, and number of components to be in a certain range. For instance, plots can be classified due to their width.
3. *The historical character:*Urban tissue provides the basis describe and identify for areas of the city, which are different in form of physical. All the cities are historical, because they built in a certain time period. The identity of each city is resulted of the formation process (the history). History of the city is record in its fabric. Special forms arise in any period of time. There are three trends to understand the historical dimension of cities:

- Urban development occurs with distinct phases in one or more than one specific area;
- The areas that built in the same time have almost the same form;
- Deformation occurs in various levels and different resolution levels, because changes at higher levels more difficult and more expensive. Thus, the street/block pattern remains constant over the plots, and plots remains constant over the buildings.

4. *Tissue and history:*The areas those are different in physical, historically are also different. Analysis of the city tissues with goal of identification has a historical dimension. For this purpose, there are two analytical methods:

- *Geometric analysis:* is the studyof the physical built city
- A comparative analysis of time: is about development and change of physical built in time.

The following are the other important factors in defining urban character:

- The physical background of the city (topography, climate, and geography);
- Specific views (perspective) of the city (inside and outside);
- Symbolic meaning of the city(Kropf 1996b).

Analysis of physical forms focuses on street patterns, plot patterns, and building patterns by comparing cartographic sources and historic maps(Carmona 2003).The terms urban fabric, urban tissue and urban grain are very suggestive. In this way, mention at both the tangible substance of a town and the intricacies of pattern. Kropf (2010)considers the essential elements of urban structure, and believed the generic structure of urban form is a hierarchy of levels related part to whole. One of the characteristics of urban form is that it divides into distinct levels.

Understanding the physical complexities of various scales, from individual buildings, plots, street/blocks, and the street patterns that make up the structure of towns helps us to understand the ways in which towns have grown and developed. The qualities of place are often ascribed, to a considerable extent, to such physical characteristics as size, scale, and relative proportions of various elements. This knowledge helps us to appraise what is successful and unsuccessful(Larkham 2010).

Street pattern is one of the principal elements identified in urban morphological analysis and urban characterization. The distinction of route types by their position in the system provides a means of clearly defining different kinds of generic street pattern and so different kinds of urban tissue or character area. As an element contributing to the morphological identity of urban tissue, route type is a general indicator of character or better, difference in character(Kropf 2011b).

A morphological study demonstrated there is a hierarchy of change within urban features. Buildings changes very fast, from alterations to complete destruction and replacement, in response to changing use necessities. Plot patterns changes with changing ownership (through subdivision and amalgamation). Individual streets have been straightened or widened, but street network resistant to change (Larkham 2010).

Urban tissue can acts as a tool within urban morphology especially in the domains of planners, designers, developers and the public.It can also contribute more directly to the decision-making process of urban growth and development.Although, in many ways the power and strength of urban morphology is disappeared because it lacks the kind of central focus that urban tissue could provide. But,we need more evident to reveal the common points(Kropf 2011a).

4.9.1 Method of Recognize the Urban Pattern

Carmona (2003) suggested the following components to recognize an urban pattern;

- Island pattern: The island pattern is the number of houses and buildings in an urban area that are defined streets. Islands have different morphological patterns that are classified and divided based on size, form, openness, usage and function.
- Plots: Segmentation results in land in small and large pieces that is appropriate for building and urban development. It carries the historical signs and represents the individual property and structure of the social-economics of a specific period. In traditional centers, the sizes of small pieces can vary significantly.
- The cadastral pattern: The cadastral pattern is the layout of urban blocks and the public space/movement channels or public space network between them. Cadastral patterns composed of many small-sized street blocks have a fine urban grain, while patterns with fewer larger blocks have a coarse urban grain.

4.9.2 Combination of urban tissue and main structure method

Mimoghtadaee in (2004) mentioned, the most obvious finding to codify a method for assessment the character (physical identity) is concluding:

1. Defined region and its physical properties (climate, land forms, architecture and urban design values, etc.)
2. Components in determining physics (based on urban morphology)
3. Assessment in determining physics (belong to the realm of “other” and “own” - despite the continuation and evolution)
4. Assessment of ability to communicate physical components (with the aim of forming a coherent whole).

Mirmoghtadaee also (2006)emphasis that Kropf’s proposed method (1996) is only appropriate in the case of small historic cities. Mirmoghtadaeeadded some items to complete the method;

- A big city can be divided into several small homogeneous towns. So, in such city variety of building types are formed in different areas on a period of time.
- The oldest parts of the city have the greatest diversity of typology, and probably building types has all of periods of the city’s development. Therefore, after primary studies in cities can be found the areas, which are introducer physical character of the whole city.
- Changed and evolution in city’s morphology over time depends on development, prosperity, and economic value of land in each area. For example, plots dimension in aristocratic areas of city are usually large, and their chance to be divided is less. Thus, the areas of the city identified for typology studies, which are relatively homogeneous in economically and socially.
- Another important factor is the building laws and regulations. In the past, people more release to shape their city. However, in the new periodbuilding laws (rules) have limited individual release.

Therefore, in the morphological study is neededaccording to local building laws and regulations.

Urban design acts at many scales, from the macro scale of the urban structure (planning, zoning, transport, and infrastructure networks) to the micro scale of buildings and street such as scale, façade, style, and etc. Macro form cans analysis as extent of urban forms, density, and degree of urban expansion (Allain 2009). Mirmoghtadaee(2006) explained weaknesses in micro and macro scales ofKropf's method. First, in building's façade does not details, such as material, texture, opening, and division. Second, does not introduce relationship between urban tissue and shaping the whole city. Therefore, to overcome these deficiencies added some itemsto complete the method;

- At the first are added Krier's comments. Krier (1992) has much emphasis on typology studies, and in his method for classify urban spaces is attention to façade's detail. Detail of façade defined as; façade elements including windows, opening including the main entrance, roof, saliency including balcony and saliency window, and decorating. Façade'scompounds also introduceas; proportions, the vertical and horizontal division, material, and color.
- The second is added the main structure theory. This theory has macro view (whole) to the city fabric. This view in addition to form and physical intends to activities and function of the city.

As result, in this study was considered the macro scale in city fabric as a whole and micro scale in building details such as façade, roof, and material to overcome to the weakness of mentioned methods.

4.10 MAIN STRUCTURE METHOD

The main structurewas introduced in the 60s and 70s, and it means the whole build of a city can be divided into two sections; main and subsidiary. Main section is formedskeletal and back bone of the city, and introducesstability, continuity, and identity. Other part of the city is the subsidiary section, and introducesdiversity, release, and option(Crane 1960; Maki & Ohtaka 1961; Bacon

1967; Alexander et al. 1977). Main section can be formed from the elements such as; network (The main axes), open spaces (main), public buildings, and etc. Subsidiary section also consists of city's neighborhoods and places that occurs everyday life in it(Bahreyni 2009).

"Team 10" believed some of the major elements constitute the main structure of a city, such as elements with large scale, rivers, channels, and some of the unique shape combinations. Other components and elements take their identities from main structure. "Doshi" also believed main structure is composed of; the main network access, main centers of activity, and the main elements of the city (Almodaresi & Karimi 2009).

Rossi (1982)had addressed in typology studies, and also was considered main structure or city skeletal. He categorized the physical element that shapes the city thus; man-made elements and natural elements. Man-made elements contains: 1. fixed elements (fixed activities and network); 2. changing elements (every residential unit). Natural elements also is the physical grounds that city can occupy. Although the overall image of the city obtained from main structure, but the primary perception of city shape comes from urban tissue. Therefore, during the study on the city character, the important of main structure is relationship between the components (the general nature of the city), and urban tissue showsmore specific image of the city(Mirmoghtadaee 2006).

Rossi proposes the city as the ultimate and verifiable data and as an autonomous structure. He also identified some of the key elements of the evolution and transformation of cities. Moreover, he conceived the city as an archaeological artifact. His object of analysis, the city, is measured by the instrument of 'typology'. He in his book "The architecture of the city"presents a protest against functionalism and the Modern Movement(Nilufar 2004).

Main skeletal of the city is meaning for a specific area. In this area is a focus on physical, urban activities, and space characteristics. Characteristics of this area classified in three categories; physical features (physical elements, urban location, structure and urban fabric,access, and etc.), activities and function features (functional components, composition and their neighborly), and spatial and visual features

(symbolic network). Physical elements of city's main foundation are composed of two groups: the built (man-made) and natural elements (Hamidi & Partners 1997).

Mirmoghtadaee (2006) concluded,after these steps comprehensive information will be available about the physical properties of the whole city that they are only identified, and they have not certain direction.The method for each city can be distinct and unique, because it cannot be a comprehensive method to analyze and present understanding to all cities. However, these method needs will be complete and accurate the features - characteristics of each city. Indeed, there aremany methods to identify the cities. Discovering the hidden principles is possible through to simplifying the problem.

Hakim(1998) suggests that the research can examine in at least threelevels:

1. The level of the single building;
2. The level of clusters of buildings within neighborhoods;
3. The level of the settlement as a whole, which constitute a city, and how those elements relate to each other, and the rules governing their aggregation in making up the whole entity.

The structure indicates how the elements organize themselves. Structure can be discrete or continuous. It can spread along some axes or be severed by natural breaks (e.g., a valley or embankment).Almodaresi and Karimi in (2009)stated the main structure has a fundamental role in every city, and can handle the future development. They also named the necessary criteria to determine the main elements of the city; environmental and natural factors, sustainability, social movement, functional scale, public space (realm), and size.

According to Ravazzoli(2011), Toschi never adopted the individual building and its plot as the basic unit of analysis, and develops the concept of type within his analysis of the city's configuration. The city itself, with its 'functions' and 'objects', considered historically, was the 'only' object of investigation. With this orientation, Toschi's approach can be considered as a primitive phase in the study of urban morphology, conducted with a strong emphasis on the identification of internal city functions.

4.11 CRITICAL REGIONALISM

Regionalism is recognized as an independent theory, and is a contextualism approach. This theory tried to provide application solutions in order to preserve and promote regional character (physicalidentity). According to Tolaei (2001), contextualism means compatibility with the physical, historical, and social-cultural background. Urban planners should be ableunderstand the place features, and to put it part of their design process.

Özkan(1985) highlighted, regionalism is an analytical and critical view, which emphasis on the maintaining of specific properties and characteristics in place. In this respect it is placed against globalization and the international style. Regionalism does not contradict with modernity, but having trends to the international style is opposed regional architects. Thus, critical regionalism is an approach, which in design for specific identity of regionalhas highest priority against general features of the global(Tzonis 2003). The main approach of regionalism is to reconcile effects of world civilization with special features of place(Frampton 1983).

In (1997), Lang et al. reported that Mumford was founder of intellectual foundations of contemporary critical regionalism. The basic problem is considering at the same time to international life and local characteristics. Therefore, in critical regionalism “own” means heritage and live values (sustainable) without returning to the past. Here, as in contextualism “other” means some aspects of the global civilization which could undermine regional values.

Hakim (1998)in “studies needed for theory” suggested the preliminary list includes;

1. Field research of cities within major regions of the Islamic world which are designed to document the design language, indicating the sources for the terms, their meaning, and the actual physical configuration and arrangements which the vocabulary of the local design language referred to, including their implication on the design of buildings and the shaping of urban form. The results of these studies would greatly enhance our understanding of the built form qualities of those cities.

2. An atlas of Islamic cities in various regions of the Islamic world which would document: first, city maps drawn in the same format; second, morphological patterns at the levels of the city, neighborhood, building clusters, and the analysis of the typology's strengths and weaknesses;third, study of building types.

The approach in Japan and other Eastern countries to respecting character and design does not extend to veneration of the original fabric, while the urban tradition in the Near and Middle East has a very different approach to valuing and using tradition and authenticity(Larkham 2010).When there is no distinctive local tradition, it will be more difficult to create a distinctive place(CABE 2000). A broad knowledge of local and regional urban forms – a larger scale than the vernacular architectural detail so often recommended – and their analysis in terms of identifying those features that produce high-quality urban environments seems useful(Larkham 2010).

4.12 REVIEW OF PREVIOUS RESEARCHES IN URBAN MORPHOLOGY

The goal of this section is to review the conducted studies in urban morphology to understand character of the city and its components, similarities and differences among them as well as the strengths and weaknesses of each study. In this way at the first are reviewed all conducted methods in different sciences such as space syntax, morphological, philosophical, and typological process. Furthermore, different opinions and categorizes of scholars are reviewed. In every research, city character and its components are determined with different classification and definitions. Based on scholars' outcomes, study will developed its conceptual frameworks, criteria, and measurement instruments.

Sima and Zhang(2009), tried to synthesize comparative morphological precedents in the context of geography, architecture, science and philosophy. They also selected examples to interpret achievement in particular fields. So they argued, these theories and methods are not exclusive and independent but essentially related which could be complementary for each other. Figure 2.6, shows the categorized of four groups studiesaccording to their concerns in diverse disciplines.

Cartographical images are crucial for analytical urban form, and ‘Space Syntax’ used quantitative analysis for morphological studies.In morphological analysis, the most important consideration is how to represent the space in a discernible pattern. For instance, axonometrics and aerial photographs help to understanding of urban space in the third dimension. The Nolli map (base map for representing urban fabric) also has been deemed as the ideal figure-ground image for urban representation.

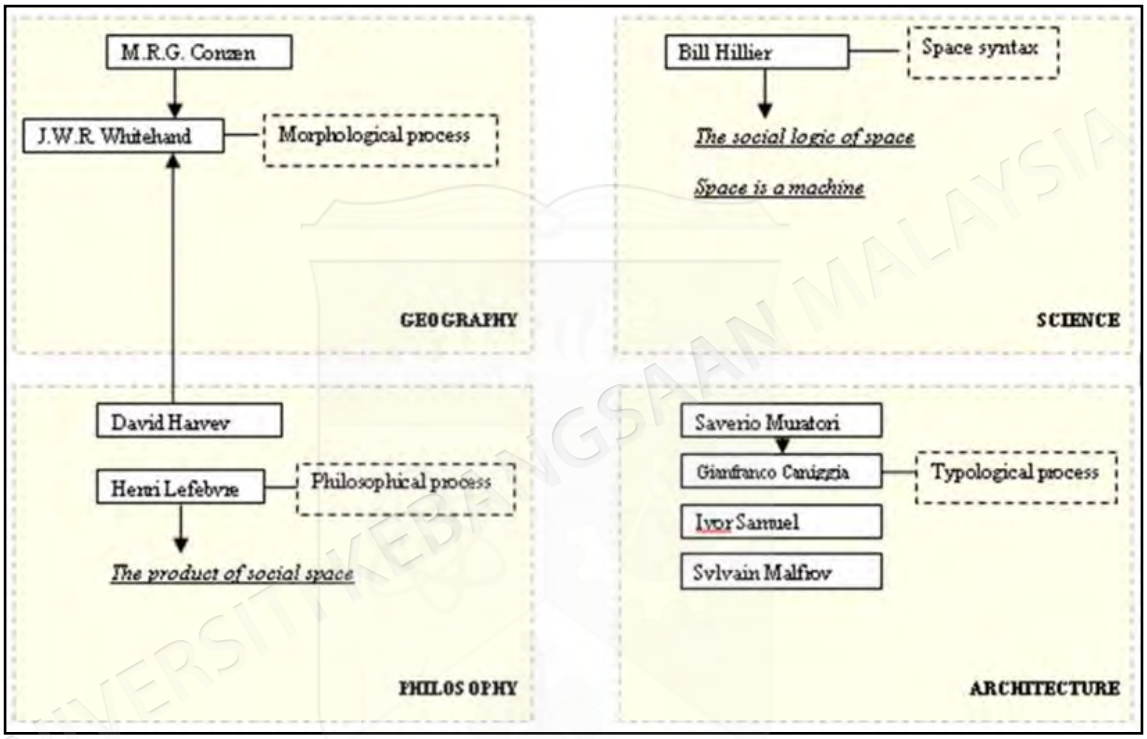

Figure 2-6Genealogy of Study in Urban Morphology
Source: Sima & Zhang 2009

Hillier and Stutz (2005) presented the space syntax as a toolfor the analysis of spatial configurations. They defined the best-known aspect of space syntax as its set of methods for analyzing patterns of space (or spatial configuration) in the built environment. In space syntax, spaces can be broken down into components. Spaces also can be analyzed and represented as maps and graphs that describe connectivity of those spaces.

It has two concepts that have been successfully used; axial analysis (for analyzing the network of streets and walkways cities) and ‘visibility graph analysis’ (or VGA, for analyzing patterns of visual fields in public spaces). However, new type

of analysis could help to build a more general theory of the city, one that especially illuminates the relation between micro and macro scales. They believed space syntax is a way of researching the relationship between the way cities are structured and the way they function.

For investigate some study about geographical dimensions of urban form can represent Conzen'swork (2001) that was includes; the study of collectivities, ensembles, and groupings of material forms, and their layout within, and in relation to, the larger spatial framework of the city. In this research isemphasis on cadastral elements and land-use contexts in the American setting, and focusing exclusively on form types as individual cases.

One of the earliest researchers was Mumford (1938) that focused the culture of American urbanism, but discussed urban form very generally. Vance (1977; 1990) was the first American geographer to integrate morphology in his 'big-picture' interpretation of American urbanism. American urban morphology is easy to recognize. There is a distinct lack of monarchical and religious urban complexes on the scale of those in European and Asian countries. American cities contain no royal palaces, and few centralized church and monastic districts, historic urban fortifications, and large-scale government-maintained cultural institutions (Conzen 2001).

Conzen (2001) also was believed despite extensive general discussion of individual cases, virtually no systematic studies exist of these characteristics and what patterns of regional occurrence, diffusion, and meaning they have. The conceptual understanding of regional origins, agency, and form typologies of American towns and cities across the nation as a whole constitutes a major research frontier as yet barely explored. Indeed, a cardinal feature of American cities is the speed with which districts can lose prestige, with consequences for their morphological development.

Whitehand (2001) described the origins, development and characteristics of the school of urban morphological. Whitehand also argued thatmicromorphology, the relationship between morphological periods, and the typological process may be referred to Conzen. Whitehand mentioned to visual representation, especially cartographic representation and linked between decision-taking and urban form. The

map of building types gave high priority to the distinction, among residential buildings between morphological periods.

Furthermore, Whitehand (2001)also recognized the tripartite division of the townscape, or urban landscape; the town plan or ground plan (comprising streets, plots and block plans of buildings), the building fabric, and land (building) utilization. For Conzen the exploration was the physical development of an urban area was the division of that area into morphological regions. A morphological region is an area that has a unity in respect or its form that distinguishes it from surrounding areas. In the map of Ludlow, he recognized a five-tier hierarchy of boundaries (Figure 2.7). The map of morphological regions is a composite of separate maps of plan type areas, building type areas, and land utilization areas(Whitehand 2001).

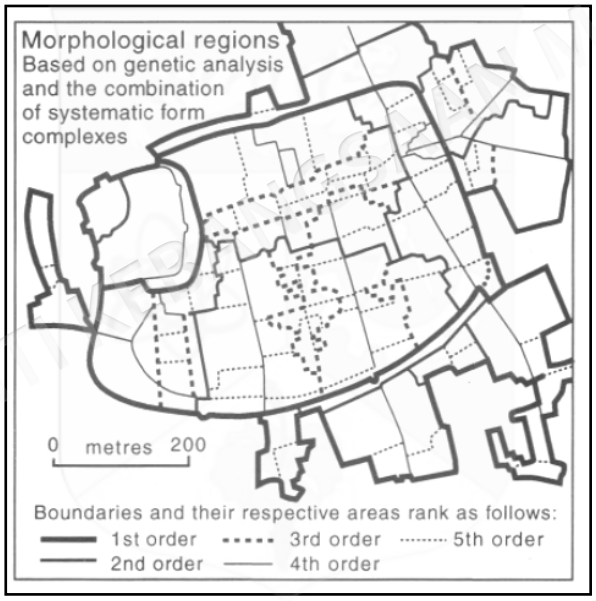

Figure 2-7The Morphological Regions (Areas) of Ludlow's Old Town.
Source: Whitehand 2001

Whitehand et al(2009)analyzed one of the Conzen's work in (1960). British urban morphology was descriptive, butConzen was obtained that cities derived their character from the physical and socio-economic processes of change.Research in Alnwick had some new concepts, such as the burgage cycle, and others such as the fringe-belt concept were developments.The precise graphical (especially cartographical) represented the historical development of urban landscapes. Concentrating on the 'seams' separating series of plots of different developmental

types, the research delimited ‘plan units’ based on the three elements in the ground plan (streets, plots, and the block plans of the buildings).

The work of Conzen had an immediate resonance with the urban morphological work undertaken by Italian architects which was by the 1980s well integrated into the training of architects in that country.It identifies the ensembles of these and the buildings as types of plan units. It also acknowledges the way in which often-invisible structures, like plot boundaries, define urban form(Whitehand et al. 2009).

Kubat (1999) chose Istanbul's old core, which has been influenced by several cultures: Roman, Byzantine, Ottoman and Turkish. She examined the characteristics of the morphological periods associated with each cultural influence by using space syntax.Space syntax offers a theory and method for investigating society-space relations. The main theoretical argument is that settlement patterns originate in the social life of the user.

Cultural, social and administrative structures and religious beliefs affect the forms or settlements. In organic settlements, the movement of people shapes the structure of space and the configuration of the streets reinforces those movements. The analytical method is based on the transformation of plans into graphs and the quantifying of the spatial qualities of nodes using mathematical formulae. Such a method offers a simple objective procedure for describing, comparing and interpreting settlements (Kubat 1999).

Kubat (1999) was used the axial map as the basis of settlement layout analysis, and measured in terms of the number of lines by the size of a settlement system. She concluded, the main spine and the dominant axis of the old city were still present.The city has maintained the symbolic character with which it was endowed as capital of the Byzantine Empire. Finally, she suggested the interpretation of history under the quantitative accounts, will be of value to urban designers, especially within historical areas of cities.

Sanders and Schroder (2008) in their research were followed traces the morphological development ofBrisbane (sub-tropical city in Queensland). They were

used the mapping of the physical changes (in a particular place), by extracting information from historical maps and photographs, identified patterns that convey the continuity of urban form, active usage and building typology. They analysis method also were measured to identify developments that are incongruous and critically.

The research of Sanders and Schroder (2008) was present a methodology of urban morphological analysis, and define a model for future development built on a principle of sustainable urban form (continuity and coherence with the existing city). Mapping have been categorized as; cadastral definition (cycle/trends of subdivision), Nolli map/figure group drawings, ground level plans, street elevations and block sections, and types of buildings and urban blocks.

Sanders and Schroder'scriteria for considerations in the classification of building type were include; relationship to street, surrounding open spaces, volume, relationship to other scales of type, spatial arrangement, form, and contribution to the urban fabric. Figure 2.8, shows types and the geographical discipline of urban morphology holds the key to provide evidence of urban growth characteristics. They suggested a possible methodology for architects and urban designers to identified cities 'DNA', and then this genealogy can inform its continued urban growth.

Hillier (2002) defines 'urban grid' as the pattern of public space linking the buildings of a settlement, regardless of its degree of geometric regularity. Hillier (1993) also in 'Natural movement' shown that the structure of the urban grid has independent and systematic effects on movement patterns, which could be captured by 'integration' analysis of the axial map. Hillier (1993)describe the urban grid emerges as a core urban element which, in spite of its static nature, strongly influences the long-term dynamics of the whole urban system.

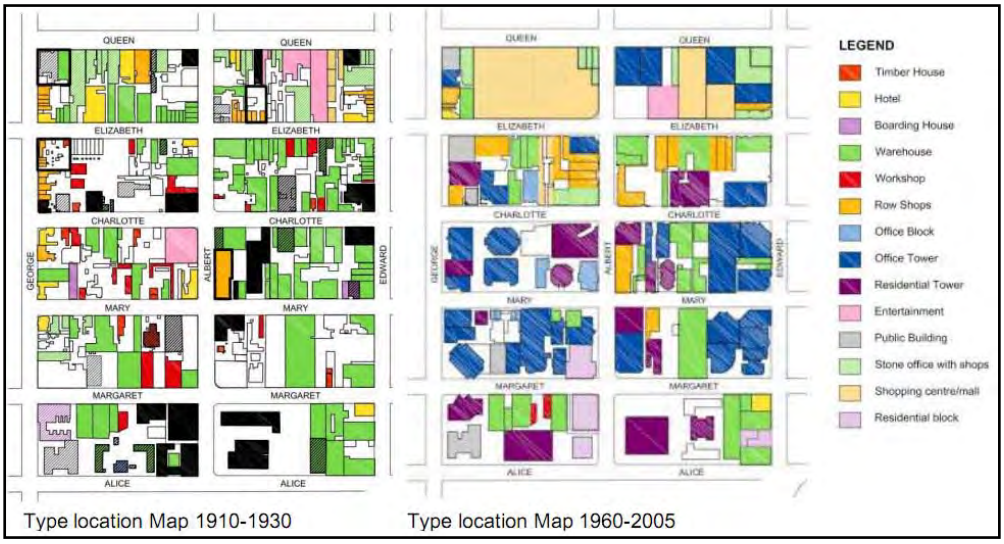

Figure 2-8The Identified Building Types From the Brisbane
Source:Sanders & Schroder 2008

Hiller (2002)examined axial maps and develop an account of their invariants, and develop a theory of how the impact of the spatial laws on evolving settlements is driven by two kinds of social forces (socio-cultural and the micro-economic). According to his work, in Hamedan (Iran) the longest lines (axial maps) are only a fraction of the radius of the system and tend to be found towards the periphery of the system. He added, from the 'spatial culture' lines in Iranian cities (on average) markedly shorter than lines in English cities, and European cities have a degree of geometric organization somewhere between UK and American cities, or Arab cities be less intelligible than European cities.

Hiller(2002)proposed spatial laws intervene, driven by the dual socio-cultural and micro-economic forces imposing on space their different requirements for potential movement. In Hillier's opinion the intensified grids found in centers and subentries are best understood through metric integration analysis.Hillier also added, finding the pattern of long to short lines is critical not just to the global structure but also to the relation between the local and global structure.

J.W.R. Whitehand and S.M. Whitehand (1983) chose Watford and Northampton towns as case studies with two main questions; what variations have there been over time in the locations of physical changes within town centers? and what changes have there been in the number and type of firms-in particular to what

extent has activity been concentrated within fewer firms over time? According to their opinions, cannot study cover a whole range of towns unless be very small.

In these selected towns are done practical considerations, especially the length and quality of the building plan records available for particular towns, and the manner in which they were indexed and stored weighed heavily. For each site within the commercial cores a card was prepared based on the site cards in the indexes maintained by the two boroughs. In this studyis mentioned to three most important types; change-rebuilding, additions (both extensions to existing buildings and free-standing auxiliary buildings), and structural alterations.

As Whitehand said in (1977), the impact on urban forms during the industrial era are as follows; those directly relating to construction (for example, concerned with building materials and legislation), functional innovations (such as new methods of manufacturing and trading), transport innovations (a particular kind of functional innovation), and town planning. His ideas for a solution to the urban morphology were: a more integrated research effort and away from isolated case studies, not suggested the particular theoretical framework that has been outlined necessarily merits any permanent status, and identified tests of the relationships of which it is composed.

Kropf (1996b), to give a sketch and to suggest how the concept of tissue might be applied to the definition of areas for the purposes of conservation (produced as a basis for a local zoning plan), analyzed the Mery-la-Bataille village of France (Figure 2.9). In this figure shown the village plan was made up of several different types of tissues (eight zones).

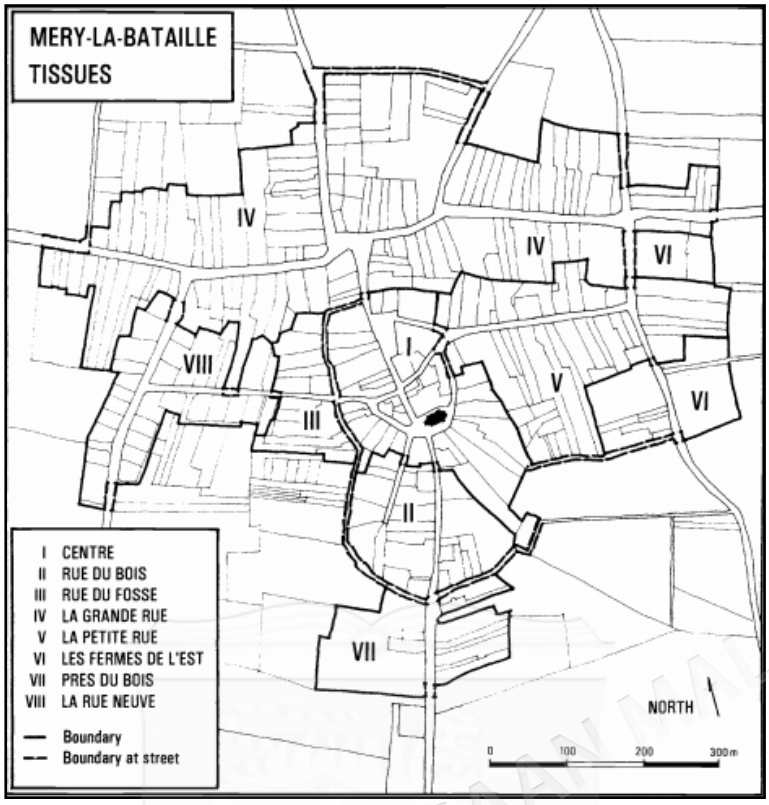

Figure 2-9Plan of Mery-la-Bataille, with Tissues Outlined (Zones)
Source: Kropf 1996b

In the zoning context, Kropf (1997) suggested three principles of the Italian school of urban morphology: first, existing forms are the product of learning of human's past experiences (activities and needs);secondly, built forms and human activities are interrelated (not fixed);thirdly, the city's structure and character is result from continuity and change (various levels).These three principles need three pre-hypothesis: 1. zoning regulations should follow local and regional forms as the starting point; 2. allow for mixed uses; 3. permit continuity and change.

Kropf (1996a) in Mennecy city, described form levels of urban tissue resolution are systematically; streets/blocks, plots, buildings, rooms or spaces, structures, and materials. Main objectives were to protect the potential of built heritage, to regenerate the older districts, to regenerate abandoned industrial areas, and to integrate new residential areas with the rest of settlement. The particular characteristics of the town were in six levels of resolution; the whole commune, districts, streets and plot series, plots, building form, and elements or construction (Samuels 1993).

Oliveira in (2006)mentioned Kropf (1997), Samuels (1999), and Hall (2005) believed two of the major themes in the agenda of urban morphology was a typological approach to zoning, and the definition of boundaries for each particular area. Oliveira in this research on Oporto city in Portugal was looking for the maintenance of the character of the city, a form-based typological approach to zoning, and the introduction of design detail within the planning process.In this way wasused typo-morphological analysis to identify the tissues of the city, and finally presented ten types of urban tissue. Figure 2.10,presents some of Oliveira finding tissues, and alsoshows parts of his proposed zoning plan.

In defied the zoning (Larkham & Morton 2011)mentioned to Sennett (2006) that suggested two different kinds of edges divided the cities: 1. it is something in which things move between across the edge (border); 2. it is an edge across which things don't move (boundary). The border tends to be a living edge, and the boundary tends to be a deadening edge.

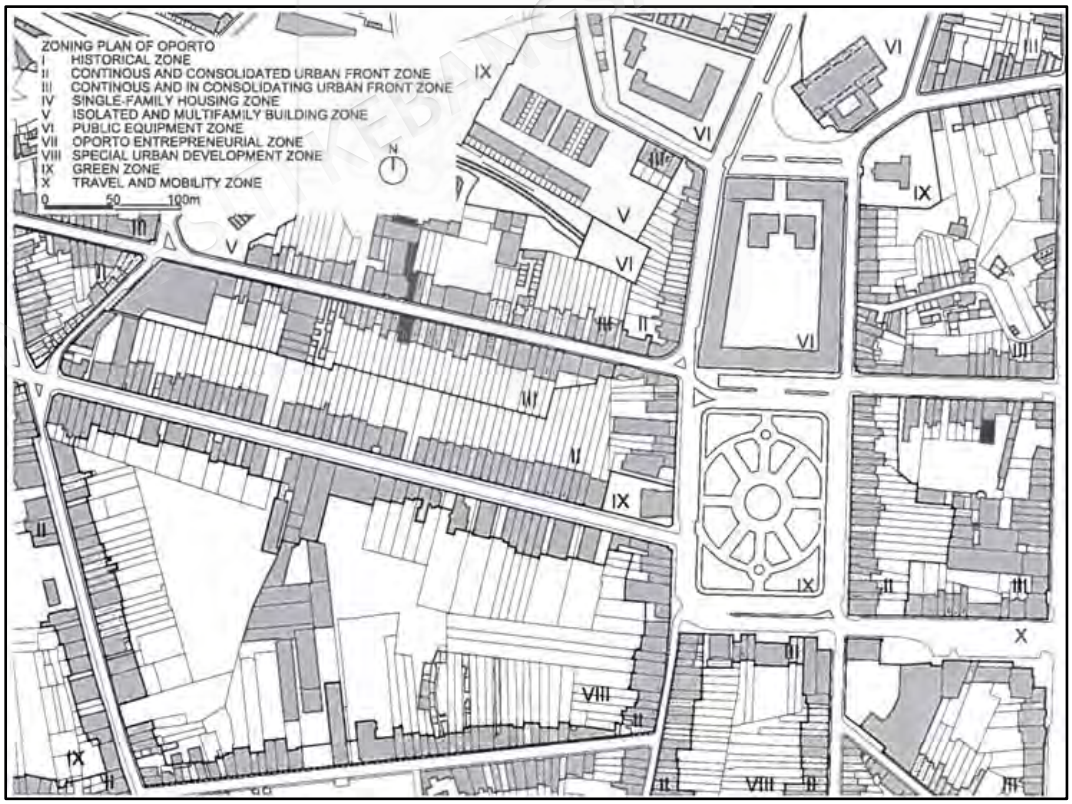

Figure 2-10Parts of Proposed Zoning Plan for Oporto
Source: Oliveira 2006

Oliveira (2011) focused on the need of urban morphology to promote a reflection on the essential morphological elements (a reflection that involves some processes of selection and simplification). Therefore, proposes a quantitative methodology for urban analysis (Morpho), which intends to deal with the least set of elements that are able to describe and explain the city.

Morpho provides an evaluation criterion for elements (the street system, the plot system, and the building system); 1.one evaluation criterion for each relationship between each pair of elements; 2. one criterion linking urban form with function.Oliveira (2011)verified his method by using GIS and chooses two streets in Oportocity as case study. He concluded that this method will provide an evaluation of the morphological basis of the city by three different dimensions: 1. an overall assessment of the city (system of streets, plots and buildings); 2. a specific assessment of the different parts of the city; 3. an evaluation of the physical impact of potential actions on the city.

Mirmoghtadaee and Talebi (2006) in their research on Tehran chose selected areas after primary studies. In the residential fabric of selected areas they conducted typology studies in each layer of the historical growth; the street / block, plots (dimensions and proportions), position and arrangement of buildings, and architectural style. For detail study they also chose a small areas from selected areas (Figure 2.11), and this step of their study were follow the Kropf's method (street / block, plots, and buildings)in 83 residential buildings. They result showed four types of buildings and six urban tissue types.

Pinho and Oliveira (2008) in their comparative study of two Lisbon and Oporto cities in Portugal used method of geographic information systems (GIS) in the study of urban historic cartography. They believed cartographic analysis is one of the main methods in mentioned schools (French, Italian, and German schools) that offers a new approach to the evolution of cities: 1. scale is no longer a problem and large cities can be selected as case studies; 2. this methodology can enhance the rigor of the original maps through a georeferencing process.

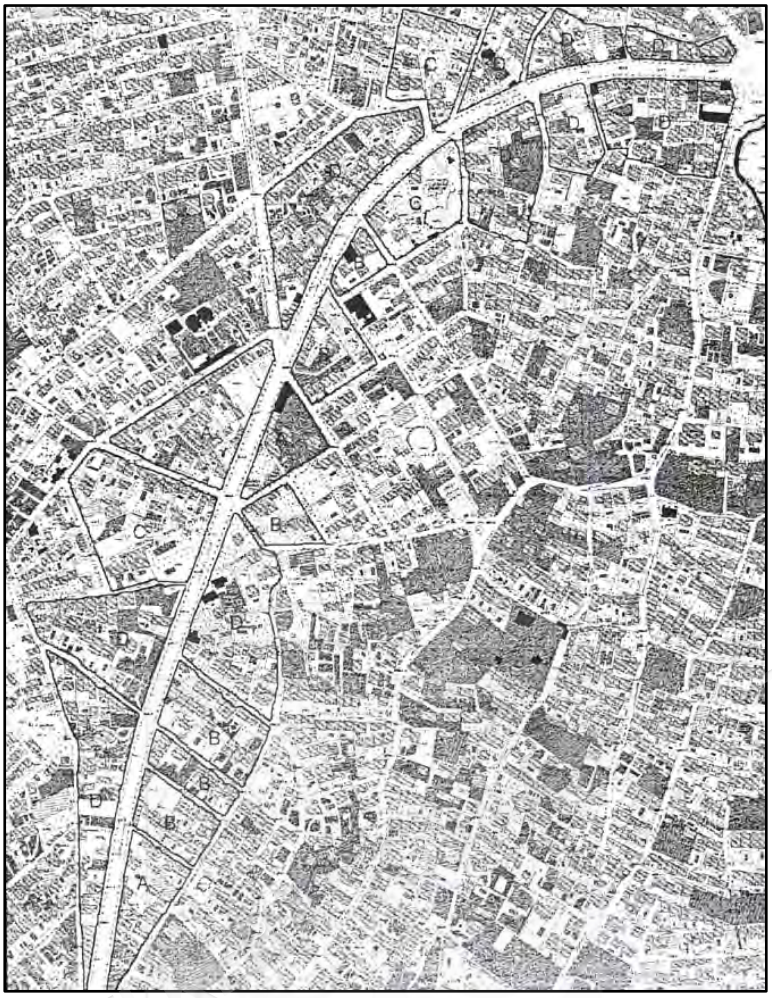

Figure 2-11 Small selected areas for detail studies in Tehran
Source: Mirmoghtadaee & Talebi 2006

Briefly, five fundamental aspects of their results were: 1. a dynamic framework to represent the evolution of the urban form; 2. the overall vision of the urban-form evolution of a particular city in a long time period; 3. the rigorous identification and characterization of urban-expansion areas; 4. the opportunity to systematically analyze unexplored urban-development processes; 5. the possibility to typify the urban fabric, taking advantage of a rigorous cartographic tool.

Moudon (1997a) applied GIS technique to some case studies in Seattle and San Francisco in America. Moudon believed GIS allows the registration of the physical characteristics of territories, and also the comparison with quantitative data, so that the physical space can be measured and analyzed in its relationships with the socioeconomic factors that shape it.Koster (2001) in research on Gröningen cityalso used GIS to digitalize, register, rectify, and overlap in different layers, a number of

town plans. The processes of Koster's study were: finding out the reliability of each town plan, and defining the necessary points to register and rectify the town plans.

Pinho and Oliveira in(2009) presented some suggestions for bridging the gap between two different perspectives of urban morphology (Conzenian and the Muratorian traditions, and space syntax). Their proposals were include three different levels; methodological, conceptual, and theoretical. The most important of their suggestion was corresponds to a similar valuation of the urban plot within the space syntax theoretical framework.Their research focus was on the historical reconstruction of the physical form. After the analysis of the redrawn maps obtained; the essential elements of the urban form – urban spaces for circulation, urban spaces for permanence, ordinary buildings, and singular buildings.

Lin et al. (2011)did a historical analysis research (morphological transformation) in the Shipai village (Guangzhou, China). The study achievement were building replacements, depending on morphological frame, have occurred widely within the village. For example, new architectural façade was a mixture of indigenous and western characteristics. Many village main roads had been blocked or narrowed by the newly added constructions.

Lin et al. (2011)believed the influence of historical urban and rural features on new urban forms has been studied widely but largely in the Western world. The morphological transformation of their case study showed the importance of the roles and interrelations of key stakeholders. In order to achieve sustainable redevelopment, they concluded it is necessary integration of the activities of various key stake holders in the 'urban project approach'.

Brake (2011) identified a distinctive form of multi-household dwelling that has been historically characteristic of the working-class districts of the large cities of Andalucia, Spain. Brake demonstrated most typological form of Corrales de vecinos attributes its origin to the period of Islamic occupation of southern Spain, but Corrales have a variety of origins (evidence from the city of Málaga). Corrales is the urban structure elements in Islamic cities, in Persian caravanserai.

Brake(2011) also find the similar structures (type) have had rather different origins. Similar forms could evolve from rather different origins. Particular building types can have a clear relationship to identity in that they constitute a specific form of cultural expression. The research concluded that need to conserve some of the few remaining structures of Corrales type, the relationship of this policy to neighborhood regeneration, and the fulfillment of a particular type of housing.

Khirfan (2011) in her comparative research was looking for the links between Conzenian morphological tradition and urban design by focused to the public realm of Athens in Greece and Alexandria in Egypt. The approach was combing GIS, with aspects of town-plan analysis, and historical archival research. She digitalized historical plans of Athens and Alexandria for compare old and new plans (quantitative analysis). Overlay the network (street patterns) in GIS showed its relationship to the elements of urban heritage and civic structures.

Larkham and Morton (2011) explored that the extent to which morphological regions, (higher levels of hierarchy) can accurately be delineated by field observation and map study for purposes of conservation planning. Figure 2.12 shown two sample blocks of their study as boundaries. Block A has a slightly smaller average plot area, and has both larger and smaller building footprints. Block B has a significantly higher area range. After they did visual characteristics of the streets (by using GIS/CAD software), they found are very similar. Finally, they suggested boundaries need to be flexible, because boundaries of morphological regions and policy designations conservation areas are not the same.

Where units meet at a street, the determining factor in the precise placement of the boundary has been the relationship between the street and the plots that front it. Where only the plots on one side of the street have been created as an entity with the street, the boundary between the units has been drawn so that those plots and the street are within the same unit. Otherwise, the boundary has been drawn along the centre of the street (Whitehand et al. 2011).

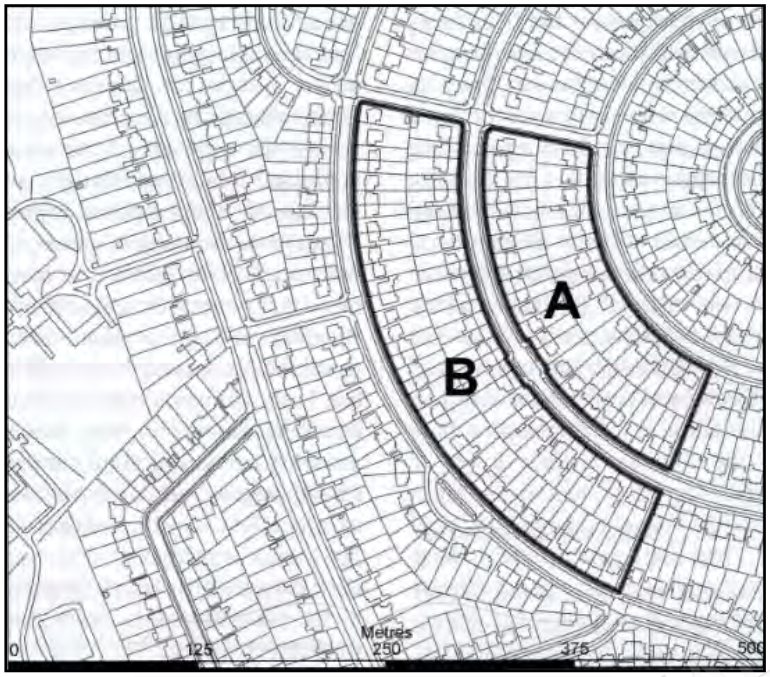

Figure2-12The Edgware 500 m x 500 m study area
Source: Larkham & Morton 2011

Ehlers (2011) examined models of urban form in a cross-cultural perspective.His study was grounded in two assumptions: 1. present-day urban forms are tending to develop towards global uniformity; 2. historical and regional characteristics of cities and towns and their uniqueness in time and space are preserved in the centers of cities, which are their historical cores.

Models of cities in a cross-cultural perspective are mostly representations of spatial patterns within not only their own cultural histories and ideologies, but also before their distortion through modem Western technologies and their expansion due to population growth and technological innovations (Figure 2.13).But it is not only western influence that shapes and characterizes modem cityscapes in a globally unifying way. There are also a number of other factors such as: the role of colonial influences, the indigenous desire for modernization and sometimes even futuristic post-modernity in urban design and form.

In urban development there are more than just differences in historical evolution over space and cultural differences over time. This makes any modeling exercise complex and its outcomes questionable. Even within homogeneous cultures, each city and town has its specific identity(Harris 1992).Traditional and culture-

specific urban forms tend to be concentrated in the historical centers of present-day towns and cities. Their representation in the more or less ‘ideal’ model reflects only a small part of present-day reality(Ehlers 2011).

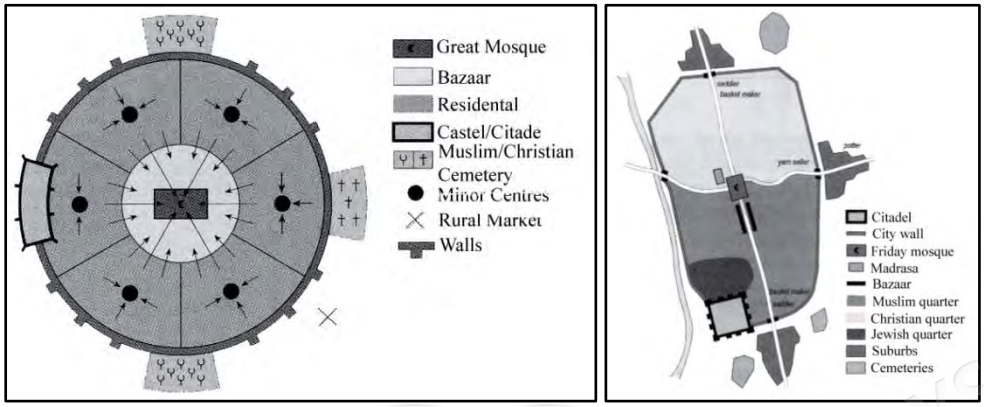

Figure2-13 Models of Islamic cities
Source: Ehlers 2011

Azimi(2005)attempts to analyze the underlying factors of recent spatial change and how it influenced the conditions of urban life in the Rasht city (Iran). After review the historical development of city, he analyzed the changes in the main elements of urban morphology. The finding showed:

1. Street layout has been changing through widening or opening the new streets in the city centre, and network was reshaped from an unplanned pattern into a radial pattern;
2. Single-story houses were substituted by multi-story buildings with a mix of architectural styles;
3. The old architectural styles were substituted with new models as more imported (non-local), and not much in accord with the local culture and environmental conditions (loss of cultural identity);
4. The morphology of inner city was transformed as the renewal of old houses and their substitutions with multi story buildings were continued;
5. Segregation of social groups was perpetuated through lower quality residential districts and better quality neighborhoods (polarization of social groups).

Researchers and scholars demonstrated the city character based on the various method and theory. Morphology had different intentions and approaches in their theory. Moudon(1997b) stated the three attempt in morphology including:

1. The study of urban form for descriptive and explanatory purposes, with the aim of developing a theory of city building;
2. The study of urban form for prescriptive purposes, with the aim of developing a theory of city design. Such studies concentrate on how cities should be built;
3. The study of urban form to assess the impact of past design theories on city building. This is in the realm of design criticism, which makes the sophisticated distinction between the theory of design 'as idea', and the theory of design 'as practiced'.

Scholars are conducted the numerous researches in the field of morphology with different approaches. Table 2.3 presented the summary of literature from this study, which shown researchers and their case studies. As result and based on numerous researches, morphology acknowledged as an approach to identifying the city character with attention to city appearance, formation and interaction of its tissue. In urban morphology focus on form and function which is obtained from combining of main structure and urban tissue with its components (Figure 2.14).

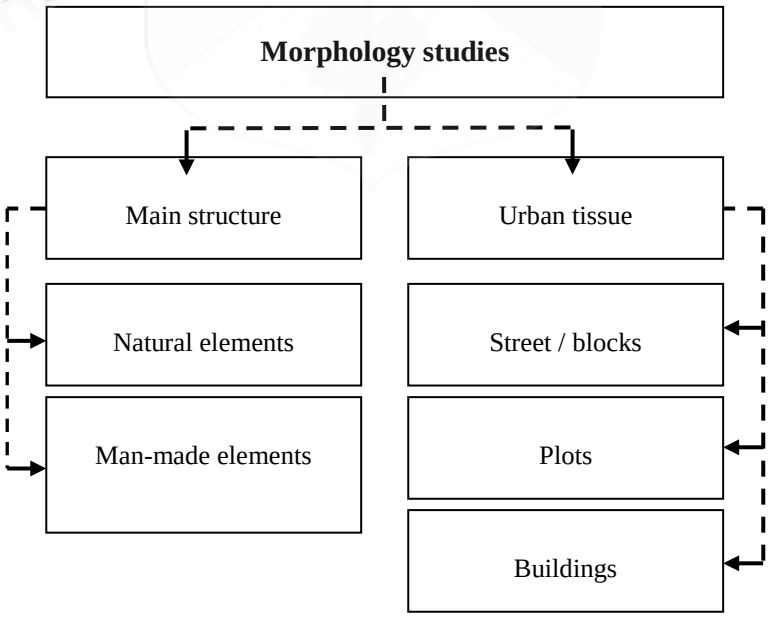

Figure2-14 Model of Morphology Studies and Its Components

Table 2-3 The Summary of Literature Categorizing

Context	Scholars
Philosophy	Lefebvre Foucault
Science	Kubat (1999): Istanbul, Turkey Hillier (1989 and 2002) Hillier, Penn, Hanson, Xu, and Grajewski (1993) Hillier and Stutz (2005)
Geography	P. Conzen (2001): American cities Whitehand (1977, 1983, and 2001): Watford, Northampton, and other British cities M.R.G. Conzen (1960): Alnwick, England
Architecture	Sanders and Schroder (2008): Brisbane, Queensland Kropf (1996a and 1996b): Mery-la-Bataille and Mennency, France Samuels (1993): Asnières-sur-Oise, France Oliveira (2006 and 2011): Oporto, Portugal Mirmoghtadaee and Talebi (2006): Tehran, Iran Pinho and Oliveira (2008 and 2009): Oporto and Lisbon, Portugal Koster (2001): Groningen, Netherland Moudon (1997): Seattle and San Francisco, America Lin (2011): Shipai, China Brake (2011): Malaga, Spain Khirfan (2011): Athen, Greece And Alexandria, Egypt Larkham and Morton (2011): England J.W.R. Whitehand, Gu, S.M. Whitehand, and Zhang (2011): Guangzhou, China Ehlers (2011): Around the World Hwang (1994): Ying and Yang, China Ben-Hamouche (2009): Hamamet, Tunisia Azimi (2005): Rasht, Iran

4.13 SUMMARY

With regard to the contents mentioned, the method was identifiedfor the character of cities (with the morphological approach) from integration of two main structure and urban tissue theories. This method based on two approaches has hypotheses: 1. the city consist of two sections, main (man-made and natural elements) and subsidiary (residential area); 2. in the same historical period to arise similar types building, and also should be identifiedthe most important construction rules; 3. the urban tissue can be described the street and block arrangement, which its component are position, outline (plan), internal arrangement, and façade details.

Typology studies should be done separately for main and subsidiary sections. If the aim of the study is evaluating certain values in the physical of the city, the study can be directed. For example, after comparing types of urban tissue belonging to each historical period (from Past to Present), can be evaluated existence or nonexistence of the "continuity" in the urban fabric (as this research). In this research was used the proposed model of Mirmoghtadaee (2006) based on combination of two main structure and urban tissue methods. In conclusion, this research also was looking for improve the method especially in converting qualitative to quantitative process.

According to the extensive literature review in this chapter in the concept of morphology argued that urban morphology is one of the best instruments to identifying the city character. Every single urban feature should therefore be viewed according to its inner logic, implying a systematic deconstruction of its principles which are individual and cannot be generalized. On the contrary it seems helpful for design practice to work on specific fragments. Every single urban feature should therefore be viewed according to its inner logic, implying a systematic deconstruction of its principles which are individual and cannot be generalized (Marzot 2005).

CHAPTER III

IDENTIFYING THE HISTORICAL BACKGROUND OF BOSHROOYEH CITY

5.1 INTRODUCTION

A better understanding of identity can be reached by investigate the characteristics of a city. Cities can be characterized by a number of different properties or characters. These properties may change across cities and geographical regions. This chapter is included to three main stages; first, for understand the cities' structures have afforded the historical development of the city. Therefore, five periods of city's development were investigated. In the second part of this chapter was described the regional traditions of architecture and urban design, the main structure, and urban tissue of cities. Finally, was presented the main structure, urban tissue, and elements of Boshrooyeh city as an initial background to understanding and overview of the city character.

5.2 IRAN

Iran, in southwest Asia, located between the Caspian Sea in the north, and Persian Golf in the south, covers an area of 1.6 million square kilometers (Figure 3.1). According to Statistic Centre of Iran(2011), the population of Iran is around 75 million.In general, Iran has great difference in elevation has resulted in great variation of climatic conditions, which range from sub-polar in the highlands to subtropical in the southern part of the country. This climatic variation has been the main cause of different urban environments, cultures and different ways of life during our history(Kamiar 1983).

According to the population censusin 1956, 31.4% of Iranian people were living in urban and 68.6% in rural areas. But during the following years, with the political and economic changes, and the concentration of development programs in

urban areas, the distribution ratio changed to 71.4% of the total population living in cities up to 2011 (Iran 2011).

Figure 3-1Location of Iran
Source: Wikipedia 2011b

5.3 URBAN DEVELOPMENT IN THE ISLAMIC PERIOD OF IRAN

Iranian cities have been developing through dramatic transformation during different historical periods. Elements and formation of the cities has been changing according to different political, cultural and social situations of each period. The topic of urban evaluations in Iran is an important issue to be considered in Boshrooyeh like other cities, which has been modified in terms of its structure and urban texture. However, the brief introduction about the history of city and transformation of urban formation are necessary to understand these drastic changes. Since the city of Boshrooyeh firstly was mention in 14th century and before that there is no historical document.

5.3.1 Structure of the City from 13th to 14th Century

Due to invasion of Moghols in 14th century and base on narratives from European tourists it is clear that urban civilization was almost integrated at that time(Gabriel 2005). Travelers were described costumes, traditions and governmental buildings rather than describing social and economical matters(Battuta 1980). It can be said that Iran was experiencing three centuries of lacking productive organization and urbanization, while the cities were transformed and modified. However the city still to

be defined as a central function and they remain the symbol of unity between urban and rural societies.

5.3.2 Structure of the City from 1501 to 1722 A.D. (Safavid Period)

After the establishment of the Safavid dynasty in 15th century, the most centralized government in Islamic era had been settled. In this era numerous of public service and urban equipment have been set up. The building and component which constructed at that time, nowadays consider as the most important traditional urban elements(Habibi 2008). Consequently, the new school of art, architecture, and philosophy was established in this era which is well-known as school of Isfahan.

a. Isfahan school in urban planning

In 17th century capital city of Iran was shifted to Isfahan (from Qazvin). The school of Isfahan proved the aims of Safavid dynasty. Therefore, it is the result of the expansion of town was in this region and concerning the sum up of all the historical matters. Nevertheless its definition is not about re-production, and this addressing the new innovation and novelty.

In the Safavid era, a central axis was designed in the heart of city (Chahar Bagh in Isfahan), and for the first time the idea of categorizing different urban district was emerged(Habibi 2008). In this ear implementing new urban complex in conjunction with traditional cities was happening all over the country with different (often smaller) scale. Thus the architecture was defined as a complex of different elements and structures rather that a single building. Since that time the structural elements such as water reservoirs, caravansaries, bridges, gardens, and lakes were constructed in an organized complex and interconnected elements(Freer & Asadi 2009).

City citadel was no longer a distinguishing element for a city when compared with a village, rather thecitadel was considered as a border and boundary to limit urban frame (like fringe belt). In contrast with the past, cities were not growing based on renovating the old and traditional urban tissues and rather cities were expanding by designing new urban complexes in vicinity and in conjunction with the old texture. A

component in plurality was defined as a sign of unity and whole was represented plurality in its unity.

The Isfahan school in Iranian urbanplanningbelievedto the concept of harmony and cooperation (the concept which the world is based on). In this school the concept of symmetry does not have a special definition except in spatial components. Furthermore, the scale is not important than space planning. The concept of centralization is based on socio-political, religious, and cultural understanding rather than geometrical aspect. The school's goal is to achieve and create democratic structures. It gets its characteristics from people and in the other hand it gives identity feeling to them (Figure 3.2and for Boshrooyeh city see Figure5.5).

Figure 3-2 Physical structure of the city in Safavid period
Source:Iran 2001

Table 3-1Summary of Isfahan School Principles

Urban planning principles	Definition
Hierarchy	Hierarchical movement from macro to micro
Multiplicity	Urban space in its expansion refers to diversity and plurality, and each component has its own identity and characteristics separately.
Unity	Urban space has its own and unique identity, regardless to the components
Centrality	Centrality of urban space makes it distinct from other regions
Lack of centrality	Balanced distribution of urban spaces, will appear different spaces, and unity of the city
Accumulation or Aggregation	Accumulation of different elements in a specific location gives special meaning to the place
Distinctiveness or Contrast	This principle released the urban space from Homogeneity and similarity
Conjunction	Each urban space is connected to other spaces.
Harmony and balance	Asymmetrical spatial balance Spatial equilibrium is possible. It is defined as coordination of spatial relation, forms and activities.
Combination	Combination of contrasts can produce distinguished spaces, and durability of the spaces depends on these combinations.
Proportion	Aesthetic is means in proportion. It is concludes aspect of dimensions and size, volume and building, Fill and empty space, Shadow and Light
Continuity	Connection with the past, urban space has meaning in the place and time.
Realm (territory)	Every space from micro to macro space has its own privacy. Territory becomes a space to define a familiar and foreign.
Simplicity	Pure urban spaces provide quick understanding of the place
complexity	In this principle form is created
Establishment	Every urban space has independence meaning and also dependence to other components
Time	What changed in time is form not content
Briefness	Respect to this principle is the most fundamental urban design guidelines. City and urban space express the broadestconcept in thesimplest form.

In this school the most important matters are content and identity, but the form can be modified accordingly. In the city every structure plays its own rule. The complex of structures creates a chapter (unity) and neighboring regions generating context of the city, and city itself becomes a book. Here Habibi(2008) compares a city

like a book: conjunction of neighboring regions simulates to compiling data to create a book. Whole book can be read without changing the context and words within the book in spite of this, every single chapter can be understood separately without reading entire book.The principles regarding to language of urban planning was listed in the Table 3.1.

5.3.3 Structure of the City from 1791 to 1925 A.D. (Qajar period)

Based on the narratives from European tourists(Shell 1989; Barbano et al. 2002; Jackson 2009) about the physical framework of the city and townscape it is clear that there are no distinguished differences between this city and those cities in Safavid period (school of Isfahan). Bazaar stills the most dominant backbone and main spine of the city. Bazaar also in spite of its economic and commercial role represents all socio-cultural factors. Accesses which are detached to bazaars intersect each other in the center of neighboring regions and neighboring regions are considered as semi-independent places within the city.

a. The birth of Tehran school (1847 to 1896 A.D.)

As a consequence of these alters the new spaces were introduced such as Madreseh, religious community (Tekyeh), new streets and squares. These new spaces introduce new concepts and as a result new elements appear. These elements not only represent new demands, though they embody vernacular identity and maintain their traditional costume and value(Titkanlou 1988). In Qajar dynasty, the new language of urban planning and new spatial values (Tehran school) has been introduced (Faghihi 1978).

In Tehran school the street defined by different meaning. For the first time streets were used for commercial function rather than only as promenade zones. Neighborhoods still function as the most dominant urban role, but in contrast in Isfahan school neighborhood play its role to represent social differences rather than functioning as a place for representing tribal and ethnical demonstration. Old neighborhoods remain their spatial regime, their centre and their connecting networks. However the new neighborhoods are located in vicinity with new streets and tend to find its requirements from surrounding spaces rather than within itself(Habibi 2008).

Regarding to the new definition, the street functions by two different patterns. First, it gets its feature and urban regimes from the definition of street according to school of Isfahan. The second pattern is streets which have attached structures towards the street and they establish continuous physical and spatial regime. This group of streets can be detrimental to the traditional network of bazaar and replace itself as the main spine and backbone of the urban development.

5.3.4 Structure of the City from 1925 to 1979 A.D. (Pahlavi period)

What is introduced by Pahlavi period as the new social identity does not exist in the root of Iranian Identity. Elements, frames and spaces which were used to show this identity are strange and unfamiliar to its actual identity. City with its spatial and physical senses loss its traditional and historical value as the term historical is transformed to old and tradition, and as a consequence it becomes old fashion and out of style. City loses its functionality based on mental viewpoint not based on visual aspects. This in fact is the reasons of huge visual and somatic interference within the urban tissue (Habibi 2008).

In Qajar period, architectural style in the eastern and western stylewere in cooperation with each other, while in Pahlavi period this pattern lost its sense to eastern concepts and followed the concept of west's style solely. Pahlavi dynasty in a discontinuous historical period gives a strange definition of society and city.

a. Pahlavi I (1925 to 1941 A.D.)

The first regulation in urban planning in Iran was in fact a law for the development of passageways and streets (Hosman Urbanization) in 1933, which was improved later on in 1941. The main planning activities, regulations and laws specifically established for urban planning programs started in 1966 (Hashemy 1990).

Following the legislation of this law, modifying streets were in action. Two cross streets had set apart the traditional urban tissue and blocked traditional urban territory. As a result traditional and old foundation of the city was detached and neighborhood arrangement was damaged seriously. Furthermore bazaar as the main

spine of the city was replaced by the new streets and almost all the economical services were switched to these streets.

After legislation of these regulations the traditional neighborhoods were separated from the spaces such as streets. On the other hand the renovation and modernity in Pahlavi dynasty caused multiple cuts within urban tissue. The city finds itself unfamiliar, changed and strange without identity. According to Ferdowsian (2002), the city planning programs during this period can be summarized as follows:

1. Planning of new streets and squares in the core of the large and some middle cities (like Imam Khomeyni Avenue in Boshrooyeh city);
2. Planning of ring roads around many large cities;
3. Demolishing areas, which were not inhabited;
4. Encouraging and s forcing people to improve their dwellings' facades;
5. Preparing suitable street layouts;
6. Development and improvement of access in old areas of the cities.

b. Pahlavi II (1941 to 1979 A.D.)

The townscape especially in the surrounding area of the new streets is changing along with the architecture. The Iranian city is about to represents the new socio-economical look for the first time. Wealthy and organized districts are built along with the poor and unorganized districts, while the urban network within the city is following its natural way. However this network was changed to reticular schema by graduates from engineering background and without taking any urban criteria and arrangement into account. The urban architecture in this period began its meaninglessness.

Establishment of engineering and then design offices in ministry of interior in 1957 was the first step towards concentrating and concerning about design and urban planning. These plans were set up for several cities and by foreign advisors. Created the first industrial settlements around the city also took this period.In the 1970s, rural planning (town planning) in vicinity with cities was developed and expanded. Since that time the border of the cities were defined based on these towns rather than comprehensive designs within the city itself.

Based on Habibi (2008), during nearly 20 years from the beginning of these comprehensive changes there have been a huge turning down and demolitions (either by erosion and natural or by human) in this period. As a result of these demolitions and by pulling down the physical structure of the city some value and social foundations have been lost. As the physical framework of the pathway, neighborhood and district are demolished, in the same way the social and neighborhood life being interrupted and as a result the city not only loses its values, furthermore it loses its identity and becomes lack of history. In the north, south, east and west it becomes similar and nonsense.

5.3.5 An Overview on the Urban Planning after the Islamic Revolution (after 1979 A.D.)

The most prevailing consideration was the plan of reclaiming and preparing the land in 1980. This plan which was a fusion partnership causes several contradictions subsequently. The problem was that the lands (which were part of the government properties) were in the outside of the city and in this case the cities were growing from outside rather than from the centre and the heat of the city became hollow. Since 1995, what have been missing in the urban management is lack of public spaces.

a. Modernization

The contrast between the acceptance of the high technology of the west and its adaptation to the Iranian context was a process, which led to false modernity in these countries. The modernization process in Iran marked a radical turning point with founding of the Pahlavi dynasty in 1925(Micara 1996).In a very short time the historic face of the cities changed. The old areas demolished and in their place new buildings with different design concept erected, and historic areas slowly disappeared.The traditional physical characteristics of the historic cities, such as walls, the gates and the narrow lanes, which were the best means of physical protection against the impact of vehicular traffic, lost their values.

Historic cities of each country are open books to learn from. In fact they are an integral reflection of man’s innate aspirations. To learn from the past necessitate the respect and understanding the philosophy hided in muddy structure of historic cities.

The revitalization of the spatial and architectural quality of this structure is a necessary aid in learning how to form the future cities. Learning from the past should accompany the fact that what we can learn from the past are urban design values, perceiving the quality of form and spaces, but it is not something to be directly transformed into new design system. Should be able to take space organization and principles in a modernized expression of past forms(Bianca 2000).

According to Sultanzade(2005), in the transition period in Iran (last years of Qaiar dynasty till 1961s) neighborhoods lost their mixed use social and economic functions and changed to strictly residential districts. Building plots were reduced in size and shaped more geometrically, mostly in rectangular forms. The rectangular plots influenced the spatial characteristics of the houses. As the plots became narrower, the built area had to be located in northern and southern ports of the land, with the courtyard in the middle.

In the contemporary period (between 1961 till now), traditional houses were largely abandoned as a type, and apartment buildings became the type that is prevalent. New building regulations, which allowed 60% of the plot for built area and 40% for open space, had great effects on the spatial organization of houses as well as urban design (Figure 3.3). Research in 1976 showed residents of apartment buildings were still not accustomed to the new spatial organization and preferred to have private courtyards, porches, access to the roofs for sleeping in summer nights (Mirmoghtadaee 2008).

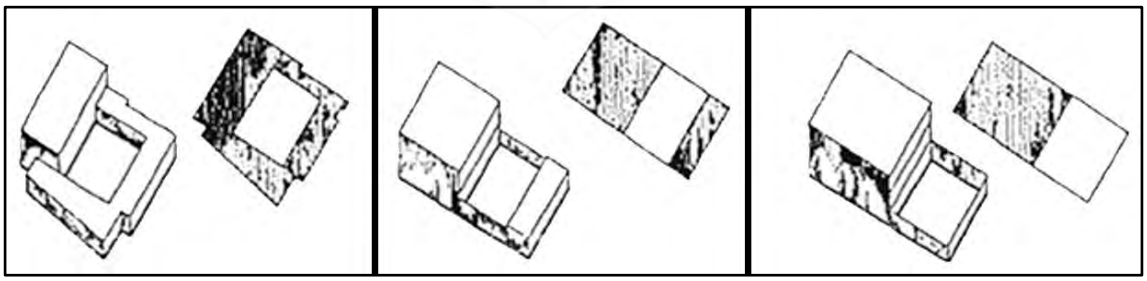

Figure 3-3From left to right, transformation of a typical Iranian house
Source: Sultanzade 2005

5.4 REGIONAL TRADITIONS OF ARCHITECTURE AND URBAN DESIGN

Falamaki (2005)analyses the historic cities in Iran. The characteristics of traditional cities which have shaped under a combination of environmental and cultural factors, are the main urban planning methods and design principles of these cities. Falamakialso categorizes these characteristics so:

1. Connectionof urban structure to its ecological and geographical environments
2. Organic formation of the city and acceptable allocation of its forming elements
3. Understanding cultural way of life of the people in design of urban environments through local architects
4. Development and evolution of urban and architectural elements through history
5. Harmonic development of different parts of the urban structure.

With the beginning of the modern industrial period, the five main characteristics of planning and design methods of traditional cities slowly lost their meaning and were replaced by new social welfare criteria.

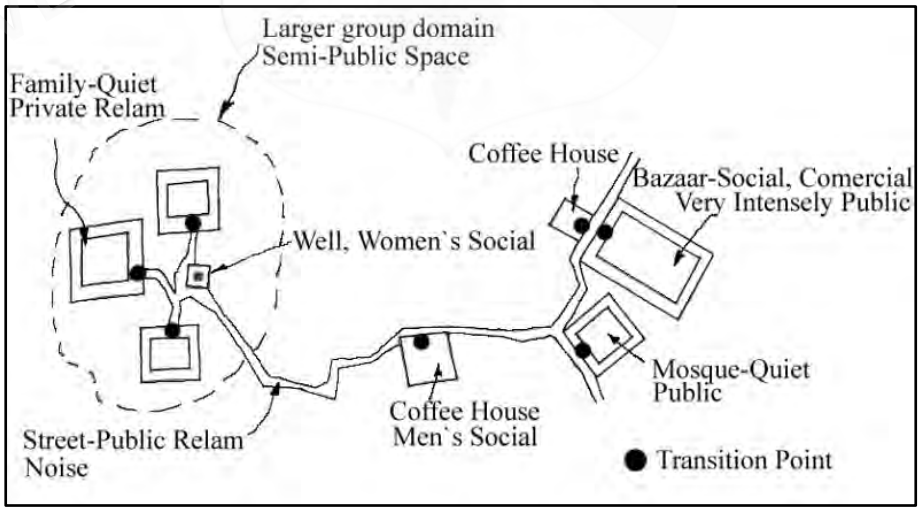

Figure 3-4Diagram of house-settlement system in Isfahan city
Source:Rapoport 1969

According to Montêquin (1983), these are qualities that traditionally associated with Islamic city; simplicity, modesty, homogeneity, equality, privacy, rurality and uniqueness. Rapoport (1969) also argued house-settlement system in Islamic cities is include the movement from the house, through the various transitions to the street, and then to the other parts of the settlement (Figure 3.4).As Figure 3.5 shows, the urban fabric in traditional Muslim cities is very complex. The age of the city reflects the number of activities undertaken, and thus the degree of maturity of the city, and vice versa; the complexity of the urban fabric mirrors the age of the city.

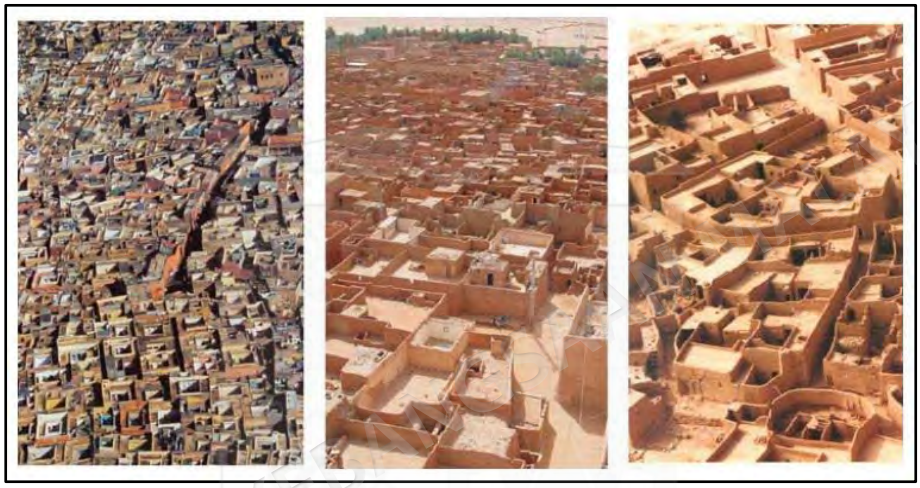

Figure 3-5Urban fabric in Fez (Morocco), Tamentit (Algeria) and a village in SaudiArabia

Source: Ben-Hamouche 2009

5.4.1 Main Structure of urban spaces

Many city elements primary was shaped in pre-Islamic cities. The main elements of Iranian ancient cities were Kohandezh (residential area of kings, leaders and members of the court), Sharestan (residential area for government and the army members), Savad (suburban area), Meydân (square), bazaar, neighborhood, Arg and Baro. In Islamic periods, some of these elements lost their efficiency and the others; Meydân, bazaar, neighborhood, mosque, and Madreseh remained as the main elements of traditional cities in Iran.

a. *Network and hierarchy of movement:* Open spaces in historic areas are based on the hierarchical movement from the central part of the city, the main streets, alleys which lead to neighborhood centers, secondary alleys,

'Hashti' of the houses, entry halls and the court yards. This hierarchy is a movement from public space to private space. Main access and streets are wider and alleys, which terminate at houses, are very narrow.

The traditional design system of historic cities in Iran has never allowed direct connection of private and public spaces. There has always been a respectful separation between these two spaces. The traditional pedestrian system of the city is the main part of this system. Single arched roof also acts as visual element which separates the semi-private space of allies from public space of the passageways. The courtyard is a private space, which is a vital and basic element in houses in hot and dry climate.

b. *City wall (Baro):*The Baro was used for preventing attacks from strangers and tribal groups. The 'Baro' were important in design of cities, and have lost their efficiency in the life of modern cities.

c. *City citadel (Arg):* The location of an 'Arg' in a city has always been subject to geographical characteristics and the strategic position of the city in the region. Apart from these factors, the political and military members of the ruling system of each city have influenced the location of an 'Arg' in a city.

d. *Bazaar:* Bazaar as an economic element formed already in commercial pre-Islamic cities. Originally the initial nucleus of most bazaars was formed around one of the gates of the cities. The formation of the bazaar elements, and their development trend depended on the main function of the city, its economic and population growth.

e. *Square (Meydân):* The Meydâns are usually built at the intersection of the main city roads. They have at least one mosque and a public building as water reservoir. In most traditional cities, there are more than one Meydân. Almost all the main Meydâns of historic cities are still in their traditional form. Although they are important connecting points in the modern city networks, have been able to keep their historical image.

f. *Jame mosque:* Historically, along praying, the mosque has functioned as religious school and a meeting place for the people. For this reason, until beginning of 20th century, the mosque and Madreseh (religious school),

have had an integrated space, with integrated functions. The activities of mosques have created a new zoning system in cities(Sultanzade 1986).

g. *Neighborhoods:* In pre-Islamic cities, residential areas were divided based on socio-economic factors. By domination of Islamic religion, some other factors such as tribal relationships, and religious factors added to the others (Sultanzade 1986).

h. *Neighborhood center:*The neighborhood centre is recognized as the main part of a residential division, and it turns out to be important as an urban element in the development of the neighborhood system in traditional Iranian cities. Each neighborhood with regard to the services has been a small city.This spatial division between neighborhood and urban spaces has been able to provide quiet and private space for its residents.

i. Others elements

1. *Religious School (Madreseh):* The school has been one of the main elements in the cities. Traditionally, some of them are established in neighborhoods to increase their social and economic values in the city(Sultanzade 1986).
2. *Tekyeh and Hussainia:*Tekyeh and Hussainia (different from a mosque) are open spaces for religious gathering as praying and other cultural and community activities. Apart from the Hussainia, which has been the symbol of neighborhood centers, “Takyeh” is a temporary place for religious ceremonies.
3. *Cemetery:*A cemetery is a place in which dead bodies. Cemetery should be facing Mecca, and it covers a wide area.
4. *Public bath:* Traditional public baths in Iran are divided into private showers and public areas with showers and pools. The public baths are usually divided into two separated spaces, for male and females for hygienic reasons.
5. *Water reservoir (Ab Anbar):* Water reservoirs are such dependent facilities on aqueduct (Qanat). Water reservoir also is a traditional reservoir or cistern of drinking water in Persian antiquity.
6. *Gardens:*Gardens are inseparable cultural elements of the cities in hot and dry climate. They not only provide shadow, but also help filtering the air.

7. *Building type:*In the parts of the country with its hot and dry climate, the main characteristic of traditional architecture is harmony between the object and its environment. Public and private buildings were built originally from brick, but color, and other local materials use for decoration give a harmonious facade to the old parts of historic cities. The use of the domes is very typical in this area. The arrangement of buildings and the design of narrow passageways between them play an important role in protecting people against the burning sun in summer and the unpleasant cold in winter. Inner design of each building is include central courtyard, pool and trees that used as design elements to provide an inner micro - climate. Every city had its own individual characteristics. What have given identity to traditional houses are the local environmental factors, and social and cultural relations(Falamaki 2004).
8. *Landmarks and Skyline:*Any observable element on the skyline of a city, apart from being a functional factor at the neighborhood level such as a dome of a natural ice house, water reservoir, mosque, and Hoseinieh, and at the urban level as minaret of 'Jameh' mosque, 'Arg' or wind towers, were and still are the main basis for urban characteristics and orientation subjects for visitors and residents.

5.4.2 Urban Tissue

Natural situation plays the most important role in shaping the fabric of the cities in hot and dry climate. The fabric of traditional Iranian cities exposes their adaptability to climate, geography and cultural factors. In such a climate open space plays a very important role in air circulation. For this reason houses are built around an open space as central courtyard (Figure 3.3).

In hot and humid climate wind plays important role in reducing the heat in summer days. To use wind in providing a micro-climate, separation of the building from each other is an important urban planning strategy. The physical structure of these cities provides a surrounded and covered space to neutralize the effect of the desert on the life of the city. For this reason, houses are completely attached to each other and roads and alleys are narrow(Sultanzade 1986).

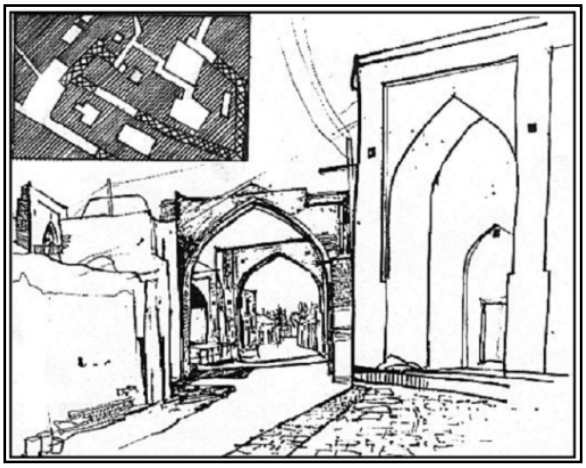

Figure 3-6A View on Ferdows City (Southern Khorasan), an Example of Connected Urban Fabric

Source:Seyhoun 1989

5.5 BOSHROOYEH CITY

Boshrooyeh is a small town in the south of Khorasan of Iran. Boshrooyeh sometimes written as Boshruyeh or Boshrouyeh(Dictionary 2011). In Figure 3.4, the area of Boshrooyeh is located in the east part of Iran and between the cities of Ferdows and Tabas at the border of the Dashte-e Kavir (Wikipedia 2011a). At the 2006 census, its population was 14,196 persons, and now its population is around 15,000 persons(Iran 2006).

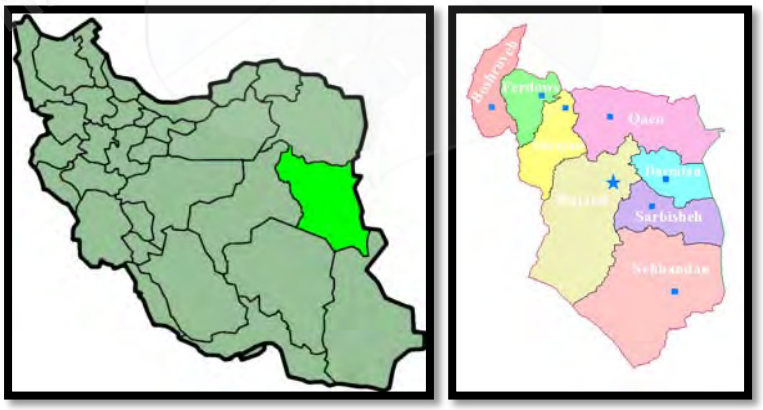

Figure 3-7Location of Soutern Khorasan Province in Iran and Boshrooyeh City in it
Source:Wikipedia 2011a

Generally southern Khorasan province is considered as a desert area. Because of the clear sky and Lack of permanent rivers in this region people were obliged to use subterranean resources via Qanat (subterranean canal). Based on archeological

records, this province is considered as one of the ancient civilizations(Djavadzadeh 2001). Capital of Southern Khorasan province is Birjand. Southern Khorasan province is a part of Khorasan province which in centuries ago was called Ghahestan. Nevertheless, this region was mentioned in Marco Polo's itinerary as Tonokaein (Dehkhoda 1955).

5.5.1 Natural Elements

Natural Elements are includes four following parts; geographic features, different forms of water, winds, and vegetation.

a. Geographic features

The city of Boshrooyeh is located in an even, sandy land, hot, and dry zone. Its weather usually in summer is very hot, and in winter is very cold. The average rain in a year is very low (lower than 150 mm).This city is divided into two different topographical features including a small area of highlands and mountainous topology in the western part and vast area of sand and desert in the North, South and East part of this city (Wikipedia 2011a).

The highest point is indicated on the pinnacle of Mountain Jamal in the west with the height of 2445 meter above the sea level. The lowest point however, is located in the salt desert with the height of 769 meter above the sea level. The chain mountain of Shotoran in the west separates this region from the city of Tabas (Figure 3.8). In the East there can be seen sandy lands with the height 40-50 meters.

The sandy hills near by the cities such as *Tabas, Ghaenat, Sabzevar, Bojestan,* and *Boshrooyeh* are moving towards villages and subterranean canals and put them at risk of damage and destruction. The overall slope of the city is drawn from west to east and in different districts of the city the slope remains the same. In the city of *Boshrooyeh,* within over 100 kilometers of radius, not even one urban point can be seen (Figure 3.9).

Figure 3-8Map of the City's Natural Effects and the Position of Boshrooyeh's Surrounding Mountain Ranges
Source: Tarh&Tadvin 2006

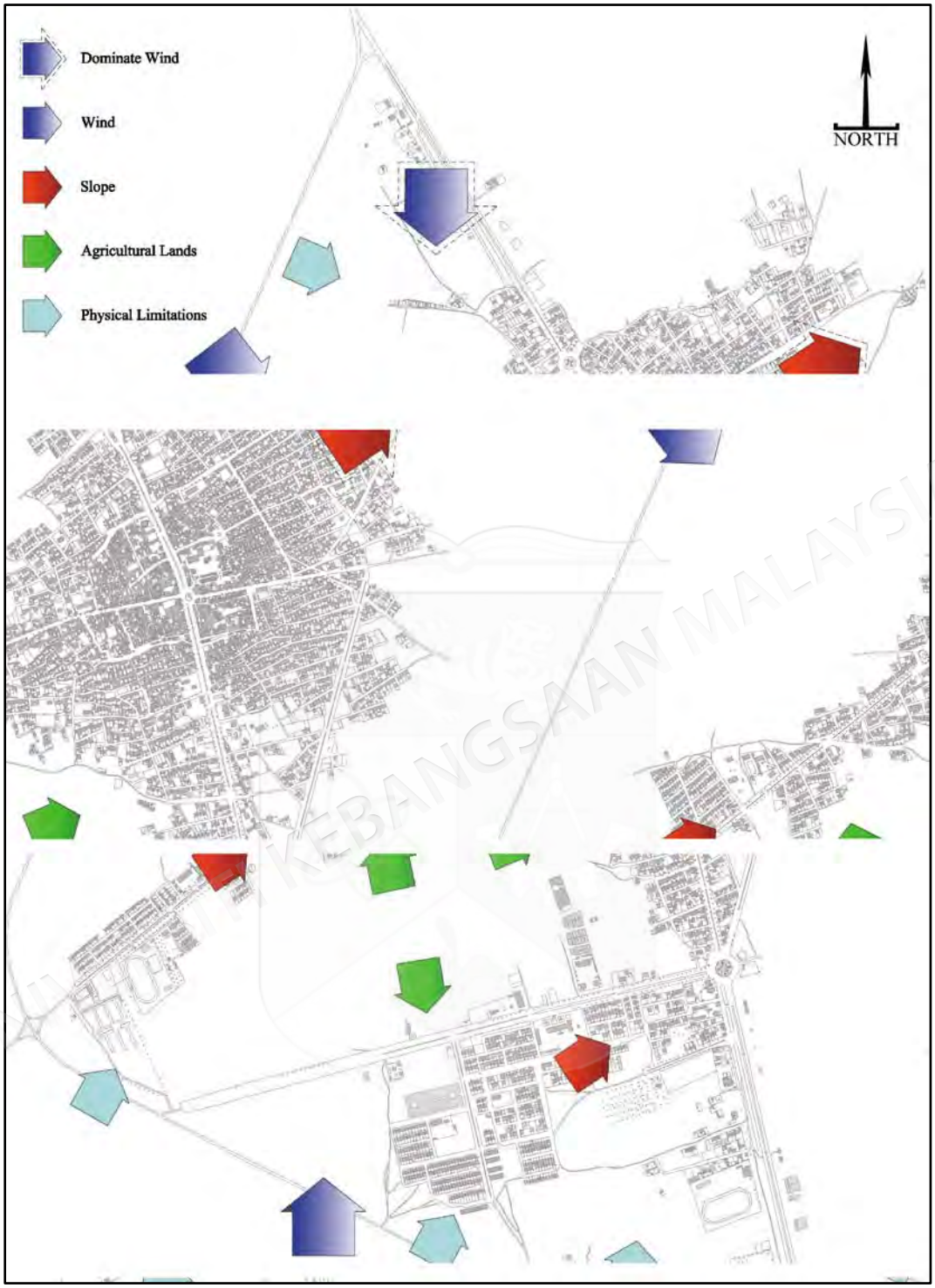

Figure 3-9 Map of Slope Rating and the Direction of Dominate Wind in Boshrooyeh City

Source: Author based upon Tarh&Tadvin 2006

b. Different forms of water

According to Tousi (1992), the hot and dry climate far from the sea, with not enough rain and no water in the mountains, has caused the dryness of the area. The rainfall

period is short and intensive. In the past in the west part of this region there were designed embankment barriers in order to control flood and make efficient use of the water especially for agricultural matters. Nevertheless the water required for agriculture was provided by subterranean channels, springs and underground waters (Figure 3.10).

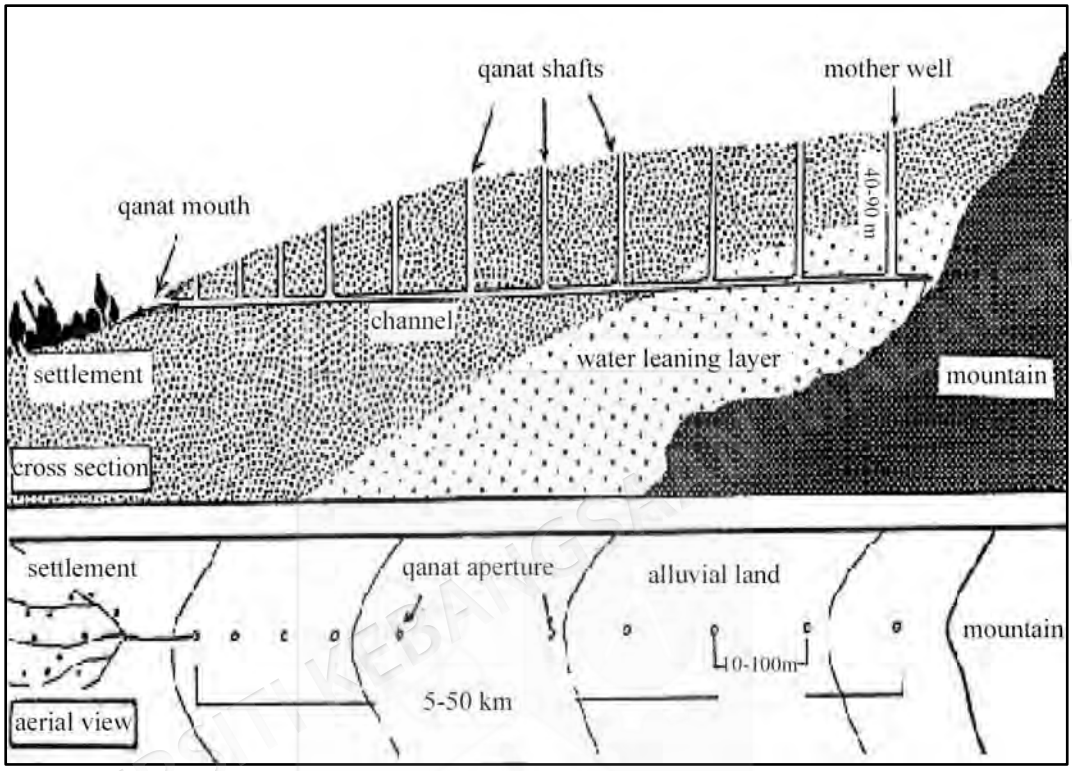

Figure 3-10Diagram of a Typical Qanat (Underground Water Channel); the Water Distribution Network in Desert Cities
Source: Ferdowsian 2002

The form of the water's distribution network in these cities, affects the form of the city, density of buildings, and physical development of the city. The role of a Qanat (underground water channels) in the emergence, development and even decline of a city such as Boshrooyeh, has been as important as the other factors(Falamaki 2005).

c. Winds

There are three important wind flows in this region. The first one blows during summers and become more intensive in hot months and blows from north towards south and sometimes from north-east to south-west. The second wind blows quite

seldom and flows along east to west. The thirdwind blows from the southern of Boshrooyeh and it breezes regularly and more constantly(Tarh&Tadvin 2006). The city of Boshrooyeh because of preserving its traditional urban context and having magnificent wind catchers is well known as a city of wind catchers in Khorasan province. The wind catchers in this city are mostly designed with odd numbers of vents and are located towards desirable winds from the north (Shaterzade 2008).

d. Vegetation

Plant and vegetations existing in this region are of the perennial type. Some of the forest trees such as fig tree, mountainous pistachio, and walnut grow in the mountain Shotoran. However, because of vast area of desert, sand and salt marsh in this region pasture lands are poor and vegetation is scattered and sparse (Figure 3.11). In the urban territory indeed the pine trees are defined as dominant vegetation(Rayati & Motlagh 2009).

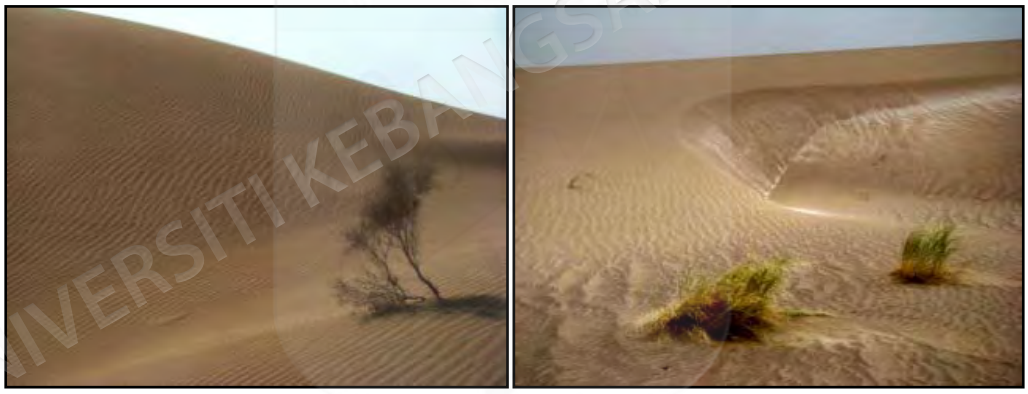

Figure 3-11Desert Plants, Its Local Name is Gaz
Source: Taniguchi 2009

5.5.2 History of the city

Boshrooyeh city was formed in the valley, which has been the main passage of the caravans travelling from Isfahan towards the east of Iran or Mashhad city. Generally the name of *Boshrooyeh* was not mentioned in the materials before the seventh century AH. The name of *"Boshrooyeh"* first was mentioned as a part of *Raghe* district in the history of *Abrou* (one of the historians of Timurid dynasty). Despite the fact that *Raghe* has an older history compared to *Boshrooyeh* it lost its importance after transforming the centrality to *Boshrooyeh*(Abrou 1970). As a consequence the

road was developed between the city of *Tabas* and *Boshrooye* and gradually the path to the *Raghe* was blocked.

In the Timur's book introduces people of *Boshrooyeh* as intelligent, religious, faithful, and hardworking people with the high level of knowledge about Quran. Because of intellectual potential and smart people, this city was called "the place of knowledge" by Timur (Brion 1987). In 1299 AH while the first deputy of foreign minister was passing through this city, he mentioned about this region and specifically addressed the industry of *Barak* weaving (the act of weaving rug and clothing with camel's skin and wool).Gabriel also described the city of *Boshrooyeh* and mentioned about its historical places and culture (Shaterzade 2008).

MacGregor who travelled to this area 130 years ago described it as a very big village that located in a heart of a plain. The occupation of the majority of people in this region is farming and they provided water required for agriculture from the streams which flowed from the western mountains. At that time (Qajar) the city of *Boshrooyeh* was comprised of 800 houses (Heydari et al. 2008).

5.5.3 Structure of the City

The urban texture of Boshrooyeh developed in Safavid dynasty (a part of the urban texture was first appeared in Timurid dynasty). This city because of its organic urban texture, mud and adobe houses, and its imposing wind-catchers is listed in the Iran's cultural heritage organization in 2003 as the second historical texture in *Khorasan* province after the city of *Mazinan*. It also is recognized in the top 10 historical cities in Iran in term of mud and adobe historical texture. Furthermore this city is well known as the museum of clay and adobe in *Khorasan* province.

The close relationship of the religion, commerce and politic has formed the basic structure of traditional cities, and politic has formed traditional cities.The historic part of city is located center with its organic and rhythmic development and its design criteria which are the result of the cultural, social and economic situation of the people, also the climatic, geographic, ecological situation of the region. The new development area does not follow any planning concept of the historic city. And in

spite of cultural and social relations, which are still very strong physical form has lost its continuity and has resulted in an inorganic and spiritless development.

5.5.4 Man Made Elements (Main Structure)

The most dominant structures of the Boshrooyeh one can mention commercial centers, religious and cultural centers, administrative centers, and connective networks. In the structural plan of the city the most important urban objects are located in the central area of the city along two important urban axes. Since in the urban morphological approaches the services are not of primary importance and the most important factor is the form and skeleton of the urban texture thus, the most dominant manmade objects are those network connections.

a. Network

In this city the roads are in harmony with topographical contours in terms of their shape. Narrow paths are often seen with lots of turn and bends. The paths are designed in a way to steer prevailing winds from north-west and prevent them from twisting inside. The paths are not located exactly on north-west or north directions, despite they are located in-between 0° to 45° angle. Beyond the historical texture of the city roads are constructed with the minimum of 4 meter in width. The outside part of the citadel has been developed vastly since 1955 and roads in this area have been designed wider in order to respond to the vehicle transportation(Tarh&Tadvin 2006).

All the roads in this city are not covered with asphalt. Based on the two previous guide plans one of the current problems is the position and location of the roads. In those two plans the location of the roads does not coincide with proper angle, as a result there will appear some problems in terms of adjusting neighboring lands(Shaterzade 2008).

i. Axial (Linear) structure: Being axial is one of the conspicuous attributes of pathway structure in the Boshrooyeh. This means that one central axe links up northern and southern part of the city. This city of has two urban axes. The first axe is located along north-south boulevard (Imam Khomeini Street) and the second axe is located along east-west Street (Toni Boshravi Street).

ii. Reticular structure: In the new rural texture the arrangement of the roads and pathways are in the reticular schema (modern). Traditional system was consisted of narrow, turn alleys, and in some cases the pathway was covered and has ended to cul-de-sac. In contrast the new network is wider which facilitates movement within urban spaces.

iii. North-South and East-West axes (orientation): One of the essential factors leading to traffic congestion is due to the existence of the main North-South Street. Other eastern and western streets put their traffic loads into the North-South Street. In terms of topography and because of location of the city on the salt desert all the urban slopes are towards north-east and east. As a consequence the roads were designed according to the urban orientation(Tarh&Tadvin 2006).

iv. Pedestrian network: The traditional pedestrian network of Boshrooyeh city is extra ordinary in this climate. Spatial orders and relations, variation in hierarchical communication and simplicity, are the main characteristics of this network. Bazaar is the economic centre and the main axis of the pedestrian system in traditional cities. Each element in this network is of special efficiency. Pavilions, entries, squares, narrow and wide alleys and entrances to houses, express different meanings. Covered passage ways is the spatial variety of the communication hierarchy is the main characteristics of this organic system.

Up to early 20th century, the pedestrian network of the city developed organically. In the following years, the new streets developed to respond modern transportation, conflicted the existing pedestrian network.The new developed streets have cut the pedestrian network of the historic area in many places and have divided some of the neighborhoods. The communication network plays an important role in relation to the city.

Pedestrian pathways of Boshrooyeh are situated along the subterranean canals which flow from Raghe Mountains. The connections are often directed from east to west. In the past the most essential pathways in the urban tissue of the city was Hussainia Robati alley and Bazaar Street (Figure 3.12). These streets passed the main square and continued towards

the west. Today what is remained from these streets is an alley behind Miandeh mosque and a small area in Robati alley.

Figure 3-12Pedestrian Network of Robati Alley in Traditional Texture of Boshrooyeh

b. City wall (Baro)

According to Riazi(1937) because of growing population the dynast of Tabas ordered to build a city wall. The length of the wall is 2 kilometer and its height reaches 6 meter. Currently the wall is not in a good condition and is at the risk of falling. This wall covers an area of about 455*364 square meters. The city wall consists of 4 gates each of them is located in a different side of the wall. The gate which located on the west side is called Bagh ali (garden of Ali), southern gate is called Ghabrestan (gate of cemetery), northern gate is Kiani and the eastern gate was called Ahmad which is located at the end of alley(Abrou 1970). The city wall also had 22 military towers. The gates were survived until 1971.

c. City citadel (Arg)

In the north-west there is a citadel which is not firm and not in a good condition(AsadiMoghadam 1997). During the Qajar dynasty there was designed another citadel in the west.

d. Bazaar

The bazaar of Boshrooyeh is in fact as all the other historic cities, the main axis and one of the main elements in the form and structure of the city. The establishment of a new bazaar has been the main factor in reducing activities of the old bazaar since the new one has been able to respond to the needs of its surrounding area. In the historical urban tissue of *Boshrooyeh* bazaar is not seen as its common definition. Bazaar in this city rather is considered as a place nearby school (Madreseh) or mosque (Soltanzadeh 2004). Nowadays, the main central square, *Haj Ali Ashraf* Street and *Robati* alley were considered as the trade centers of the city.

e. Square

There was a caravansary in the main area of the city square. This square later was considered as the social square of the city. This central square which was constructed in the same way as Naghsh-e Jahan square in Isfahan with smaller scale, later was shrunk due to changes to surrounding streets after 1955 and mainly due to the expansion of *Boshravi* Street in 1979. The *Boshravi* Street is perpendicular to *Imam Khomeyni* Street and they were constructed according to the *Pahlavi* urban planning style. As a result of these modifications the rectangular square was changed to almost a circle shape square.

In the vicinity of main square of the city there were located a mosque, a cistern and main bazaar of the city. This square is located in the middle of 4 neighborhood centers (urban node). In these centers mostly small bazaars or shops, gave service to neighboring regions and all four centers were accessed by walking. As a consequence of changes on urban tissue the size of square became smaller and all the shops were shifted to the main street (Tarh&Tadvin 2006).

f. Jame mosque

The Jame mosque (*Tarik mosque*) is located on the south-west corner of the main square, the mosque however has be demolished and reconstructed. In Figure 3.13 isshown the mosque of Miandeh (*Nakhl mosque*) that is one of the oldest mosques of the city (1621). The mosque is located in vicinity with a water reservoir and is

considered as one of the most dominant structure of the neighboring centre in *Miandeh*. Based on the date which is written on the inscription this mosque was constructed in 1030 AH in Safavid period.

Figure 3-13Main Iwan of Miandeh mosque
Source: Cultural Heritage Organization of Boshrooyeh 2009

g. Neighborhoods

Neighborhoods in this region were designed based on privacy and they were shaped by narrow alley. In the city of *Boshrooyeh* there are four main neighborhoods including, *Miandeh* neighborhood, Paein neighborhood,*Mola saadi* and *Sar Pol*(Figure 3.14).The most complete process of architectural evolution in terms of residential buildings can be seen in the traditional houses of these districts. In the current situation the city is divided into 13 different urban neighborhoods. *Miandeh*is considered as a wealthy neighborhood with elaborated houses in city citadel, this perhaps reflecting the fact that there were some trades centers within this neighborhood. In contrast the slum of the city is considered the district which is located on the north-east of the *Omran* neighborhood.

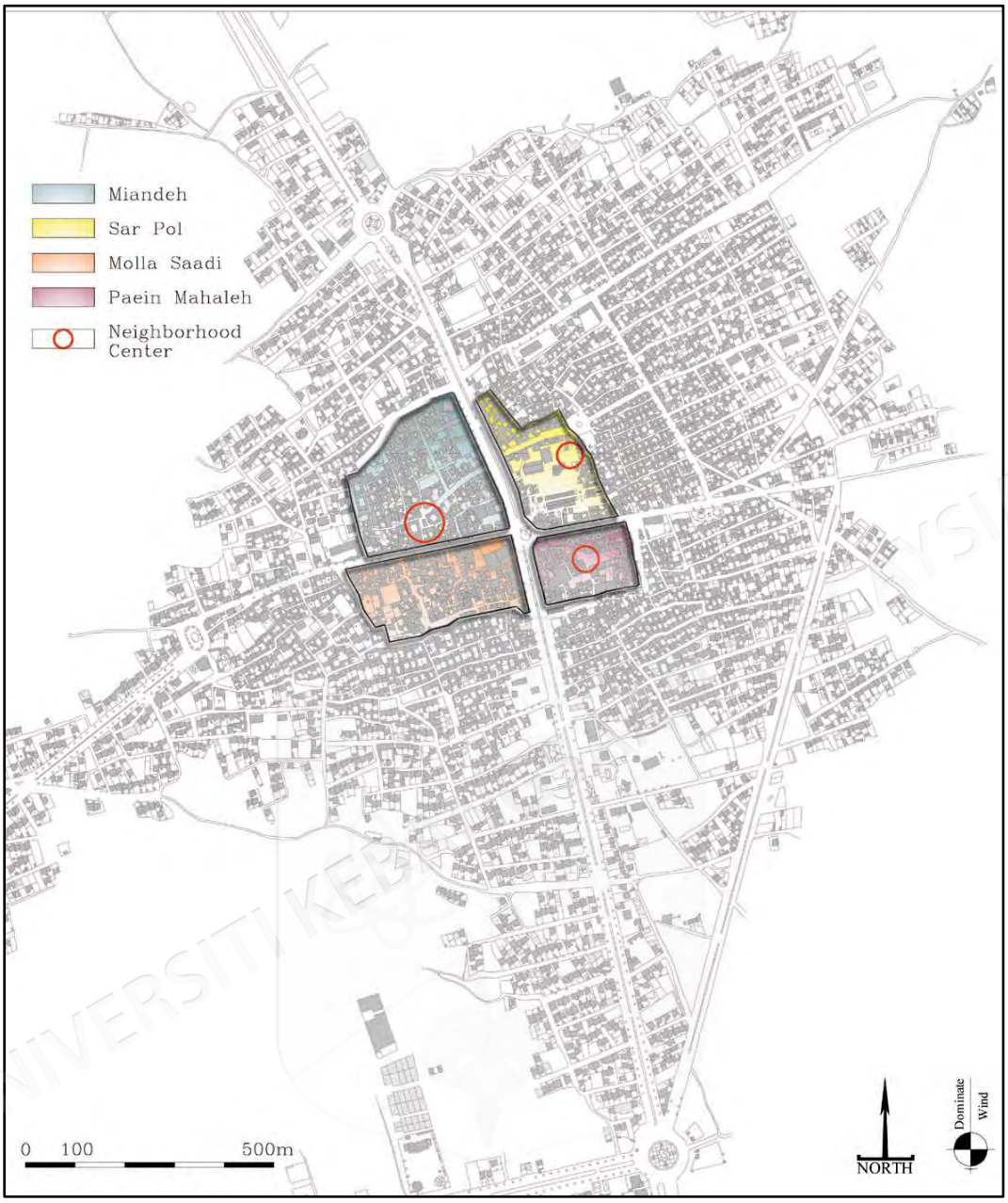

Figure 3-14Boshrooyeh Historic Site and Its Neighborhoods
Source: Author based upon Tarh&Tadvin 2006

h. Neighborhood center

In Boshrooyeh city, space of the neighborhood centre is recognized because of the elevation and height of the buildings, its elements as covered entries, wind towers of houses and public buildings, and domes and minarets of mosques and shrines. Different sizes of neighborhood centers, special spatial organization of elements, all have given a special identity to these centers.

Miandeh as mainneighborhood centre in the cityis consist places such as bazaar, religious school, a mosque and a water reservoir (Figure 3.15). In the neighboring centre of *Mola Saadi* there was the mosque of *Mola Saadi*. A*Abanbar* was located in front of this mosque and at the back of the mosque there were garden and houses. In the Paein neighborhood the neighboring centre was located in the *sarayserkeh* and a water reservoir was at the back. Currently in the *Miandeh* neighborhood there are situated new shops. However, it seems that this area was neighboring centre in the past.

Figure 3-15 Miandeh Neighborhood Center and Its Elements

i. Others elements

1. Religious school (Madreseh)

The religious school (Madreseh) was established in 1718. This structure is located in the Miandeh neighboring centre and in front of Miandeh mosque. Based on deed of endowment the structure was established in 1757 (Figure 3.16).

Figure 3-16 Main Iwan of Miandeh Madreseh
Source: Cultural Heritage Organization of Boshrooyeh 2009

2. Tekyeh and Hussainia

There are numerous of *Tekyeh* (religious platform) and *Hussainia* (congregation place for commemoration ceremonies) within the city and the oldest one is the *Haj AliAshraf Hussainia* which is situated in vicinity with *Jame* mosque. This structure was established in 1704. Another Hussainia is the *Moeil* Hussainia which can be accessed by the most important passageway of Boshrooyeh (so called Robaty alley). The date which is shown in the deed of endowment is 1887 and architectural style of this Hussainia is similar to *Haj AliAshraf Hussainia* with smaller scale (Figure 3.17).

Figure 3-17*Haj AliAshraf* Hussainia and*Moeil* Hussainia
Source: Cultural Heritage Organization of Boshrooyeh 2009

3. Cemetery

The cemetery is located inside the city in the southern part and nearby main street (Imam Khomeini) behind the green landscape.

4. Public bath

Another public space in the city is public bathrooms which are built inside the ground and have domed-shape roof. In each neighboring centre there was one bathroom (Hamam) belonging to that territory. Some of the baths are still in used, and due to growing population and based on people's need several baths and water reservoir were built in this area. *Fazelkhani* bath in Moghari neighborhood is one of the historical structures of the city.

5. Water reservoir (Ab Anbar)

In every neighborhood there was a water reservoir. The size of the water reservoir was different based on the population and the size of the district. The required water for these water reservoirs was provided from the west and gate of Bagh Ali. Miandeh water reservoir which was established in 1568 (early Safavid period) is located in this neighboring centre. The water reservoir has magnificent Iwan which is built towards dominate wind. On the roof there is a high wind catcher that distinguishes this water reservoir from other ones.

6. Gardens

The garden which is located in Mola Sadi neighborhood, in fact it was a house. This house was built in the middle Qajar period, and it is well known as Khan Garden. The city dynast lived in this garden in 1912. The structure has a square big courtyard surrounded by rooms. In the middle of northern and southern courtyard walls there were designed two Iwan in front of each other.

j. Residential building

1. Architecture

The simple and local techniquesthat are the non-mechanical solutions in Boshrooyeh city are include; building pavilions, deep court yards, trees, local building materials

and awareness of their thermal capacity, direction of buildings, circulation of water and air inside buildings, high arched roofs, numerous verandas, use of light colors in building, and et al. Arranging different functional spaces around a central courtyard is the main design principle of public spaces as well as of individual houses (Figure 3.18).

Figure 3-18Old House in Historic Texture with Its Veranda and Traditional Central Courtyard
Source: Cultural Heritage Organization of Boshrooyeh 2009

High wall also is one of the characters of internal and desert architecture which causes shadow inside the alleys. All wind-catchers are directed towards North West, and chimneys are directed in the inverse direction. There are different types of wind-catchers depending on different households and their income. If the urban texture is low diversity this is because of the cultural issues, privacy, and climatic condition. The higher diversity makes the air inside of the buildings warmer.

2. Form

Traditional building's form is a subject of climatic-geographical factor, socio-cultural behavior and Iranian way of life. Traditional buildings reflect characteristics of their environment with regard to space form and function.Traditional architecture, in spite of its special characteristics and values, does not have place in modern life of the city. *'Hashti'* as the main semi-private entry space of several houses, and the central courtyard in spite of their importance as the main design elements in such climate

have lost their value. In modern building form and architecture, cultural concepts are changed.

In current situation total urban territory of Boshrooyeh is estimated about 217.3 hectares including 98.6 hectares of residential territory. Housings in this urban tissue are designed with artistic ornament and plaster modeling. Houses in this region are internal with a courtyard in the middle of the plan. The courtyard is surrounded by four verandas (*Iwans)* and the house is divided to summer and winter residence. Construction materials used in these houses are mud and adobe and the roof is constructed in domed shape (Soltanzadeh 2004).

In traditional houses of Boshrooyeh, there are spaces such as: courtyard, living room, kitchen, stack to keep foods, corral (enclosed area where personal animals are kept), *Sufah*(a covered corridor that is guided to living rooms), pool, *Sardabeh, Shahneshin*, and wind-catcher. Different design of the house indicated different financial situations of households (Rayati & Motlagh 2009).

3. Material

Unity in building materials and harmony in color with surrounding environment has created identity and character of traditional cities. Residential buildings are mostly built of sun-dried brick and in construction of public buildings as bazaar, mosque, water reservoir, bath, Hussainia, both materials have been used. In public buildings ordinary bricks are mostly used as a façade or cover for the domes or minarets. The façade of traditional residential buildings inside and outside is mostly of clay and straw plaster with decoration. The modern building materials are mainly ordinary brick and steel.

Construction materials used in these houses are mostly local materials including adobe and mud. Wood and timber are used for door and window framing. Other materials such as mixture of mud and straw are used and brick also is utilized for new structures. In the new part of the city some houses with marble façade can be seen.

4. Building installation

Dominate wind flows are from North-West to North-East, as a result houses are build to be on leeward side and towards topography of the land. The height of the houses is low and roofs are dome shapes. Arrangement of buildings around a central open space wasthe most common building method in the past of Boshrooyeh.

k. Urban landmarks and skyline

Development of urban landmarks has made people to understand their environment. The existence of these urban landmarks, make movement in the city much easier. Effect of environmental factors and cultural characteristics on physical structure has provided the image of the traditional cities. Urban symbol in the city is the main cultural and mental relationship between people and their environment (Figure 3.19). Character and identity of the buildings build the image, and play important role in the skyline of traditional cities. Single buildings such as wind towers and domes of the religious spaces are effective elements forming the skyline of the traditional cities.

Figure 3-19Wind Catcher (Badgir), an Example of aLandmark

5.5.5 Urban Tissue

Based on the recorded information historical urban tissue of the city is about 22.4 hectares. In addition the cultural heritage organization suggested that 27 hectares in the middle of this area is considered to be of the absolute protected area, which means the total area of historical urban tissue is over 49 hectares (Figure 3.16). The city of Boshrooyeh itself has 553 registered historical capitals. Furthermore there are 1134 capitals which are considered to be registered in the list of national heritage (Taniguchi 2009).

Figure 3-20Map ofthe historic texture area
Source: Shaterzade 2008

Historically a central rectangular square has been the most dominant social factor in the skeleton of the city. This square was located in the middle of main vessel along with old bazaar of *Boshrooyeh*. However due to the vast demolition and constricting new street in Pahlavi era and placing a new square within the street after

Islamic revolution only one of the right angles of the square is remained. The eminent characteristics of *Boshrooyeh* are its turn alleys, muddy and adobe façades, domed roofs and wind-catchers.

In fact the religious point of view affected urban structure to be compact, but the reason which is more dominant on this issue is the climate condition of the region which made the urban texture to be compact. The people in this city were humble and satisfied so they considered about using energy efficiently. They covered entire their courtyards with the minimum equipments in order to save energy in winter.

Historic fabrics such as Boshrooyeh are not built in contrast to their climate and their harsh environment, but they take advantage of every normal quality, which enhances the life of the residents. The building form, court yards and deep gardens, high ceilings, thick walls, hierarchical order in entering the houses, alleys, penthouses on alleys, water streams inside the city and location of the city in relation to the desert, all indicate a good understanding of the environmental condition and the most efficient use of existing natural capacities.

Individual buildings because of their special height are a very effective element in forming the urban skyline. Jameh mosque (at urban scale)and Hoseinieh (at neighborhood scale) have been used as the most important communication element in the city, and have a function of urban landmarkfor people.

5.6 SUMMARY

In the morphology of traditional Iranian cities, the role of the Islamic religion has been very strong. The Islam, along with the environmental factors, has played an important role in making and the spatial pattern of traditional cities. The influence of Islamic values is evident in the form and structure of residential areas in traditional cities, for example: preventing direct contact between private spaces with public. The strong desire for privacy and tranquility has resulted in design of spaces, which act as a barrier between private and public spaces.

Topography and water supply constitute the precondition for the emergence of settlements in Iran. The development of traditional Iranian cities is based on a

combination of environmental (such as climate) and cultural (religion, economy and socio-political believes) factors depending on each other. The cultural influence of the western countries in the last decades, whether in spiritual or material form, the acceptance of unknown patterns, and the break of the people with their past, have resulted in a deep crisis which has affected every single part of historic sites.

The historic city has been shaped and developed organically along with to the political and natural situation of the area. The development of the city and its division into neighborhoods, accompanied by neighborhood centers has given the city its special characteristics. Boshrooyeh has special character in its main structure and urban tissue.

In this chapter of study was identified the case study in a different concepts such as geographical and historical background. The development structure of Boshrooyeh city was presented in different period of time and decade. In the general, was described the main structure of urban space and its elements in the desert cities. Further, was explained the main structure and urban tissue and its elements of Boshooyeh city as a research case study. These descriptions are initial information for recognition of city character. These mentioned elements and principles were involved in the qualitative aspect of traditional cities. So it would be logic thatinterpretation the elements and principles provide a situation for identifying the character of the city.

CHAPTER IV

METHODOLOGY

6.1 INTRODUCTION

Research methodology is an attempt to determine a logical method of achieving the goal of science or knowledge without which such work would not be possible. In other words, research method is a reasonable and reliable process that is developed in order to prove hypotheses. So that it can be defended, and generalized it in others. The aim of this study was to identify and assessment of the city character.

In this study three main elements for the identifying subject are; research environment, available theoretical resources, and physical samples studied. To express the scientific understanding of character: first, identification subject to explain its attributes;next, chose the samples, and then sets the range of resources related theoretical subject. Finally, identified the character of the city and offered suggestions.

In order toreachthis aimit was necessaryselected methods for identifying and evaluating.Section oneof methodology chapter includesapproaches (theories) and methods (case study, qualitative, and quantitative). Section two shows the process of methodology such as choose the case study, data collection, selected areas, detail study, and used software. To reach the three objectives of this research are explained the methods that identifying the character of Boshrooyeh, evaluate to find continuity of character, and give recommendations to continuity of city's character.

6.2 APPROACH AND NATURE OF THE STUDY

Character or physical identity is a wordwithdualmeaning. In this research, based on Lang's proposed (1994) conceptual framework on one hand, related to identity that is a substantive and normative concept. On the other hand, it related to physical that is a procedural and positive concept (Table 4.1).The aim ofsubstantial theories is to the

explanation theproducts of urbandesign.The aim of proceduraltheories also is to the description the processes of urbandesign(Lang 1994; Golkar 2000)

Table 4-1 Physical Identity Position in Lang's (1994) Conceptual Framework

Subject Matter	Philosophical Orientation	
	Positive	Normative
Procedural	Physical	
Substantive		Identity

Positive theories deal with description, explanation, and prediction of eventsin theworld(Golkar 2000). It can be a simple and comprehensive model presented for introducing an analysis physical of the city by using positive theories and their combination.In fact, positive theory gives the order to our observations through its conceptual structures, and through the possibility of providing commentary. Hence, the successful positive theories are a number of theories made from simple generalization but powerful about the world and its mechanism. We willalsobe abletopredictthe future (Lang 1987)

Definition of normative theories is based on understanding the mechanism of the world's major focus their attention on the difference between right and wrong, and good a bad. Normative theories are made based on positive theories(Golkar 2000). By studying these theories and receiving characteristics of environment favorable identity can be found an assessment and evaluation criteria.Normative theories focuses on these questions: What qualities make a "good" urban design? What processes to make a "good" urban design? How to resolve the conflict, if the two are hostile to each other? (Lang 1994)

6.3 CASE STUDY METHOD

Researchstrategyof this study is a case study (Boshrooyeh city). In one of the most frequently cited books on case study research, Yin(1994) provides the following definition: "A case study is an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident."

To make the definition more clearly applicable to architectural research, we would amend Yin's definition to read: an empirical inquiry that investigates a phenomenon or setting. By deleting the word “contemporary” and adding the word “setting,” we include historic phenomena and both historic and contemporary settings as potential foci of case studies(Groat & Wang 2002).

Briefly, there appear to be five particularly salient characteristics: 1) a focus on either single or multiple cases, studied in their real-life contexts; 2) the capacity to explain causal links; 3) the importance of theory development in the research design phase; 4) a reliance on multiple sources of evidence, with data needing to converge in a triangulating fashion; and 5) the power to generalize to theory (Groat & Wang 2002).

Table 4-2 Yin’s Typology of Case Study Designs

Type of Structure	**Purpose of Case Study**		
	Explanatory	**Descriptive**	**Exploratory**
1. Linear-Analytic **Typical article format:** **Problem statement** **Literature review** **Methods** **Results**	✓	✓	✓
2. Chronological **(Narrative sequence)**	✓	✓	✓
3. Theory-Building **Sequence of chapters depends on logic of theory development**	✓		✓
4. Unsequenced **Sequence of chapters interchangeable**		✓	

Source: Groat and Wang 2002

This study design was single case study, and used combined bothqualitative and quantitative strategies. According to theresearchquestionsand goals,this study not only wasexplanatory but also has pursuedexploratory and descriptive. Explorationcan beconsideredin the influence of modernism complexities through archives'resources,artifactsclassify, and oralnarrative of history.Descriptive also can beconsidered in-field work of buildings in selected areas. Based on Yin’s typology

(Table 4.2) this research was a linear-analytic type of case study, which follows the traditional research article outline as well as conventionally suitable for dissertation work.

Yin(1994)recommended that the case study research design be guided by theoretical development. The case study's purpose is to develop or to test theory. He explained that the theory does not mean a “grand” theory; rather, the goal is to find what data must be collected and what criteria should be used for analyzing it.

Stake (1998) distinguishes between what he calls the instrumental case study and the intrinsic case study. For researchers using the former, the case is of secondary interest to the theory that can be established from it. In the intrinsic case study (like this research), the research is “undertaken because one wants better understanding of this particular case”. (Groat & Wang 2002)

6.4 QUALITATIVE METHOD (URBAN MORPHOLOGY APPROACHES)

The method to identify and evaluate the city character is the morphological approach which is obtained of merging the two theories (main structure and urban tissue).

6.4.1 Qualitative

Qualitative research is especially appropriate for understanding the meanings and processes of people’s activities and artifacts. Despite differences between qualitative and interpretive – historical, these researches remain closely related. Demonstrating how permeable the boundaries of research strategies are. These two strategies are often combined, in fact, so that aspects or one can augment the characteristics of the other. Historical research may advantageously incorporate a focus on the social impact of particular buildings, styles, or city forms. Likewise, studies of contemporary environments may profit from analyses of historical archives and physical artifacts (Groat & Wang 2002).

6.4.2 Urban Morphology

Urban morphology is a study of the city appearance, gradual formation of its tissue, and interaction of tissue components. Urban morphology also defines specific

combinations and faces of the city such as streets, squares, and other public spaces. Urban Studies can focus on two perspectives (form and function) and prefer the urban morphology approach. Urban forms cannot be understood except through field works (Allain 2009).

a. Methods

According to Lynch (1969), urban morphology has three methods; historical morphology, efficient morphology, and criterion morphology. Historical morphology (Archaeology type) intendstoanalyze developments, depositions, and changingformsof citiesbased onsocieties. This is for better understood of cities' formation to the current. Efficient morphology tries to describe thebarriers, and evaluated their suitableforms and functions in terms of activities. Criterion morphology wills dept study of relationshipsbetweenhuman values,quality ofresidents' daily life, and forms. It also tries to determine suitable forms (Allain 2009).

In this research used both efficient and criterion morphology methods for evaluate city's form and functions with attention to relationshipsbetweenquality of life and city's form. In this way, evaluated the continuity of the character and determined the new boundaries for city.

b. Tools (Instruments)

The tools of morphology can be categorized in three groups; maps, cadastre maps, and three-dimensional displays. Maps (and aerial photos) include two scales; 1:50000 and 1:25000. Cadastre maps are the only sustainable resources for looking up the urban changes (ownership, plot, deformation of buildings). Three-dimensional displays include modeling and Maquette (Allain 2009).

This study mainly investigates the local documents and the only a world heritage document. The World Heritage document is Taniguchi's report for UNESCO in 2009. The local documents include; Annual Records of Municipality in2010, Historic and Cultural Heritage Organization of the City's report in 2008, Preservation Plan of the city in2006,Master plan of the city in 2005, Guide plan of Boshrooyeh in 1984 and 1993.

In addition to the plans got from the local planning bureau, someold pictures and news are gathered online both from government websites and personal blogs. The government websites provide official notices and records of the preservation and the management, while the personal blogs contain interesting photos and literature, which give the perception and ideas of local people on the changing urban landscape of the ancient city of Boshrooyeh. In addition to data collection on site, the photos and literature people have become an important resource for the study.

c. Analysis (Analytical Method)

As stated by Yin(1994), there are two general analytic strategies:

1. Relying on theoretical propositions: theoretical orientation guiding the analysis, following theoretical propositions that have formed the design of the case study, helps to focus attention on certain data and to ignore other data.

2. Developing a case description: a descriptive framework for organizing the case study, analysis organized based on description of the general characteristics and relations of the phenomenon in question.

In morphological analysis style, designers explain possible relationships between the research variables through the list of differentvariables,categories them, and determineallpossible combinationsbetween thevariables. Ifthe numbers ofvariables increase,the variablesobtained bytheir combination also will be increased. This method is effective for analysis of issues that are limited in the key variables (Lang 1987). So in this research the quantitative method (SPSS software) also was used for analysis, because the key variables were a lot.

Typology is an analysis method includes; plans, plots, and especially tissues. This method described detail of architectural and urban elements. Then continue byclassifyingthemaccording to form and function criterion. Finally, similarelements are related with other elements of structure.Whole position of buildings - plots is base type, and this type is related with public structures of the city such as tissues (evolution and social geography). Analysis method isrequired a researchwork inthe

archives (old maps, perspectives, etc.), and completed with field work. In order to evaluate the city and data collection was utilized questionnaire in fieldwork (in selected areas and selected blocks). Endeavored to questions that is raised in the questionnaire as short as possible. Questionnaires were presented in three categories: street/blocks, plots, and buildings.

Urban design and the combination of morphology with typology have been considered to offer a rich database on forms and form-making processes(Moudon 1997b). Typologies are an essential tool for the analysis because they define the Boshrooyeh as a historic city by determining its unique combinations of building, plot, street and block. In addition, organizational typologies provide guiding principles for solving problems concerned with spatial distribution.

6.5 SITE SELECTION

Boshrooyeh city as one of the historical city in Iran was considered as a case study in this research. So far, morphological research has not been investigated in this city. Therefore, it can be argued that this is the first attempt to identify the city character. In addition, historic fabric of the city is registered in 2003 as second historical fabric of the province. According to Taniguchi (2009), this city is part of network in new small historic cities (NSHC). The network is founded in 2008 by the Historic and Cultural Heritage Organization. Likewise, morphological method that is used in this study can play an important role in cognition and understanding the city character. Unique features of Boshrooyeh city also can help to find significance characters of the city or identity.

Typology (mapping) is a method and a result at the same time. Hence, there is no acceptable single typology for all cities in the world except a relatively short form. Each city provides an opportunity to obtain a classification of a specific typology, especially if the goal is to better understand the fabric before change and urban process(Allain 2009).The most important aspect of Boshrooyeh cityis its history like other historical city. It is possible to learn from our ancestors experience when intended to planning for the future, because structural and socio-cultural heritage is intimately linked.

6.6 DATA COLLECTION

According to Yin (1994) six sources of collecting evidence are; documents, archival records, interviews, direct observations, participant observation, and physical artefacts. Three principles of data collection also are; use multiple sources of evidence, create a case study database, and maintain a chain of evidence.

Archival data (basic documents) in this study were included; visual, graphical, and text. These documents also are composed of; aerial photos, maps, sketch, movie, topography map, guide and master plans, Cadastre map, published sources (articles, reports, and books), and travel journals. Interview (oral history) with experts about changing of urban forms can be added to the field work. These experts were including from Historical and Cultural Organization, Museum, Municipality, proconsul, Housing and Urban Development Organization, and Housing Research Organization.

Basic documents were studied in two ways; text evidence, and field evidence. In this study encountered with the lack of evidence and information sources in text part. This was trying to collect all the documents with visiting to the Capital and Provincial Capital libraries. In the research process alsowas confronted with the lack of evidence in field part. Its cause was destruction of old architecture and urbanism evidence, which replaced with the new asymmetric architecture.

To reach the aim, six months living in the study area with an understood the importance that in a historic fabric as Boshrooyeh, the structure of the city was a collection of different systems of which each one had its own special characteristics.The field observations were done from November 2009untilJanuary 2010, and from October 2010untilDecember 2010. Update the city's map from year 2006 to 2010 was performed at these times. Apart from collecting the necessary information from different sources, it was necessary to investigate every single building in selected blocks.

6.7 QUANTITATIVE METHOD

In addition to the qualitative (field works) were used quantitative methods for details of study. The major concern of descriptive statistics is to present information in a

convenient, usable, and understandable form (Ho 2006). At the first data have been collected the data then calculate their frequency, to graph them. In this way was used cross tab with frequency and graph to compare two or more variables (SPSS Version 18). The count and percentage in the achieved graph assist us to compare the variables. These procedures are intended as primary descriptive the data. Ho (2006) also stated that the description of data is important and fundamental to any analysis.

Descriptive statistic was utilized to discover differentiate between the variables. This level of measurement involves ranking the variable to be measured (Ho 2006). The data was achieved not by questionnaire but also by primary data from qualitative analysis of variables. To set up data the component of variable was conducted with their coding for street/blocks, plots, and buildings and their components (see Appendix A).

In descriptive statistics, a frequency is used to obtain counts on individual variables. The frequency for each value expressed as a percentage of the total sample. Both frequencies and cross tabs of are used for obtaining information on the number of cases that have a certain characteristic. The frequency in this study was used to obtain the percentage and count of variables and its components. In the Cross tabs arranges information into rows and columns of two variables, and also showing their relationship in the tabular form. In contrast to Frequencies, which obtained information about one variable, Cross tabs provides information about bivariate relationships. It can report the row, column, and total percentages for each cell of the table.

Microsoft Excel is a spreadsheet program which is used to enter numerical values or data into the rows or columns of a spreadsheet. Excel generates charts, graphs or histograms from specified groups of cells. Excel Version 2007 was used to compare more than two variables. The count of variables (more than two variable) in their compared was demonstrated according to the excel results. As the conclusion obtained results of both software SPSS and Excel lead to understand urban tissue and building types in the selected area.

6.8 RESEARCH PROCESS

This research used a case study strategy which consists of both current situation and the historical events of Boshrooyeh. The data mainly came from the historic and current photos taken at the site by author, and gathered from history and official websites. Methods involved in this case study researchwere mainly documentation research and field observation. The morphological approach was used to review the development layers of Boshrooyeh (Figure 4.1). This figure shows the morphological frameworks to achieve the objectives of study.

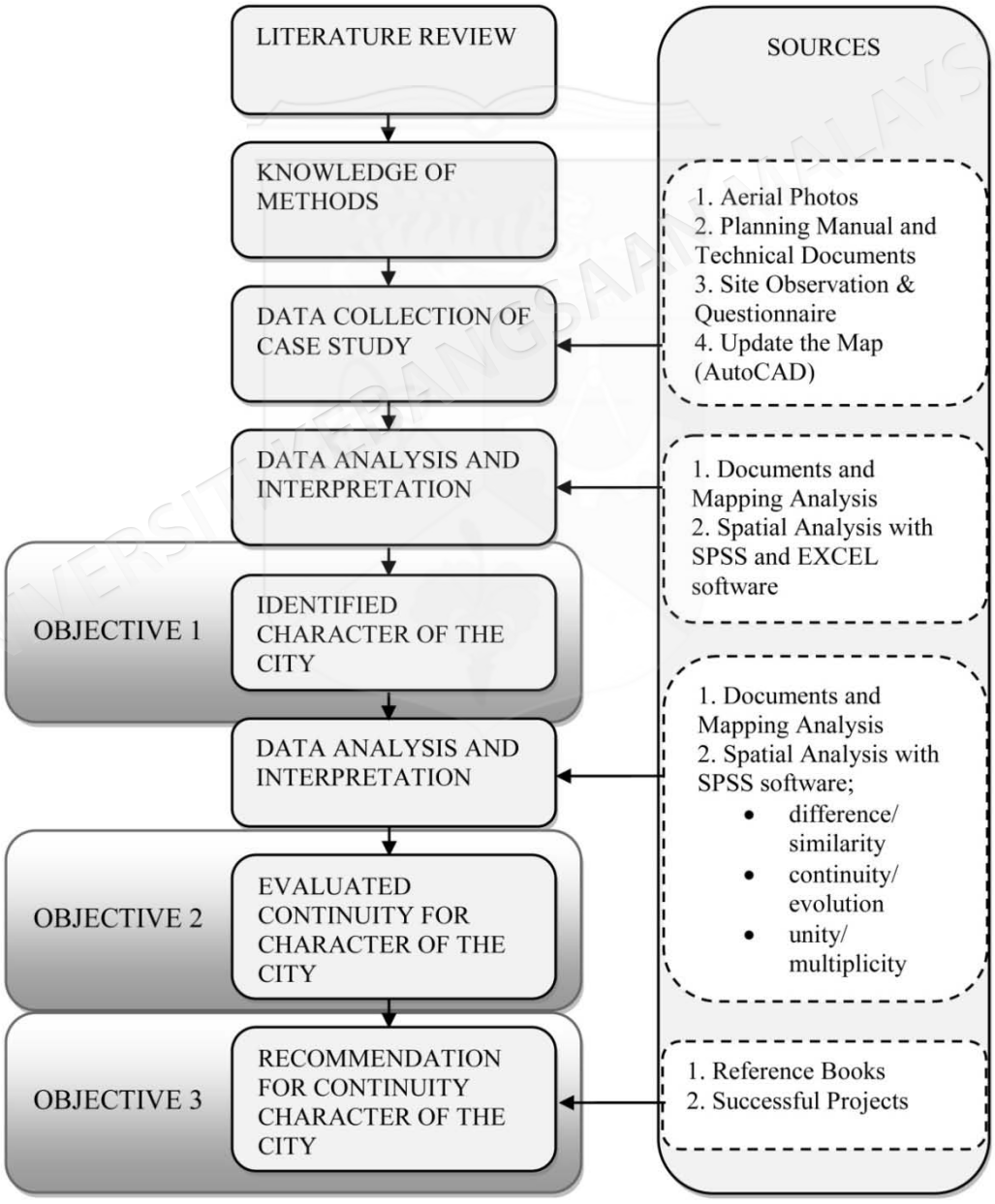

Figure 4-1Methodology Frameworks

Main structure theory isexpressedthe cityconsistsoftwo parts; main and subsidiary. Main part includes man-made Elements (public buildings and main network of traveling) and natural elements (land shape, plants, and variousforms ofwater). Subsidiary part is including other elements (residential areas) (Rossi 1982). Urban tissue theory describes the arrangement streets and blocks. Each element has its position, outline (shape, size, and proportion), and internal arrangement (type, number, and relative position of component parts) (Kropf 1996b).

6.8.1 Identifying

If we want to the analysis whole the city, it is very difficult to establish or infer over the lengthy time spans dealt with here, but work to this end is continuing at least for small areas (Khirfan 2011). As Mirmoghtadaee (2006) suggested, in order toidentifyandstudythecity (typology studies) first mustbe selected an area. Thisareashouldcontainthe followingconditions: 1. covering the part of main structure 2. Be included the development layers of the city 3. Take the different geographicalareas ofthe city 4. Covering the otherfactors which affectingtheformation ofdifferent types ofurban fabric (such as urban rules and regulations, classcontradictions, etc).

As shown in figure 4.2, the selected areas was included all properties. Although selected areas was not covered some of the urban fabric (after Revolution period), but there was similar residential fabric. It should also be noted that the older areas of the city have been more changes and more diverse. After selected areas, typology studies were done separately for main and subsidiary parts of the city.

According to Kropf (1996) method identifying the urban tissue (residential fabric) also included; street/blocks, plots, and buildings. Typology studies also were done in historical development of each layer based on street/block pattern, then with other components. Identifying the main structure was included; natural elements (land shape, water, and plants), man-made elements (public buildings and main network of traveling). All questions somehow made clear rate of buildings vulnerability, tissue, and accessibility in the city assessment. The information also provides concerning a comparison between the situation before and current which it also helped in assessment.

Figure 4-2 Selected Areas

All variables were comparing in two sections. In the first section was evaluated typology of 90 blocks in the selected area. These blocks covered adjacent blocks of North-South street (Inghelab Boulevard) and East-West street (Boshravi and

Shirazi). The first section is included shape, dimension, and orientation of blocks in compared with the development layers. Every variable divided into their components;

1. *Shape:* Block shapeswere divided into two groups geometric (with straight sides) and non-geometric (with indirect sides). Geometric includes three patterns; Trilateral with access to street from three sides (A), Tetragon with access to street from four sides and Cul-de-sac (B), and Polygon with access to street from surrounding and Cul-de-sac (C). Non geometric has a Polygon with access to street from surrounding and Cul-de-sac (D) pattern.
2. *Dimensions:* the Block dimensionswere divided into three groups; widthless than 50m, width between 50-100 m, and width more than 100m.
3. *Orientation:* Block orientation was determined according to most plots' orientation on it; Northwest/ Southeast and Northeast / Southwest.
4. *Development layer:* Of the blocks located in growth layers of the city was divided; in the city wall (old town), until 1956, until 1964, until 1980, until 1998 and after it. In addition, the blocks which were formed in several layers were placed in a layer that the block completes.

Since 90selected blocks, andthe areasbehindthem were included wide areas, and study generally area wasvery time-consuming and difficult, so eight blocks selected for detailstudies (Figure 4.3). These blocks (Twosamplesofeachtype) had the highestvariety in residential buildings, and covered all development layers of the city. Second section was including typology of plots and buildings in selected blocks. Every variable divided into their components;

1. *Shape:* Plots' shape was divided into three patterns; Simple tetragon (a) whilst its length been less than twice of thewidth (Closetothesquare), Tense tetragon (b) whilst its length been equal or more than twice of the width, and Polygon (c) with various shapes.
2. *Dimensions:* Plots'dimensionwas divided into two groups; widthless than 15 m (I), and width more than 15 m (II).
3. *Orientation:* Plots' orientation was determined like blocks; Northwest/ Southeast and Northeast / Southwest.

Figure 4-3SelectedBlocks

4. *Development layer:* Of the plots located in growth layers of the city was divided; in the city wall (old town), until 1956, until 1964, until 1980, until 1998 and after it.
5. *Shape:* Buildings shape in three plots pattern was observed; Simple Tetragon, Two Verandas, Three Verandas, Four Verandas, and Polygon.
6. *Dimensions:* Buildings'dimensionlike plots was divided into two groups; widthless than 15 m, and width more than 15 m.

7. *Arrangement and Position:* Buildings position and armament of them in plots were determined into seven groups; in the North (N) as the yard is located in the south of building side, in the North (N-2) as the yard is connected with two or three joint sides of building,in the Middle (M) as the yard is connected with four sides of building, in the South (S) as the yard is located in the north of building side, in the South (S-2) as the yard is connected with two or three joint sides of building, Whole of the plot (W) as the yard is located in the center of building, and in the North and South (N-S) as the yard is connected with two separate sides of building.
8. *Period:* Buildings in terms of the construction period divided intofive groups; ageless than 15 years (P1), age between 15-30 years (P2), age more than 30 years (P3), Traditional period (T), and combination with two difference periods (Comb).
9. *Material:* Buildings in terms of materials used in their construction were divided into three categories; Brick (Br), Mud and adobe (Mu), and combination with two difference materials (Comb).
10. *Floors:* Building in terms of height was determined into three groups; one floor, two floors, and three floors.
11. *Roof:* Buildings weretwotypes of the roof; Flat and Dome.
12. *Façade:* Buildings in terms of façade numbers was divided into five groups; without façade (these buildings were surrounded by other buildings), one façade, two façades, three façades, four façades (these buildings were located in the middle of plots).
13. *Development layer:* Of the buildings located in growth layers of the city was divided; in the city wall (old town), until 1956, until 1964, until 1980, until 1998 and after it.

In order to identifying the character first, two-dimensional characteristic was studied by plots'maps. Then, in order tocomplete theinformationwas used of aerial photos (three-dimensional). Eventually, in order to update the information fieldworkwas conductedat the site, andchanges wereconsidered inbuildingsand plots. Figure 4.4 to figure 4.7 shown plots maps and aerial photos of selected blocks.

Second section consisted of six steps. Step one is including typology of plots based on dimension and arrangement of buildings in it. Step two is including relations between plots typology and periods. Step three is including relations between plots typology and buildings floors. Step four is including relations between plots typology and façades. Step five also is including relations between plots typology and buildings roofs. Finally, step six is including relations between plots typology and buildings material. For all these six steps are provided tables and figures such as figure 4.8 (other figures and tables are in Chapter 5). The results of typology in selected blocks can supports in finding buildings type and types of urban tissues.

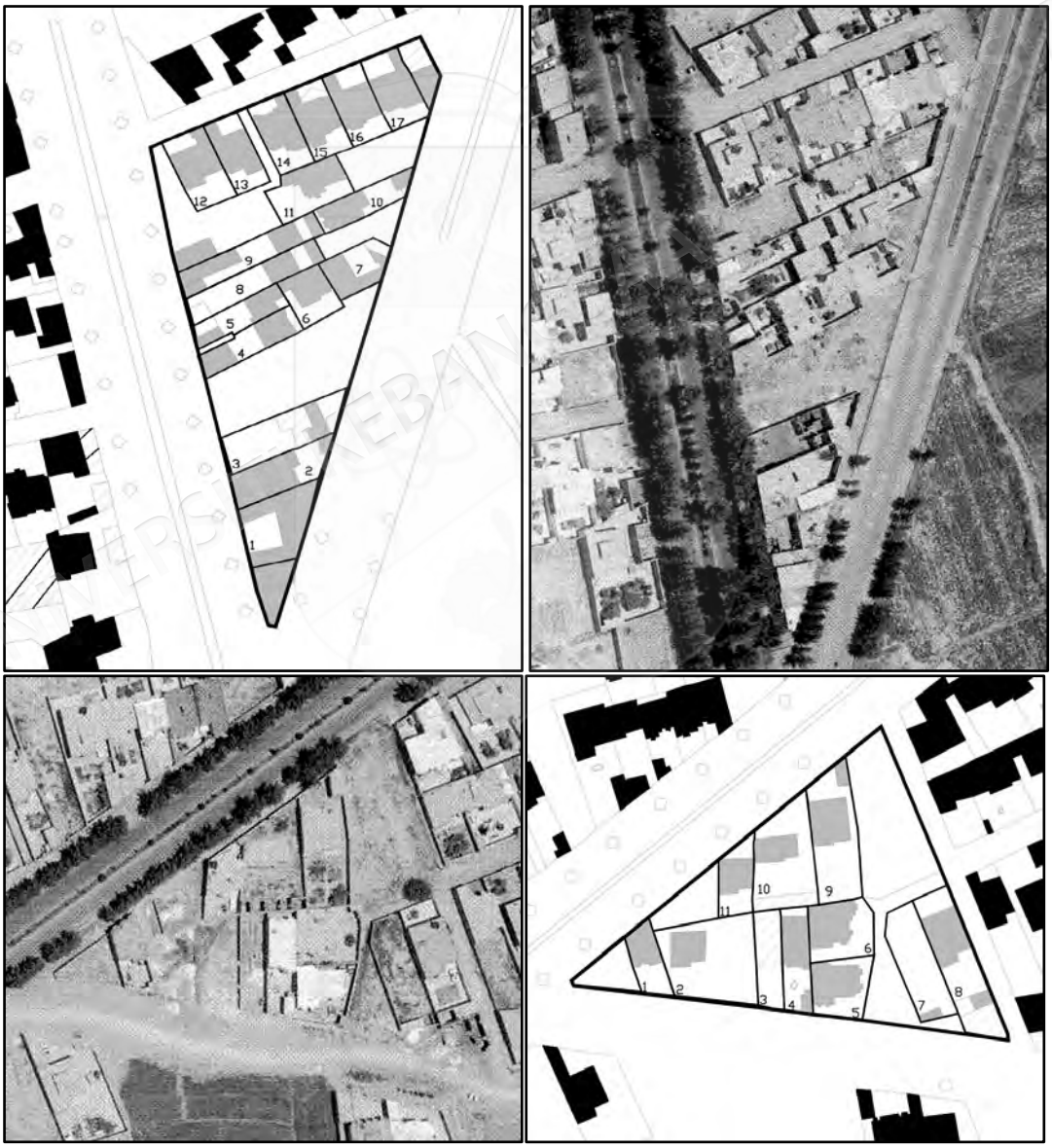

Figure 4-4 Aerial Photo and Plots ofBlocks A

Figure 4-5Aerial Photo and Plots ofBlocks B

Figure 4-6Aerial Photo and Plots ofBlocks C

Figure 4-7Aerial Photo and Plots ofBlocks D

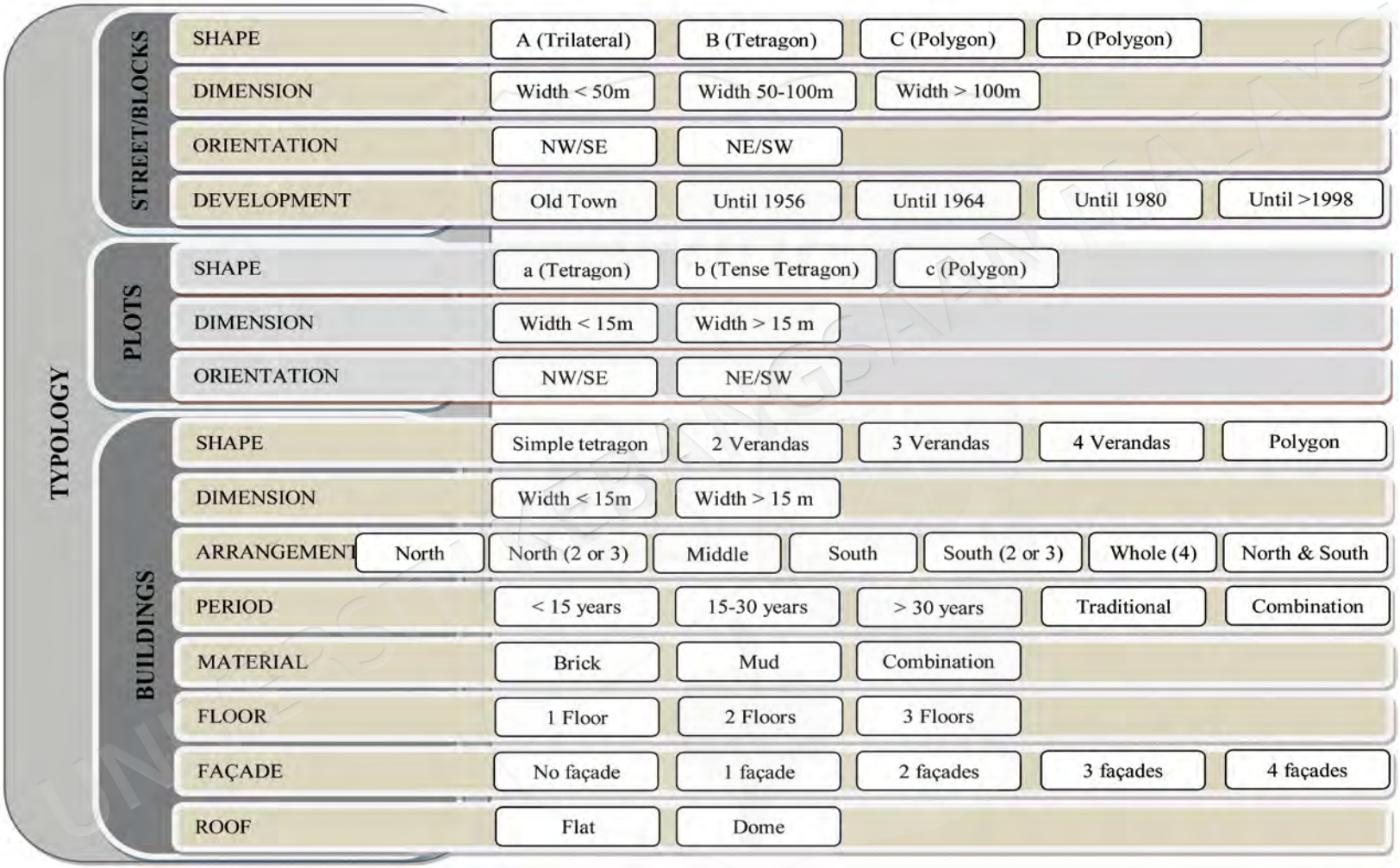

Figure 4-8 Typology Process

6.8.2 Evaluate

Evaluate like identifyingwas doneintwo steps; main structure and urban tissue. For this purpose, firstit was found the range ofthe effective region (in two scales; micro and macro). In case of Boshrooyeh, macro region was included the effective region of Islamic/Iranian traditions and micro region was included Boshrooyeh city. Then, designtraditions (related to the main structure and urban tissue) were identifiedineach of thesetwo areas.

Afterwards, the present situation (physical evolution of the city) was studied to be determinedwhich traditions have still remained (difference/similarity). For the presence or absence of continuity in urban tissue were compared types of tissue in each historical period (from past to current). The number of remained traditions represented the continuity. For evolution was determined the most important changes in each of the periods the city growth, and was evaluated affected rate of urban tissues. Finally, linking elements of the city's components were assessed to find unity/ multiplicity.

6.8.3 Suggestion

Formal analysis helps us to measure and maintain character based on criteria of philosophical and theoretical framework.Coelho(2010) stated that on the evolution of the city urban fabric needs to creating the model for operational projects. Morphological analysis is an introduction of any intervention (such as urban restoration projects) and preparatory actions (such as the master plan, etc.) (Allain 2009).The suggestion phasewasincluding theformulationofgeneralapplicationwith respect tothree criteria; difference/similarity, continuity/evolution, and unity/multiplicity.In other words, maintain and upgrade these three qualities was the main goal of this phase. Consideringthis goal was propose upgrade and coherence the Boshrooyeh character (physical identity).

After the evaluating the city's character, to achieve the suggestion are considered the existing urban tissue, new urban forms and buildings, densities and land use. A morphological analysis was carried out to identify the distinct tissues constituting the city of Boshrooyeh. Data sources included contemporary maps,

current building applications, and direct observation. In addition, whole the city, representing several types of urban tissue, were selected and thoroughly analyzed, in terms of similar characteristics, buildings height, and land- use.

Zoning is an instrument of land use planning used by local governments in most developed countries (Lefcoe 2006). Zoning is a practice of determining the uses of land based on mapped zones which separate one set of land uses from another. The densities of these factors are considered to establish the boundaries between the zones. The zoning utilize for local municipality, and urban planner and designer tosets the zoning rules and regulations for any given area. Zoning is an appropriate mechanism to provide for the necessary physical improvement.In this study, eight tissues (zones) were identified, and their main characteristics formed based on different regulations.

1. *Organic* zone correspond to the traditional urban fabric of Boshrooyeh. The streets and plot series of this urban tissue are very irregular, and buildings are four and three verandas. Organic zone determined based on dispersion of these buildings types (Figure 4.9).
2. In *Middle* zone, streets and blocks are regular and in continue with the traditional part of the city. In this zone, dispersion of the buildings types is twoconnected and separateverandas (Figure 4.10).
3. *New low height* zone identified based on the low density of housing. This zone is located in the new part of the city. The number of floors in this zone is one and two.
4. *New high height* zone determined based on high density of housing. This zone also is located in the new part of the city. The number of floors in this zone can be more than two.
5. *Commercial frontage* determined based on the dispersion of commercial function. This zone is including the stories with commercial function which are established in the street frontage.
6. *Public services* are based on dispersion of the services centers in the city.The Areas of this zone include large plots that contain the public buildings.
7. *Green area* is a zone belongs to the green spaces, parks, and local green areas.

8. *Farms* zone shown dispersion of the farm lands that are surrounding the whole city.

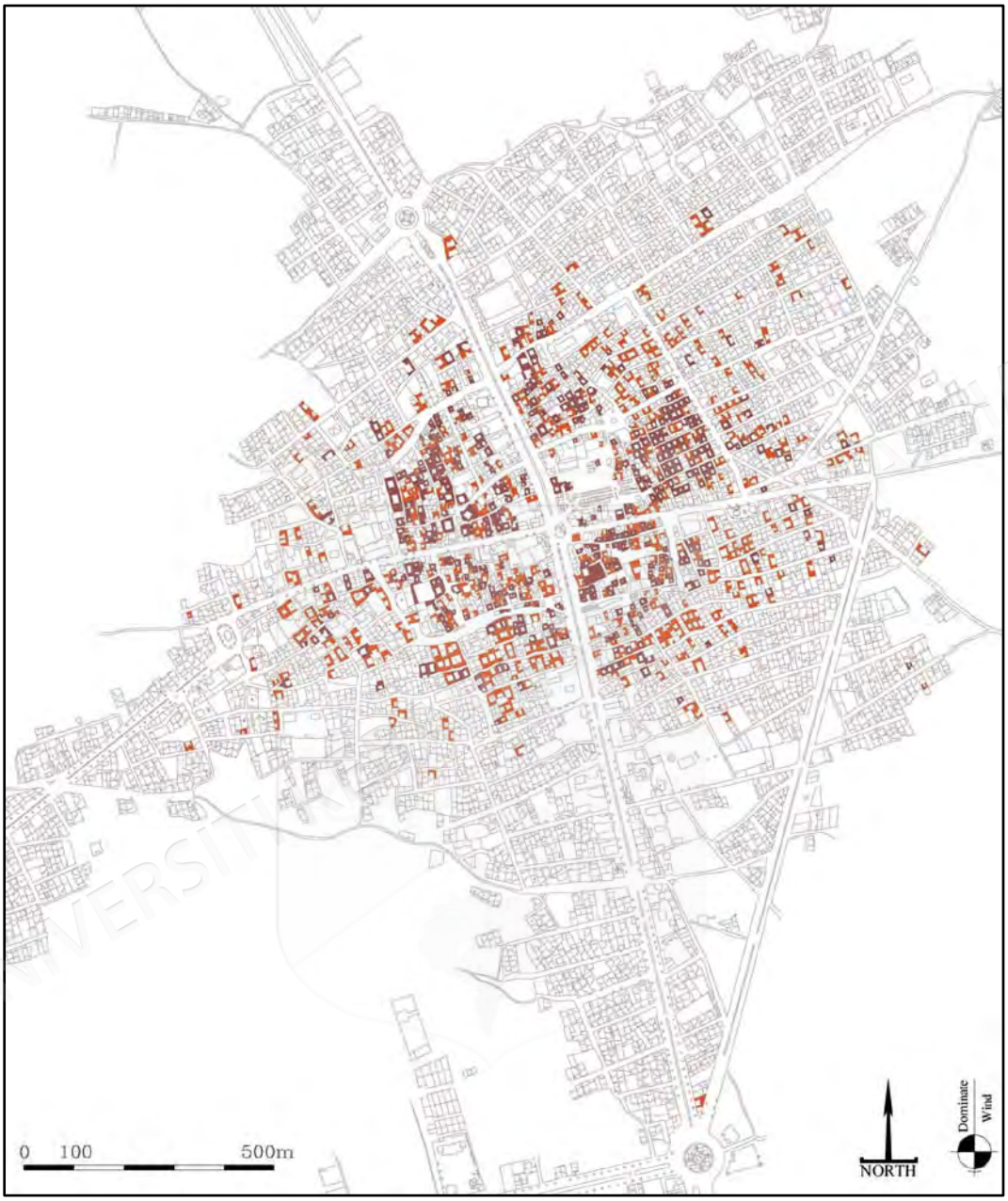

Figure 4-9 Dispersion of the Four and Three Verandas Buildings

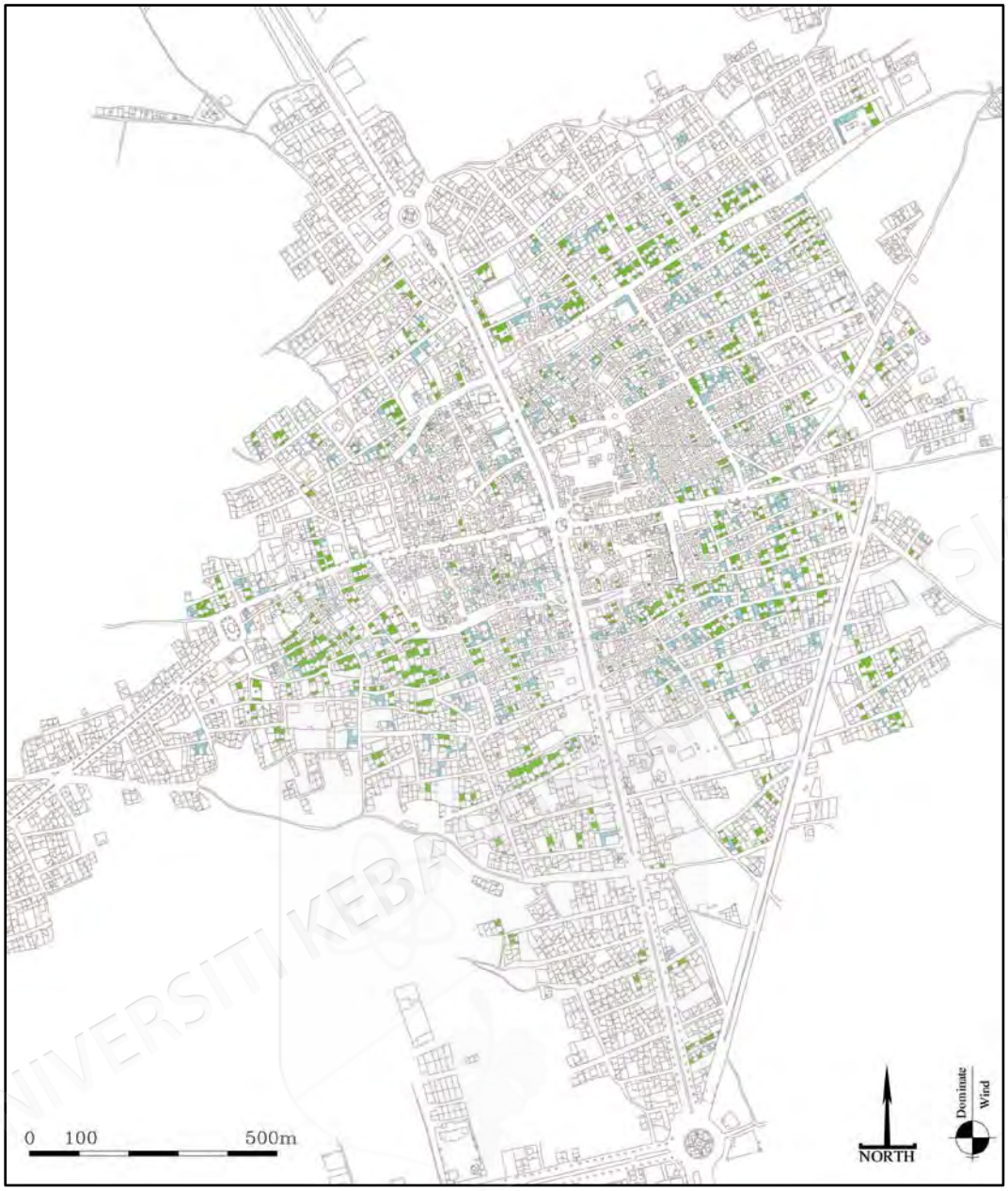

Figure 4-10 Dispersion of the Two Connected and SeparateVerandas Buildings

Suggestion phase was developed according to studies in reference books such as; Morphologie urbaine (Allain 2009), Rehabilitation Monuments and Historic Cities (Falamaki 2004), Urban Renovation (Habibi & Maghsoudi 2005), Urban Design Process (Bahreyni 2009), Responsive environments (Bentely 2008), From Venice to Shiraz(Falamaki 2005), Design of urban space and Public and private spaces of the city(Madanipour 1996; 2003), Towns and town-making principles(Duany et al. 1991), The Concise Townscape (Cullen 2003), Defensible space(Newman 1972) et al.

6.9 SUMMARY

Most studies on urban morphology undertake the analysis of urban form and characterize the moments and the evolution processes of certain fabrics and their components. The investigations aim at creating basic tools for developing sequent research has not been adequately explored.The transfer of knowledge to the production processes of the urban object has not been done by focusing on the evolution of the current city urban fabric.

This chapter was described the research design and method for study. The case study research as main approach was utilized, which linked to qualitative and quantitative methods. In this study to assessment of character was conducted the qualitative method by systematic field observation. The morphological approach was used to review the development layers of Boshrooyeh.

In addition, the SPSS and EXCEL software was used to assist qualitative data converted to quantitative data. This software also was contributed to find difference/similarity, continuity/evolution, and unity/multiplicity. In next chapter obtained data from field observation and converted to SPSS and EXCEL software will be analyzed and interpretation in detail. It will provide the findings and analysis the data to achieve the desired objectives.

CHAPTER V

DATA ANALYSIS AND DISCUSSION

7.1 INTRODUCTION

People and residences create their mental concept of the urban reality by combination of elements, environment, and connection with them. Thus city in residence viewpoint has its own identity that is understood by mind. In this organized perception, city has its unity and has conditions to create a whole. In this chapter was used the study of urban morphology to understand the spatial structure and character of a city, town or village by identifying the patterns of its components and the process of its development.

Stylistics in urban morphology in addition to identity cognition will also helpto the whole view of urban fabric. The main structure is considered in the scale of complex and hierarchal. This overall view discussed how connection of urban fabric has effect in form of the entire city. As results to recognition of identity in every city is needed to style cognitive, organization of urban elements and urban complex.

Every part of the city with any organized style has to be investigated. Every solution or strategy for changes and its reproduces the space should be based on cognition of style and its organization of the spaces. The city is in addition to style has principles and rules that should be considered in its identity recognition. Hence analysis of physical forms in Boshrooyeh focuses on street and block patterns, plot patterns, and building patterns.

7.2 IDENTIFYING THE CHARACTER (PHYSICAL IDENTITY)

7.2.1 Boshrooyeh City

a. Main structure

As was described in chapter 3 (recognition of Boshrooyeh city), main structure of Boshrooyrh can be summarized as follows:

The city is located in an area between the mountains and desert. Location of the city is separable into two areas: 1. Low area is mountainous in west 2. Wide area is desert (pebble field) in north, south, and east. Catchment of Boshrooyeh plain is located between east (Dasht-e Lut) and west (Shotori Mountain). Pine (Kaj) is the main vegetation in the cityzone. Networks includes organic in center and reticular structures in surrounding. The streets are located in two majors along north-south and east-west, that north-south is more significant.

b. Urban tissue

Attention to the physical evolution of Boshrooyeh and its features that over the centuries, there have been special features in the tissue. The most important featuresare as follows:

1. The dichotomy of core – surrounding: One of the physical features of Boshrooyeh is dichotomy that occurs in core (place with focus on commercial and business activities) and its surrounding (place with residential use). Farms also surround both of them.
2. Land use: While residential use is spread in whole the city, in central areas and along main streets commercial use and government (services, administration) are dominant.
3. Contrast between west and east: The main feature of the city is contrast between aristocratic and lower-class settlement. It has been formed from past to present in the northwest of the city (Miyandeh neighborhood and continue to the west) as aristocratic settlement and northeast of the city (Barzegar neighborhood) as lower-class settlement (Figure 5.1).
4. The main shape of buildings: Buildings shape is shown of transition from low height, introverted, with courtyard houses to the houses and apartments with an average height and extrovert. Courtyards by walls still have maintained its importance.

Figure 5-1Left: Mostoufi House as Aristocratic Buildings, Right: Panahi House as Lower-ClassBuildings

5. Scale:Boshrooyeh texture can induce a consistent perception of sensory and visual. Unfortunately, in recent years it disrupts with manipulation and also creates additional two-arms to the city. The homogeneity of texture goes to the non-homogeneity and uniformity. Exist of signs in the urban fabric to prevent loss, but the scale did not continue. Sky line and perspectives have become blind.
6. Neighborhoods diversity: Boshrooyeh like any city is made up of neighborhoods, that each have their own special features. For example, Miyandeh neighborhood is more significant from others with a different neighborhood center (Figure 5.6).
7. The relative uniformity throughout the East - West axis, and diversity throughout the North - South axis: Boshrooyeh city has same with special faces and spirit throughout the East - West axis. The colors of the walls follow almost uniformly, and the differences that exist are in the framework of a civil unity. The sky line still has not blind, except new (built in two past decades) additional arm in west after Second Square. During move throughout the North - South axis the conditions is more different. The colors of the walls are noticeably transformation. Right and left side of the street is different. What's in front has no resemblance to the behind, and sky line has blind.

c. Typology of urban tissue in Boshrooyeh

i. Traditional tissue

Traditional neighborhoods that are origin of the city still make core of the Boshrooyeh city. The traditional district of city is located within the North, South, East, and West streets. Inside of this complex located the city's main square, Jame mosque, and city wall. The streets have commercial activity and services. The buildings in this area are traditional and valuable with regard to their history, and some have become old and dilapidated. In organic tissue of this area still preserved some of the old network pedestrian (alleys are narrow and with many turns, surrounded by tall walls). This area of the city has the highest density of traveling activity (Figure 5.2).

Figure 5-2Part of the Boshrooyeh's Traditional Tissue (Aerial Photo in 2003)
Source: National Cartographic Center of Iran

ii. Middle tissue

In continues of traditional tissue formed another tissue like past and outside the core, but within the streets of Pahlavi period and with new materials.Passages network is in the previous network but become more regular. Streets with more wide open the way for vehicles to passed. Residential buildings in this area are built with low density (Figure 5.3).

iii. New developments

Domains and residential areas have formed with Urban Planning plansaround the middle tissue like an aura. Modern town, but have been developed out of area (separated themselves) with regular construction such as Farhangian town, Azadegan town, and Sajadieh town. One of the features of this tissue is modern discipline in Urban Planning and physical discipline as a reticular structure in its residential areas. Another feature of this tissue is long streets that are open the way for car traveling (Figure 5.4).

Figure 5-3Part of the Boshrooyeh's Middle Tissue (Aerial Photo in 2003)
Source: National Cartographic Center of Iran

Figure 5-4Part of the Boshrooyeh's New Tissue (Aerial Photo in 2003)
Source: National Cartographic Center of Iran

7.2.2 Selected Area (Detail Study)

a. Main structure

As was described in chapter four (methodology), justifiable area was selected for typology study of Boshrooyeh tissue. This area covers multitude of different types around the city to be acceptable. Selected area also has contact with the evolution of main axis North - South of city. Attention to the evolution main structure and existing passages types in selected area, we see that this axis represents the changes are made (Figure 4.2).

The main structure is a combination of elements such as, network of main roads, streets, squares, openness, nodes, and other public buildings and monuments. Adjacency and hierarchy of these elements has an effective role in stability of city's memories, legibility and easy to access, and alive of the city. Meanwhile, elements that are considered as signs of Boshrooyeh were city wall, old castle, and four historic gates. Main square (Meydân) and the old neighborhood center of city (Miandeh) had established adjacent to the mosque, Hussainia, religious schools, water reservoir (cistern), and aging single mulberry tree (Figure 5.5). This neighborhood center formed as a basic core of the city and it is interface with all indicators elements of the city. It even, in terms of located status is a center of gravity and visual to each of these elements.

Street network in the old core that are connected to the main axisinseparable to organic and away from that the more regular (have not reticular yet). Distance of this axis for connection to main axis is near and far depending onadjacentof the fine-grained or coarse grain texture. Main North - South axis through thealong directly route from the new and old tissue. Its width has been increased in recent years, and without changing in the width throughthe new and old tissue.

Inghelab Boulevard is Main Street and main core for economic and social activities of the city. Its width is 36 meters, and Boshravi Street that perpendicular to it has 16 meters width. Boshravi street also divided tissue and among the main streets in the city. Streets inside of traditional tissue are divided to the three groups. Roadway (the streets that have been wide), Secondary alleys (width of 4 to

6 meters) have possibility to passing a car, and the pedestrian alleys (under 4 meters) have possibility to passing bicycles and motorcycles (Figure 5.6).

Figure 5-5Main Structure of Boshrooyeh City in Safavid Period
Source: Author Based Upon Aerial photo in 1956

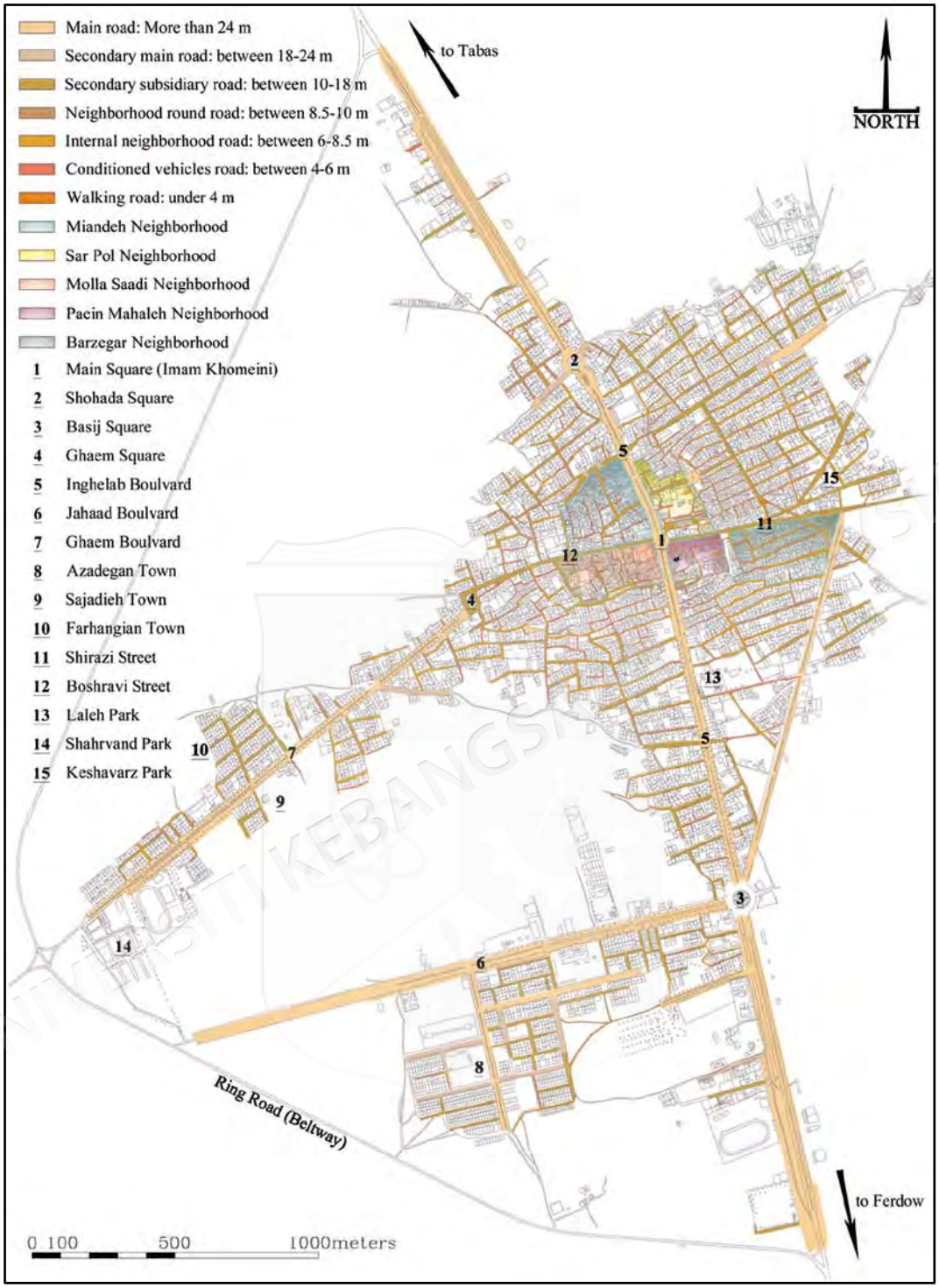

Figure 5-6Update Map of the Boshrooyeh City in 2010

Source: Author Based Upon Map in 2003 (Cultural Heritage Organization of Boshrooyeh)

b. Urban tissue

In fact selected area defines overall cross-sectional (North-South and East-West) from city tissue (except for marginal tissue). This cross-sectional covers all historical period of city growth, and represents the City's physical development. Typology studies in selected area are consists of two sections.

i. First section

At the first, was chosen 90 blocks based on the existing block on the selected area. First section is including typology of 90 blocks (Figure 4.2) in the selected area based on shape, dimension, and orientation. Table 5.1 shows the frequency and percentage values of the block shape in different development layers of the city. Block shape is divided into two groups geometric and non-geometric. Geometric is includes 3 patterns; Trilateral (A), Tetragon (B), and Polygon (C). Non geometric has a Polygon (D) pattern. Number of block shows the count of blocks in every pattern of block in all layers of development which respectively are 7 numbers in pattern (A), 43 in pattern (B), 17 in pattern (C), and 23 in pattern (D) . These numbers are counted from 90 which are related to the whole blocks of selected area.

Table 5-1Block Shapes in DifferentDevelopmentLayers

Block Shape		Development Layers					Number of Block
		Old Town	1956	1964	1980	> 1998	
Trilateral (A)	Count	1	3	0	1	2	7
	% within	4.5%	50.0%	.0%	7.7%	5.7%	7.8%
Tetragon (B)	Count	7	3	5	7	21	43
	% within	31.8%	50.0%	35.7%	53.8%	60.0%	47.8%
Polygon (C)	Count	7	0	2	2	6	17
	% within	31.8%	.0%	14.3%	15.4%	17.1%	18.9%
Polygon (D)	Count	7	0	7	3	6	23
	% within	31.8%	.0%	50.0%	23.1%	17.1%	25.6%
Total	Count	22	6	14	13	35	90
	% within	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

It can be seen that the highest percentage in Trilateral (A) is in the year 1956 about 50.0%, Tetragon (B) in 1998 with 60.0%, Polygon (C) in Old Town, and Polygon (D) with 50.0% in 1964. The results in figure 5.7 indicated that the majority of block shapes in the historical core of city are relevant to Tetragon (B), Polygon (C), and Polygon (D) and also Trilateral (A) have been used less than other shape of

blocks. In 1998 Tetragon (B) have been used more than other shape of block specially Trilateral (A) in the city form. This shows the tendency to reticular structure in contemporary form of blocks in urban form.

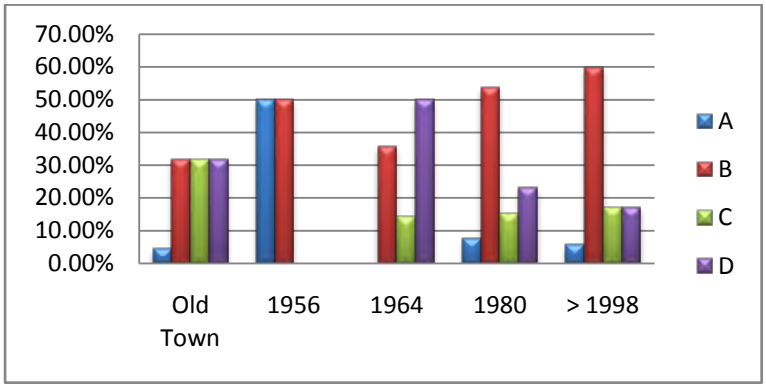

Figure 5-7Block Shapes in DifferentDevelopmentLayers

In Table 5.2 can be seen that block dimension are divided to width less than 50 meters, 50-100 meters and more than 100 meters. Number of block with width less than 50 meters are 32, 42 numbers for 50-100 meters and 9 for more than 100 meters. The highest and lowest percentages in width less than 50 meters are 66.7% in 1956 and 17.1% in 1998. Block dimension with width 50-100 meters has the highest percentage in 1998 about 72% and lowest 16.7% in1956. At the end percentages in width more than 100 meters shows high percent 16.7% in 1956 and low 7.1% in 1964.

Table 5-2Block Dimension in Different Development Layers

Block Dimension		Development Layers					Number of Block
		Old Town	1956	1964	1980	> 1998	
<50 meters	Count	12	4	6	4	6	32
	% within	54.5%	66.7%	42.9%	30.8%	17.1%	35.6%
50-100 meters	Count	8	1	7	8	25	49
	% within	36.4%	16.7%	50.0%	61.5%	71.4%	54.4%
>100 meters	Count	2	1	1	1	4	9
	% within	9.1%	16.7%	7.1%	7.7%	11.4%	10.0%
Total	Count	22	6	14	13	35	90
	% within	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

The predominant block dimension is belongs to blocks with width less than 50 meters in the historical part of city compared with other blocks. Table 5.2 and figure 5.8 shows that in 1998 blocks with width less than 50 meters is reduce. Blocks with width 50-100 meters in comparing the old and new (1998) increased and show

the ascent of percentage. Also blocks with width more than 100 meters in comparing the old and new increase with little change.

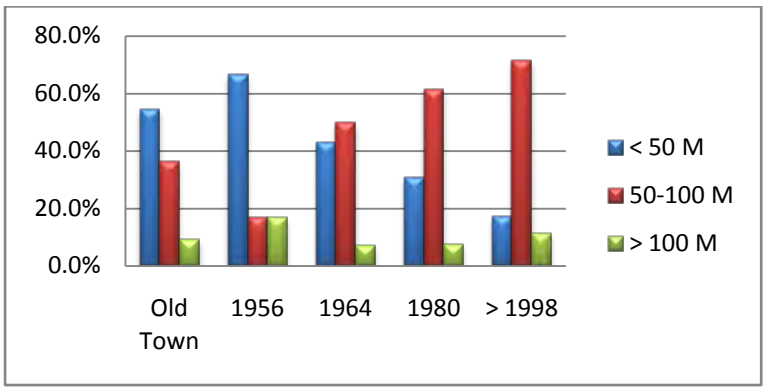

Figure 5-8Block Dimension in Different Development Layers

Block orientation are consists Northwest-Southeast and Northeast-Southwest. In table 5.3 can be seen that numbers of blocks in North West-South East are 68 and 22 in the other orientation. Block orientation in NW-SE shows high percentage 100.0% in 1964 and low 50.0% in 1956. In the NE-SW the highest percentage is 50.0% in1956 and low .0% in 1964. The results are quite contrary from each other and the superiority of the blocks is to the NW-SE (Prevailing winds) orientation. Development layer in figure 5.9 from old town to 1964 shows that the NW-SE orientation has the greater percentage compared to contemporary period from 1980 to now.

Table 5-3Block Orientation in Different Development Layers

Block Orientation		Development Layers					Number of Block
		Old Town	1956	1964	1980	> 1998	
NW-SE	Count	14	3	14	11	26	68
	% within	63.6%	50.0%	100.0%	84.6%	74.3%	75.6%
NE-SW	Count	8	3	0	2	9	22
	% within	36.4%	50.0%	.0%	15.4%	25.7%	24.4%
Total	Count	22	6	14	13	35	90
	% within	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

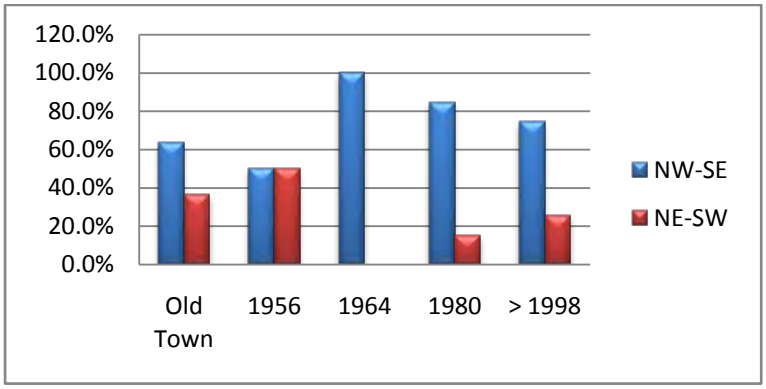

Figure 5-9Block Orientation in Different Development Layers

ii. Second section

Second section is including typology of buildings in eight selected blocks (Figure 4.2). Second section is consist six steps. Step one is including typology of plots based on dimension and arrangement of buildings in it. Step two is including relation between plots typology and periods. Step three is including relation between plots typology and buildings floors. Step four is including relation between plots typology and façades. Step five also is including relation between plots typology and buildings roofs. Finally, step six is including relation between plots typology and buildings material. For all these six steps are provided tables and figures (tables of section two are in appendix). The results of typology in selected blocks can supports in finding buildings type and types of urban tissues.

Figure 5.10 (Left) represents the number of buildings in selected blocks (A, B, C, and D). It shown numbers of building in block Trilateral (A) are 28 (9.4%). Respectively the number of building in blocks are 59(19.8%) in Tetragon (B), 91(30.5%) in geometrical Polygon(C) and 120 (40.3%) in Non-geometrical Polygon (D). As a result amount of buildings in D are more than other shape of blocks. Figure 5.12 (Right) shows distribution development layers of buildings in selected block. It can be seen that 93 (31.2%) of residential units are located inside the city wall and traditional area. That also shows other 93 (31.2%) units in the layer of 1956. Numbers of residential units in 1964 are 49 (16.4%), in 1980, 35 (11.7%) buildings and after 1998 are 28 (9.4%) units.

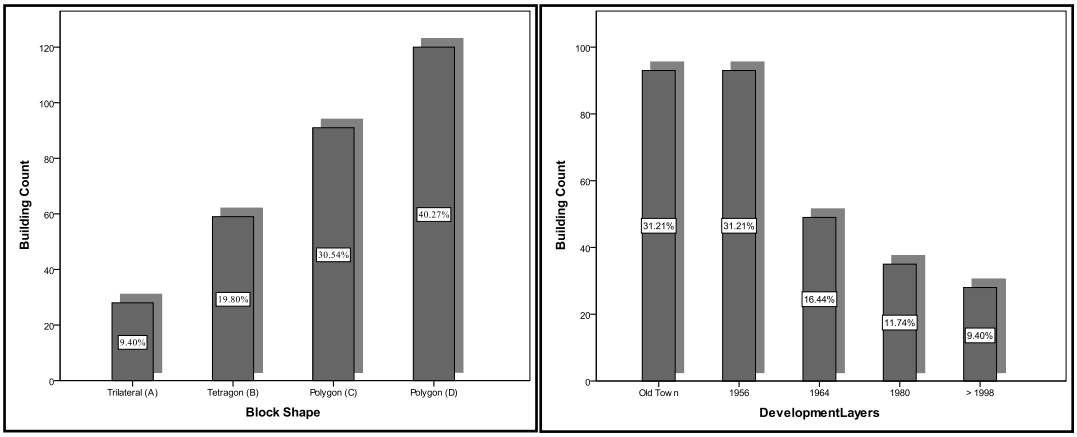

Figure 5-10Buildings in Development Layers and Selected Blocks (A, B, C, and D),

Figure 5.11 representplots shapes and plot orientation in selected blocks. As seen in the left side of figure most of the plot shapes respectively in block A are Tense tetragon, in block B are simple tetragon and tense tetragon, in blocks C and D are simple tetragon and polygon with various shape.As a result in the right side of figure prevailing plot orientation are to the NW-SE.

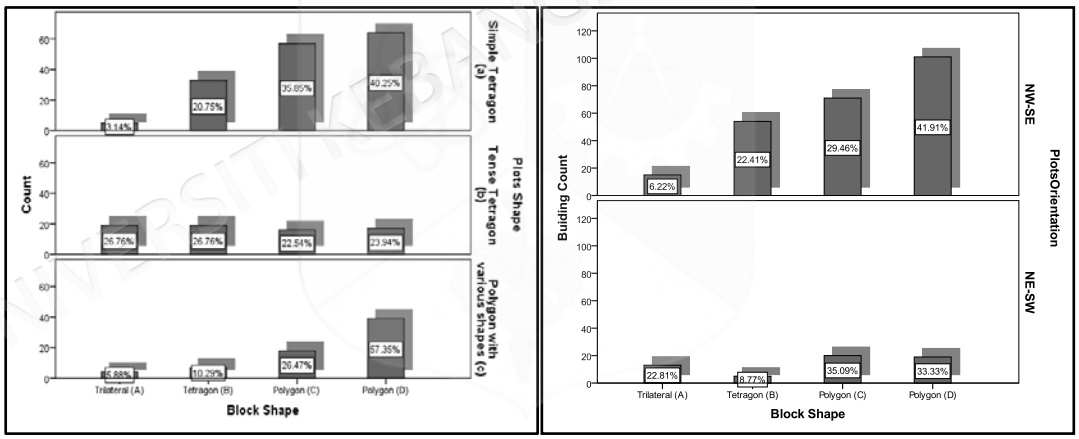

Figure 5-11Plots Shapes and Orientation in Selected Blocks (A, B, C, and D)

Figure 5.12 indicates plots dimension and arrangement in selected blocks. Prevailing plot dimensions in selected blocks are less than 15 meters. The most number of Plots arrangement in block A and B are in N-2(the north of plot), and in blocks C and D are in W (the whole of plots), then in N-2(the north of plot), and S-2 (the south of plot).

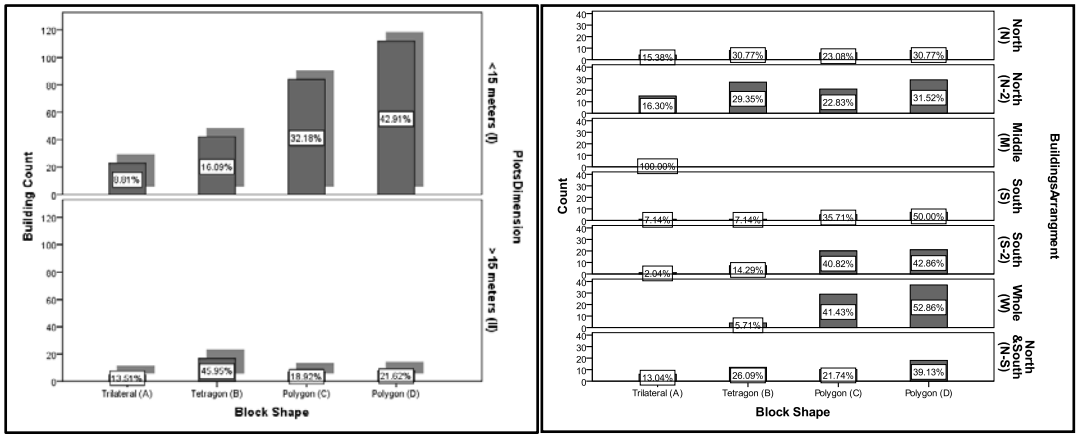

Figure 5-12Plots Dimension and Arrangement in Selected Blocks (A, B, C, and D)

Buildings shapes and dimension in selected blocks can be seen in Figure 5.13. Prevailing building dimensions in selected blocks same the plots dimensions are less than 15 meters. The left figure represents shapes of buildings in selected blocks. It show that respectively the most shape in block D are four and three veranda and simple tetragon, in block C are four and three veranda and polygon, in block B are simple tetragon and three veranda, and finally block A has the high rate in simple tetragon and polygon.

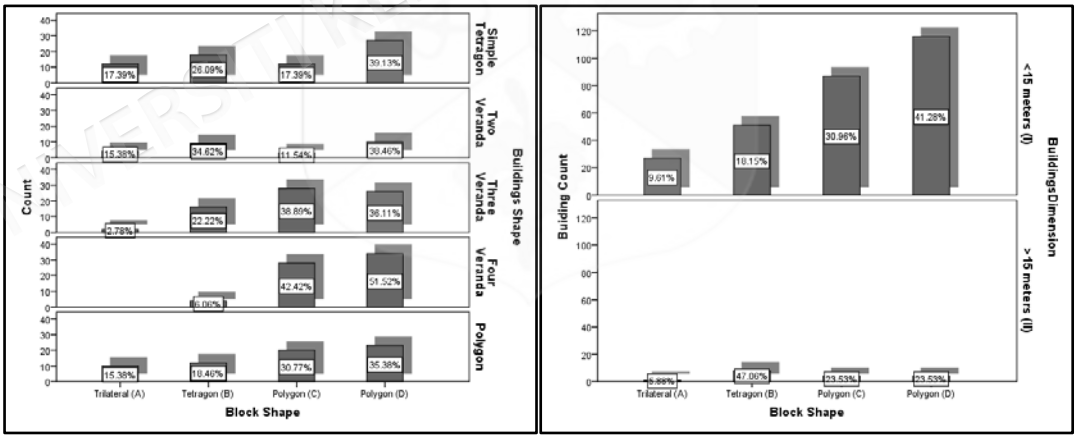

Figure 5-13Buildings Shapes andDimension in Selected Blocks (A, B, C, and D)

Figure 5.14 indicates that the majority of buildings floor in selected blocks have a floor. The right figure also represents building materials in selected block. The material of buildings in block A is brick more than other material, in blocks B are brick and mud but in blocks C and D is mud only.

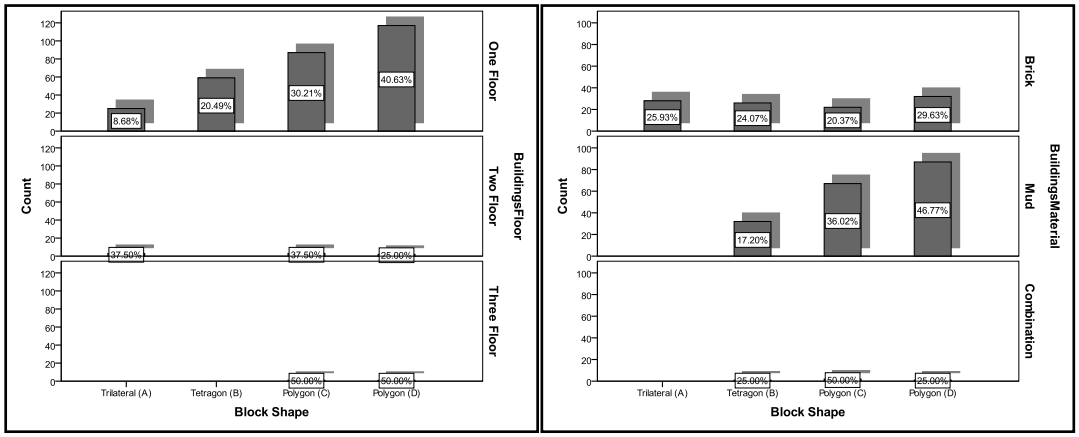

Figure 5-14Buildings Floor and Material in Selected Blocks (A, B, C, and D)

Building's roof and façade in selected blocks are presented in Figure 5.15. As seen in building roof the most kind of roof in block A is flat, in block B is flat and dome in a same rate, and the most shape of roof in blocks C and D are dome. In the right figure can be seen the façade in blocks. Respectively the most number of façade in block A is two and three façade, in block B is two and in blocks C and D is two and one façade.

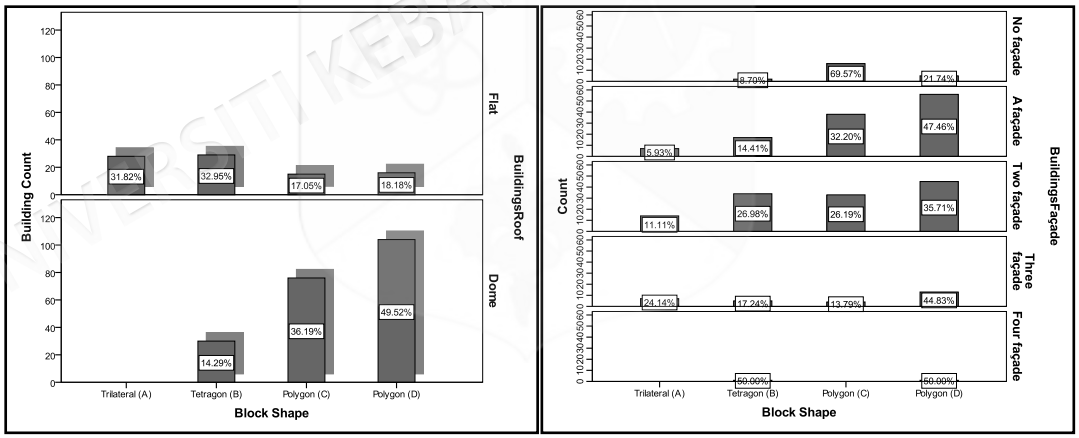

Figure 5-15Buildings Roof and Façade in Selected Blocks (A, B, C, and D)

Figure 5.16 represents buildings period in selected blocks. As seen in this figure in block A the most number of buildings are less than 15 years. In block B period and time of building construction is over 30 years. Buildings in Block C are over 30 and traditional. Finally block D is consist buildings with two different period like traditional and between 15 to 30 years.

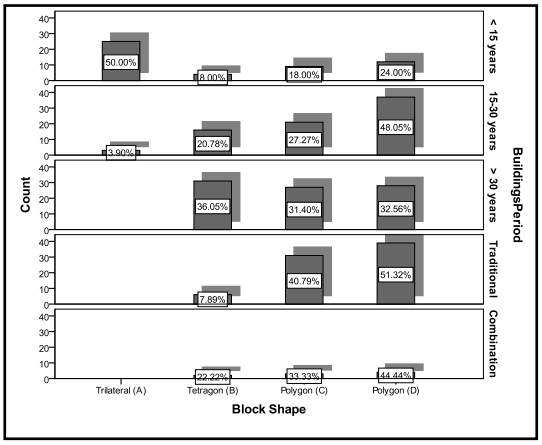

Figure 5-16 Buildings Period in Selected Blocks (A, B, C, and D)

In figure 5.17 can be seen that plot arrangement is evaluated with its relation to plots shapes and dimension. Arrangement of buildings in plot (a) with width less than 15 meters (I) are W, then N-2 and S-2. Plot (b) with width less than 15 meters (I) is arranged in N-2 and N-S. In plot (c) buildings are arranged in N-2, S-2 and then W.

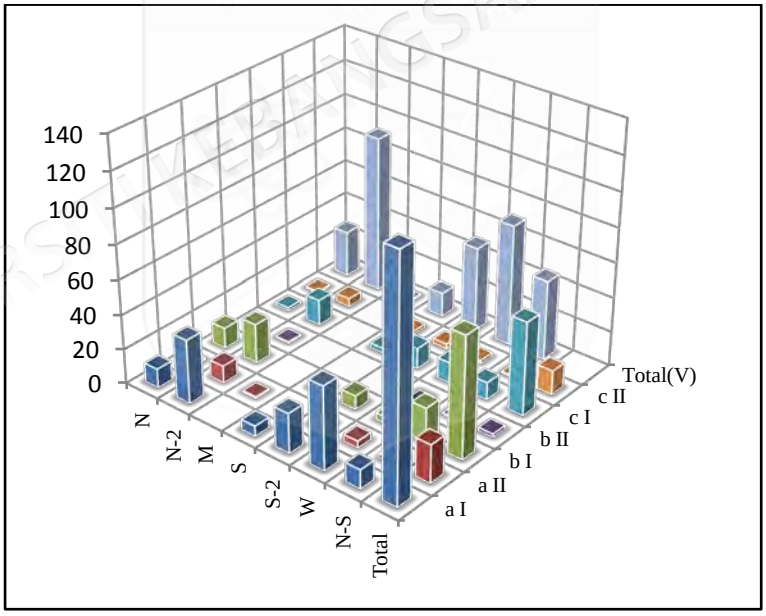

Figure 5-17RelationBetweenPlots Shapes, Dimension and Arrangement

TheAcronyms words in figures describes as below:

(a) Simple tetragon: whilst its length been less than twice of the width (Close to the square).
(b) Tense tetragon: whilst its length been equal or more than twice of the width.
(c) Polygon with various shapes.
(I) Plots with less than 15meters width.

(II) Plots with more than 15meters width.

(N) Building position in the north of plot: whilst the yard is located in the south of building side.

(N-2) Building position in the north of plot: whilst the yard is connected with two or three joint sides of building.

(M) Building position in the middle of plot: whilst the yard is connected with four sides of building.

(S) Building position in the south of plot: whilst the yard is located in the north of building side.

(S-2) Building position in the south of plot: whilst the yard is connected with two or three joint sides of building.

(W) Building position in the whole of plot: whilst the yard is located in the center of building.

(N-S) Building position in the north and south of plot: whilst the yard is connected with two separate sides of building.

(P1& P2) after Revolution Period.

(P3) Pahlavi Period.

(T) Traditional.

(Combination) Build with two Difference Periods.

Figure 5.18 represents relation between plots arrangement and floors in selected blocks. Most of buildings in plot (a) with width (I) and arrangement in W, then N-2 and S-2 has a floor. In Plot (b) with width (I) and arrangement in N-2 and N-S buildings are one floor. Plot (c) also with width (I) and arrangement in N-2, S-2 and then W has one floor.

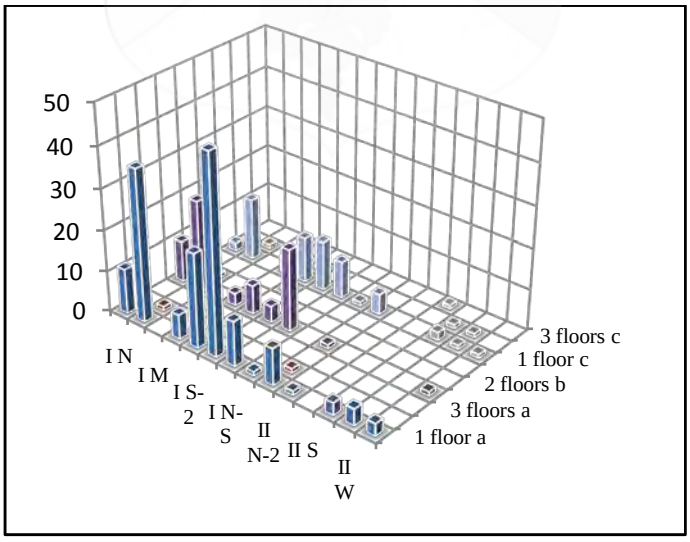

Figure 5-18RelationBetweenPlots Arrangement and Floors in Selected Blocks (A, B, C, and D)

Figure 5.19 indicates relationbetween plots arrangement and materials in selected blocks. Building's material in plots (a and c) with width (I) and arrangement in W, then N-2 and S-2 are mud. In Plot (b) with width (I) and arrangement in N-2 and N-S buildings are brick.

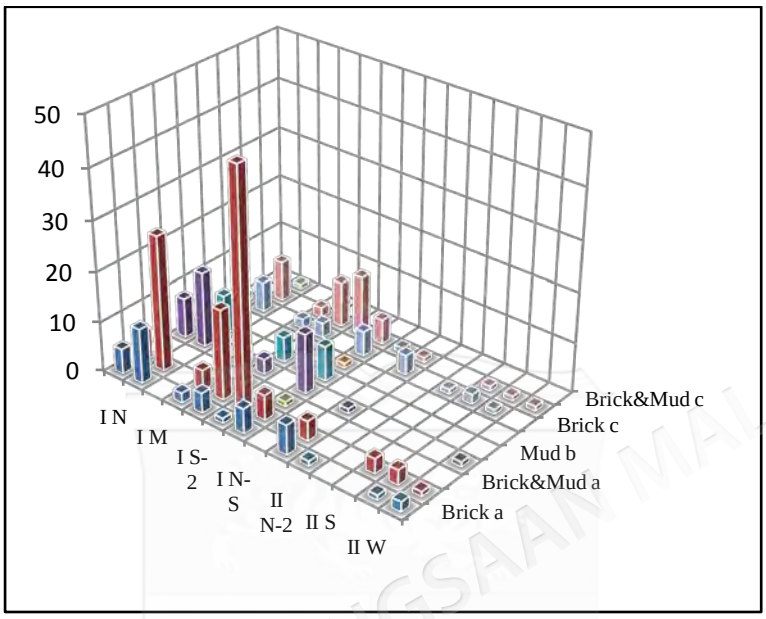

Figure 5-19Relation BetweenPlots Arrangement and Materials in Selected Blocks (A, B, C, and D)

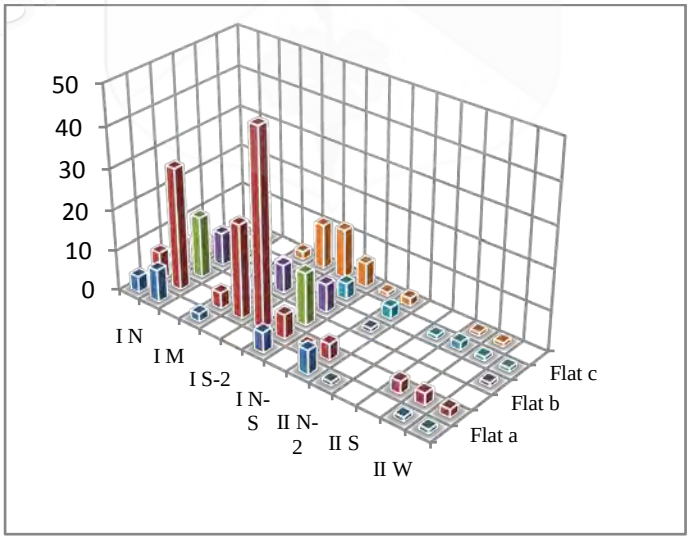

Figure 5-20RelationBetweenPlots Arrangement and Roofs in Selected Blocks (A, B, C, and D)

Relation between plots arrangement and roofs in selected blocks shows in Figure 5.20. Highest number of Building's roof in plots (a and c) with width (I) and arrangement in W, then N-2 and S-2 are dome. In Plot (b) with width (I) and arrangement in N-2 and N-S buildings are flat.

In figure 5.21 can be seen that plot arrangement is evaluated with its relation to façade. Façade numbers in plot (a) with width (I) and arrangement W, then N-2 and S-2 are 1 and 2 façade. Plot (b) with width less than 15 meters (I) that arranged in N-2 and N-S has façade with 2 sides. In plot (c) buildings are arranged in N-2, S-2, and W has1and 2 façade. In plot (c) in this part was added other arrangement (N-S) with 1 façade and then 2 façade in their frequency.

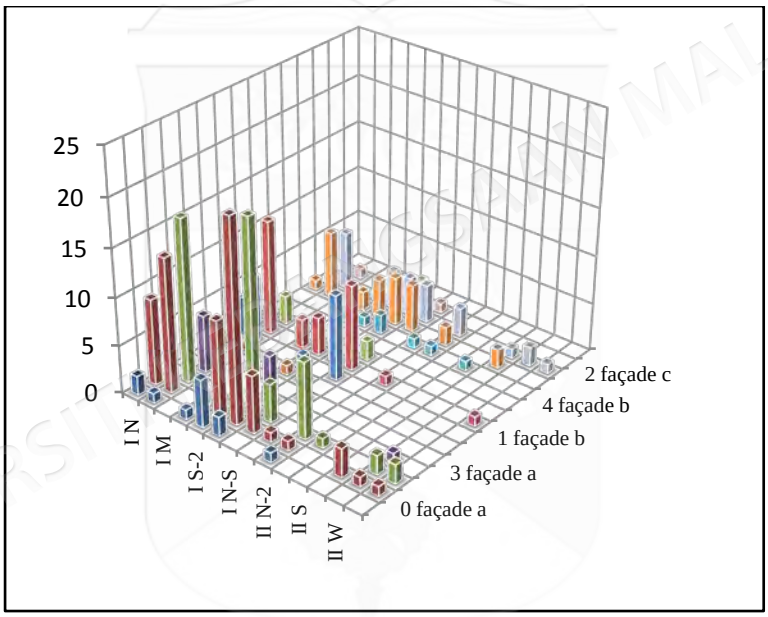

Figure 5-21Relation BetweenPlots Arrangement and Façades in Selected Blocks (A, B, C, and D)

Figure 5.22 shows that plot arrangement is evaluated with its relation toperiods. The most number of buildings in plot (a), (b), and (c) with width (I) and in their arrangement respectively are belongs to:

1. Buildings periods in Plot (a) with arrangement in W are traditional.
   Buildings periods in Plot (a) with arrangement in (N-2) are belong to Pahlavi Period, after Revolution Period and Traditional.
   Buildings periods in Plot (a) with arrangement in (S-2) are belong to Pahlavi Period.

2. Buildings periods in Plot (b) that arranged in N-2 and N-S are belong to after Revolution period.
3. Buildings periods in Plot (c) with arrangement in (W) are traditional.
   Buildings periods in Plot (c) with arrangement in (N-2) are belong to after Revolution Period.
   Buildings periods in Plot (c) with arrangement in (S-2) are belong to Pahlavi Period.

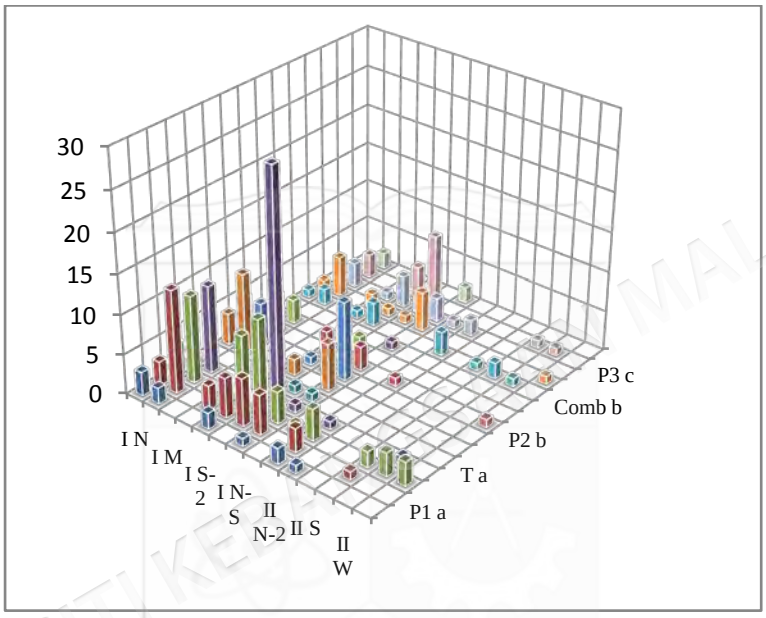

Figure 5-22RelationBetweenPlots Arrangementand Periods

The results of typology studies in selected area (detail study) can be understood in two views; gradual changes in tissue from start to now, and common features. Gradual changes in tissue from start to now as follows:

1. Gradual slope from West to East 2. Any visual advantage and control does not exist to the city, becauseestablishment in plains and desert 3. Height of the buildings is increasing relative from center to around 4. Fine-grained fabric and small plots is located in center, and coarse grain fabric and larger plots is around 5. Traditional and valuable tissue is located in center, and modernize tissue is around 6. Organic fabric is in center, and regular fabric is around 7. Centralized and cohesive fabric is in center, fragment and different fabric in around. It represents there is a strong and meaningful core in the city that other fabrics (Even heterogeneous) are located around of it 8.

Variety of building materials and style of building facade is increasing relative from center to around.

Common features have occurred in selected area with attention to the changes in the historical evolution of the city as follows:

1. Evolution from organic to the regular network 2. Cohesive fabrichas evolved into the fragment fabric. Area of open space is increase gradually in the infrastructure 3. Area of plots is increase gradually especially in the new development 4. Height of buildings is increase gradually especially in the new development 5. Variety is increasing in buildings materials and style of building facade 6. Façades change from traditional style (simple) to the classical and modern (Western) 7. Extraversion of buildings is relative increase 8. Build laws has obvious effect, clear, and strong on city shape (most in the new development).

Networking feature in selected area is as follows:

1. Network structure is included a main axis (North-South). 2. Axes of east-west are secondary and connected to the main axis. 3. Axes of east-west are organic in center and near it, and away from that are directly. 4. Distance of this axis for connection to main axis is near and far depending onadjacentof the fine-grained or coarse grain texture.

1. Buildings types
    - *Traditional type (T – Old period)*

Traditional buildings which are located in the whole plots and have central court yard (Figure 5.23). Yard has connection with four (W) and three sides of the building (N-2 and S-2). Buildings have plots with width less than 15 meters (I) and geometric form such as simple tetragon (a) and tense tetragon (b). These buildings have one floor with one or two façade and simple decorating. Roof always have dome shape with wind catcher (Badgir). Construction material was mud and in Façade was used thatch.

Four verandas that mentioned is a plan composed of nine parts, which four verandas have been to the core and create four subdivisions at the corners of plan. In general the nine-part plan can be found into two categories introverts and extroverts.

The typical introvert was used in the Safavid period, because the features are proportional to the desert climate. The inherent introverts of four verandas can also a good response for provide privacy at home. These buildings usually located along narrow alleys with a width of 80 cm to 2 or 3 meters.

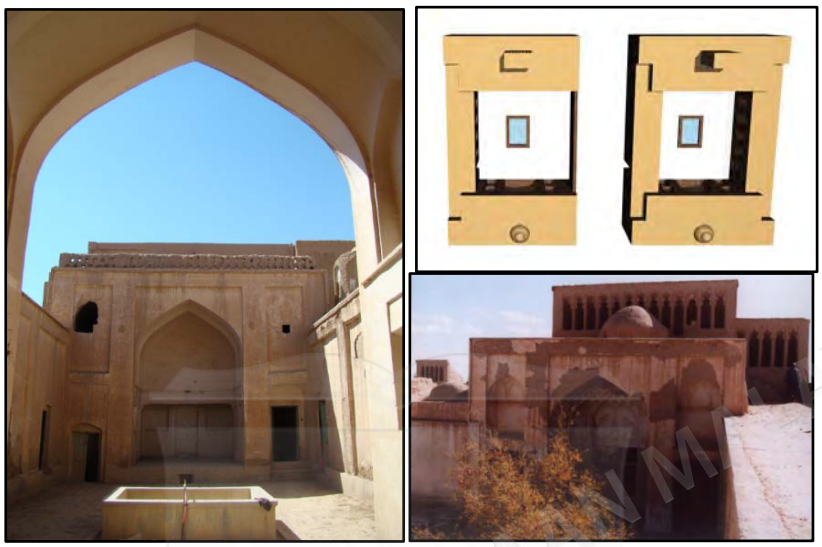

Figure 5-23An Example of TraditionalType

- *Middle type (p3 – Pahlavi period)*

Buildings of this type are belongs to Pahlavi period. This type is divided into two categories: 1. Yard same the past is located in the center of buildings and is connected with two discontinuous sides of buildings 2. Yard is located in north or south of the building and is connected with two joint sides of buildings (Figure 5.24).

Figure 5-24An Example of MiddleType

Plots width is less than 15 meters (I). Geometric form of plot is often tense tetragon (b) and also was used simple tetragon (a) and polygon(c). These buildings have one floor with brick and concrete in façade material. Buildings in this type were utilized international style and have more decoration in their façade. Dome ceiling changes to the flat floors and Brick material is used instead of adobe and mud.

- *New type (p2 and p1 – after Revolution period)*

Buildings of this type are belongs to after revolution period. Buildings are located in north (N) or south(S) of the plots. Width of plots is less than 15 meters (I). Form of plots is tense tetragon (b) and tends to tetragon (a) that is closed to the square. Buildings are more varied in their height but the most number of buildings are a floor. In buildings design are seen different kinds of style (Figure 5.25).

Figure 5-25Examples of NewType

The diversity also is seen in material and decoration in façades. Numbers of façade has increased and are one, two and three façade. Dome roof also decreased and buildings tend to flat roof. Construction of new buildings and settlements are purposed to providing commercial benefits not aesthetics.With regard to the Boshrooyeh municipality (based on area legal and services which is widely) has issued the construction permit, these buildings scattered around the city.

2. Types of Urban Tissue

Form getting together of these buildings types produce different tissue which divided to organic tissue and partly regular tissue.

- *Organic tissue*

*Traditional tissue:*buildings in this tissue are used the mud in their materials and dome in their roofs. Buildings are constructed in one floor or sometimes two floors in the new buildings in this tissue. Material of new buildings is brick and quite different. New buildings has similar feature with new type. Street Networks in this tissue are organic and irregular. Two main streets separated street network and organic tissue (Figure 5.26).

Figure 5-26Examples of Traditional Tissue

Combination of traditional and middle tissue: in this tissue, organic street network has maintained its old form. Traditional buildings located beside of new buildings. Most of buildings have one floor and yard still is enclosed in the center of building. Two main streets also separate this tissue from each other (Figure 5.27).In traditional tissue and combination of traditional and middle tissue of Boshrooyeh can be seen evolution of residential architecture of Safavid period to the Pahlavi period.

- *Partly regular tissue*

Low height: Regular network constructed in its continuing to around organic network. All buildings are new with low height. This tissue formed as irregular around main street networks (Figure 5.28).

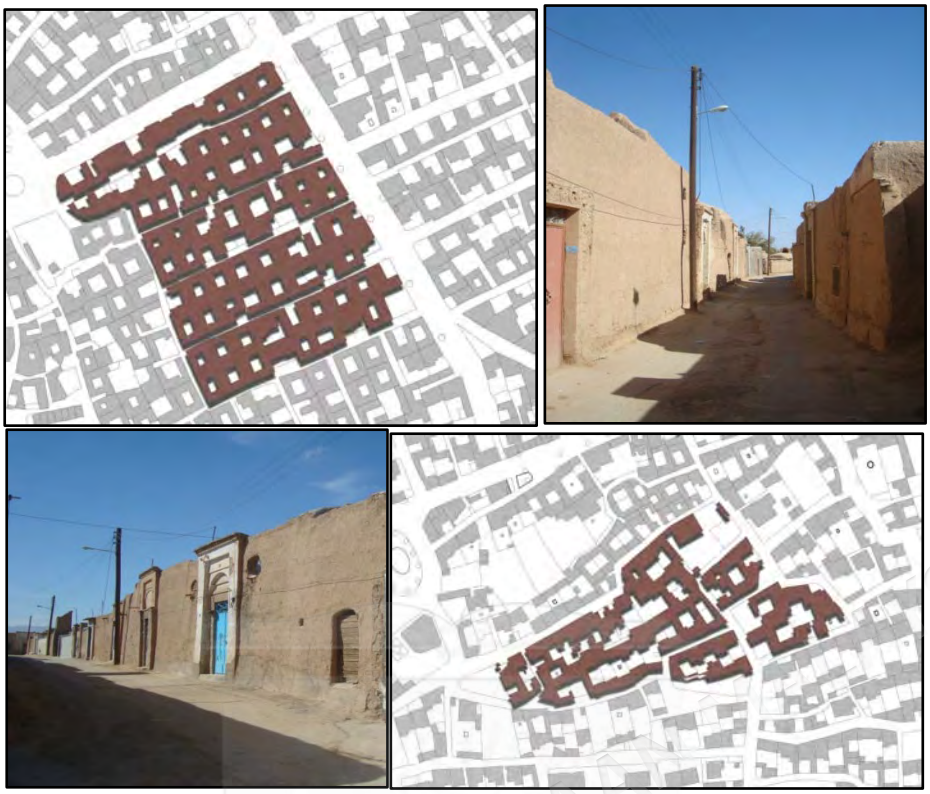

Figure 5-27Examples of Combination of Traditional and Middle Tissue

Figure 5-28 Examples of LowHeight Tissue

7.3 EVALUATING THE CHARACTER (PHYSICAL IDENTITY)

One of the main principles in Isfahan school that has impact in Boshrooyeh planning specially in Safavid period is that outline and forms are changeable but content and essence do not change. Therefore in urban morphology to recognition of identity was

evaluated and investigate these features (Difference/Similarity, Continuity/Evolution, and Unity/Multiplicity) in Boshrooyeh in the whole and its components.

7.3.1 Regional Traditions of Architecture and Urban Design - Micro (Boshrooyeh)

Physical features of city in contemporary are product formation process of city in centuries past. During these periods have been established several traditions, which some of them have disappeared or survived. Unfortunately, a lot of deep research has not been done on the historical – physical evolution of Boshrooyeh. This deficiency can be explained considering the scale and location (far from significance cities). On the other hand in centuries past lack of communication and information tools would cause technological and advances developed slowly across the country (Mansouri & Saazmand 2008).For this reason this study intends to review a summary of the past and more is discussed to the contemporary, and will be identified alive and remain traditions in this period.

a. Structure of the city from 1501 to 1722 A.D. (SafavidPeriod)

Although the city foundation has develop with relatively fast growth in Timurid period, but as mentioned in chapter 3pay attention to main structure reaches its peak in Safavid period. Complexes were made so farare known as main elements of traditional urban design. City - region is also founded on the principle of regionalism.

Prevalent style in construction of Boshrooyeh city is Isfahani style.The effects that this style can be placed on the city's physical features noted as the large square with the areas around (Jame Mosque and Bazaar), Miandeh neighborhood center with mosque, religion school, and Hussainia. Other effects that Isfahani style left on the city are space hierarchy, the balance, harmonizes with humanenvironment, and unity in multiplicity. Buildings types are four and three verandas.

b. Structure of the city from 1791 to 1925 A.D. (Qajar period)

Based on evidence that mentioned in the physical construction of the city in Qajar period (Chapter 3), in this period main structure and urban tissue has no major differences with the Safavid period. Main square and Bazaar are still backbone of the

city, and neighborhoods continue their life as semi-independent places. With born Tehran style in mid-course of this period can see changes in new spaces, but these changes have occurred later in Boshrooyeh. Buildings types are still four and three verandas. The only major change in main structure was destroyed of the old city citadel (Arg), and made new one in west of the city.

c. Structure of the city from 1925 to 1979 A.D. (Pahlavi period)

In the year 1956 (Figure 5.5), most development has been in the East, because there is no barriers such as mountains (in West), agricultural land (in South), and desert (in North and Northeast). Urban development is the same with system of inside the city wall. The city's physical structure is also similar with past and along the streets and alleys (Tarh&Tadvin 2006).

In aerial photo1964 (Figure 5.29) can see that most development was in the northeastern section of the city (on a regular basis), and in the South has been scattered (because agricultural land). Agricultural lands were located in North, West, and South, but there is no in East due tonear the salt marsh and the slope of the land.

Between years 1956 to 1964 the city is divided into two half by North – South Street to within 12 meters. This street also has been destroyed West side of the city's central square. Main Street plays the role of business that cause fading of the Bazaar function. Residential neighborhoods have kept their main structure and network. New neighborhood made continued older neighborhoods with more regular organization of the network access. Buildings arrangement is together, and buildings types are still four and three verandas.

Figure 5-29 Aerial Photo of Boshrooyeh in 1964
Source: National Cartographic Center of Iran

i. Municipality

With its establishment in 1953 (in two floors and overlooking the main square), measures were performed in order to facilities growth. They can be important to development and extend the city's streets. For the first time the West - East Street of Boshrooyeh was widening to 14 meters (in 1966). With this act the city was divided into four parts, and the new look was created for the city. This new street and Main Street because of have privileged location most administrative institutions and commercial center are in its place. Street North – South that was widening in 1962 was much wider again to 18 meters. City's Jame mosque also has been destroyed and renovation in the 40s. The city gates remained until 1969 and city citadel (Arg) until 1992. In the past two decades because of development project of central square, municipality's building also destroyed and built in new location (Panahi 1994).

In aerial photo 1980 (Figure 5.30) can see intersection of two North - South and East – West streets was in main square of the city. Another East-West Street with 12 meters connected Miandeh neighborhood center and Sar Pol neighborhood. In addition in this time was built Sar Pol neighborhood center. Residential buildings by two verandas were built with larger area than before and continue along the streets

before, but they have regular arrangement. The city development occurred in around the same. Green space made more than before in the urban and residential areas.

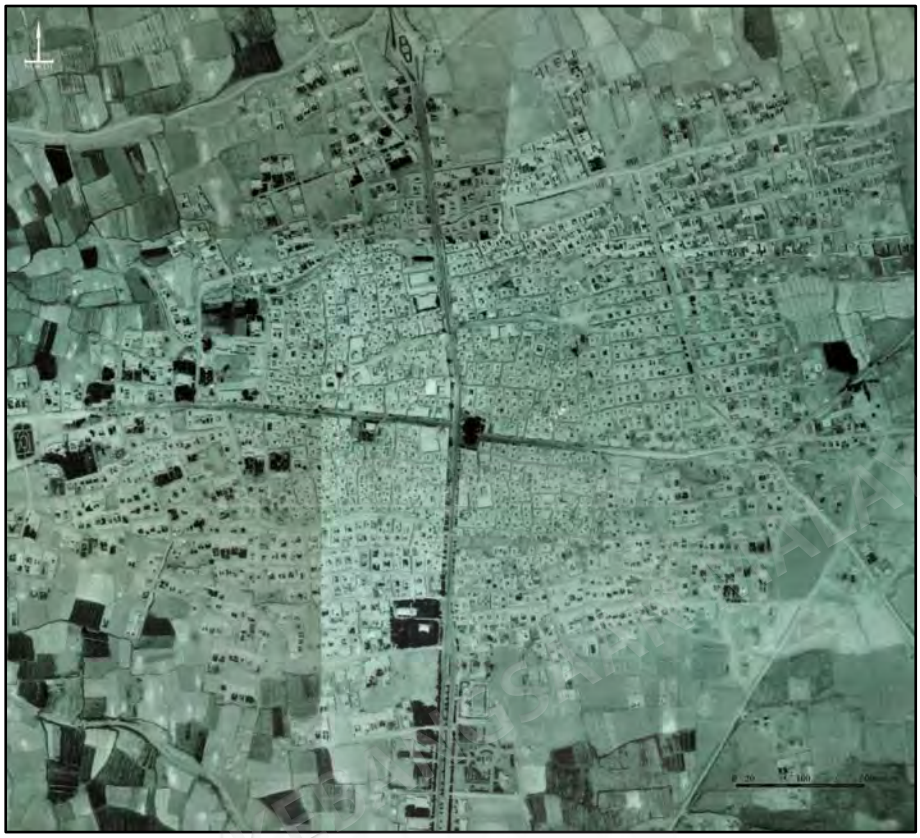

Figure 5-30Aerial Photo of Boshrooyeh in 1980
Source: National Cartographic Center of Iran

The major change in main structure were generated two squares in north and west that along the main axis. West square has nearly dimension the same old square. In general tend develop is to the west, because the slope is higher (closer to the mountain) and away from the desert. A boulevard with western style (width of 36 meters) was made at the south entrance andcomestoedge of the city, too. This boulevard has planting trees, and is beginning to change development from organic and circularinto axial stretch and reticular. With the rise boulevard and the loss of old bazaars handicrafts have gone and they are forgotten such jobs Barak knitting, shoemaker (Giveh), and coppersmith.

The first urban planning action, which should be called the beginning of the historical center evacuation from services, occurred simultaneous with the development of a new street (today is the central street of the city), and the

reallocation of the urban services. In the following years because of the new commercial activities along these streets, the old bazaar slowly evacuated. At this stage, the city started a two dimensional development. On the sides of the new streets, city linear development began around the new streets. Alleys on the sides of the historic centers, all try to connect to the central street of the city. This unusual combination in this part of the city has got special form, which today is very obvious.As a consequence of these new streets, many historical monuments were demolished. Neighborhoods were destroyed and the remains of the old bazaar were moved to the new streets (Ferdowsian 2002).

Of the positive points that exist in the reconstruction of the city between 1956 to1980 were preservation four main gates during making long streets and kept (restoration) part of city wall (Heydari et al. 2008). During 1961 to 1979 (the reign of Mohammad Reza Shah Pahlavi) in Iran architecture has been occurred many differences in terms of quality with during 1941 to 1961, because of oil revenues. The other point is sovereignty supported of individual creativity samples (it's not the collective). Due to the modernist tendencies in Pahlavi period and visual symbols of culture can see positive events in architecture especially in the architecture of government buildings (SalehiJazi 2002).

d. Structure of the city after 1979 A.D. (the Islamic Revolution)

As can be seen in aerial photo 1998 (Figure 5.31) beltway was constructed around the city. Its connection with Western Street (Ghaem Boulevard- Figure 5.32, left) was caused around this street construction is done to close the beltway. New square also was constructed in south, and in west of this square (Basij square) constructed a new town (Azadegaan town). These constructions were done because of the new Boulevard (Jahaad Boulevard- Figure 5.32, right) that connected to the beltway. New street also built from southern square to the east and up (connect to Shirazi Street).

One of the urban destruction at this time can be noted to a quarter of Sar Pol neighborhood and two other side of Central Square. Transform the cityquite apparent from organic and circularinto axial stretch and reticular in this time. The city that had two strong axes in its develop has two strong arms in west. These arms show tends to spread to the West.

Figure 5-31Aerial photo of Boshrooyeh in 1998
Source: National Cartographic Center of Iran

Figure 5-32Left: GhaemBoulevard. Right: Jahaad Boulevard
Source: Municipality 2010

After the second guiding plan of the City (1993), construction was changed from the Tabas road (North) to theFerdows road (South). After executing this guiding

plan also observed passing standards, and these standards are not complied before it. Urban green spaces are limited in the Boshrooyeh city. There are two stadiums and two sports grounds in the city (Ahmadi 1993).

In aerial photo 2003 (Figure 5.33), we see construction of new commercial spaces on the damaged areas of Sar Pol neighborhood. Central Square of the city is no longer a square with only one remain side. At the entrance to city's north side has been made a new square close to the previous square (built in 1979). Constructions continued at this time are more coherent following the scattered constructions in the range 1998.

Figure 5-33Aerial Photo of Boshrooyeh in 2003
Source: National Cartographic Center of Iran

According to Update Map of the city in 2010 (Figure 5.6), city wall in Boshrooyeh still remain but is damaged the major part of that. Its basic form has been destroyed because of urban development (Panahi 1994).The Boulevard with 36 meter width which has seen in aerial photo 1980 (Figure 5.33) has continued into the city in 2009 and 2010. Construct and developments of new Boulevards and streets has a large impact on the transformation of the city's image. The main square of city is lost its shape and has formed to oval shape (Municipality 2010).

The amount of tissue damage and reconstruct has increased in the old city. Streets are widening within the neighborhood and opened the way for vehicles. In Molla Saadi neighborhood the majority of city wall is damage. Likewise the connection between traditional and middle tissues is destroyed with the destruction of large parts of the neighborhood and its city wall. In these years growth continues in suburban and margin areas. Build apartment and high density are formed in new and west part of the city. New towns are performed like Sajadiyeh town in the west and Mehr apartments in Azadegan town (south-west).

Three neighborhood parks (Laleh, Shahrvand, Keshaavarz) is located with an area of 6120 square meters also is built Forest Park (Reza) in an area 15 km in south of the city (Municipality 2010). In new urban design not only urban center in the neighborhood not considered, but also the plan was implemented to eliminate the center of Sar Pol neighborhood that did not implemented.

In recent decades communication axes have great significance because of the increased communication. This issue led to increase the tendency of spread around the main city street. Meaningless of milieu is going to pervasive with using the plate stone, Roman style, and reflex glass due to imitation of the capital (Tehran) that makes the city boring in terms of its landscape and visual concept. In new parts of city are implemented low quality design in façade without attention to type of buildings, environmental conditions and other factors.

i. Municipal Laws and Regulations

The first Guiding Plan of the city was in 1984 (Figure 5.34). Second Guiding Plan also was adopted in the year 1993 (Figure 5.35). This plan limited rules for street

widening and new construction that had impact on damaging the historic city neighborhoods. According to table 5.4 in this Guiding Plan we find; physical distribution of urban centers in compared between capitation of Boshrooyeh and an average capitation of Iran show high rate in administrative spaces, residential, education, sports and religious. Other spaces in city include commercial, public green space, industrial and tourism show low capitation. Therefore distribution of administrative and services spaces in the city makes difficult access to them.

Table 5-4Physical Distribution of Service and Convenience Centers

Function	Current situation (pure urban)			Common Capitation in Iran plans
	Capitation	Area (m2)	Percentage	
Residential	74	986495	49.3	40-50
Education	12.8	171536	8.6	3-5
Medical	1.4	1911	0.95	0.75-1.5
Health and Welfare				
Facilities and Cemetery	3	40129	2	-
Commercial	1.1	14828	0.74	2-4
Sports	5.8	77000	3.8	2-2.5
Public green space	1.9	26600	1.3	7-12
Administrative	8	107910	5.4	1.5-2.5
Industrial	0.18	2485	0.12	2-3.5
Military and police	0.18	2500	0.12	-
Religious	10.6	142370	7.1	0.75-1.5
Historical and Cultural	0.8	11263	0.56	-
Transport network and storage	29.5	393667	19.7	25-30
Tourism and service	0.27	3650	0.18	-
Total pure	150	199444	100	79-107.5
Barren land in tissue	12.9	173000	-	-
Gardens and farms	0.03	510	-	-
Total (not pure)	163	2172954	-	-

Source: Ahmadi 1993

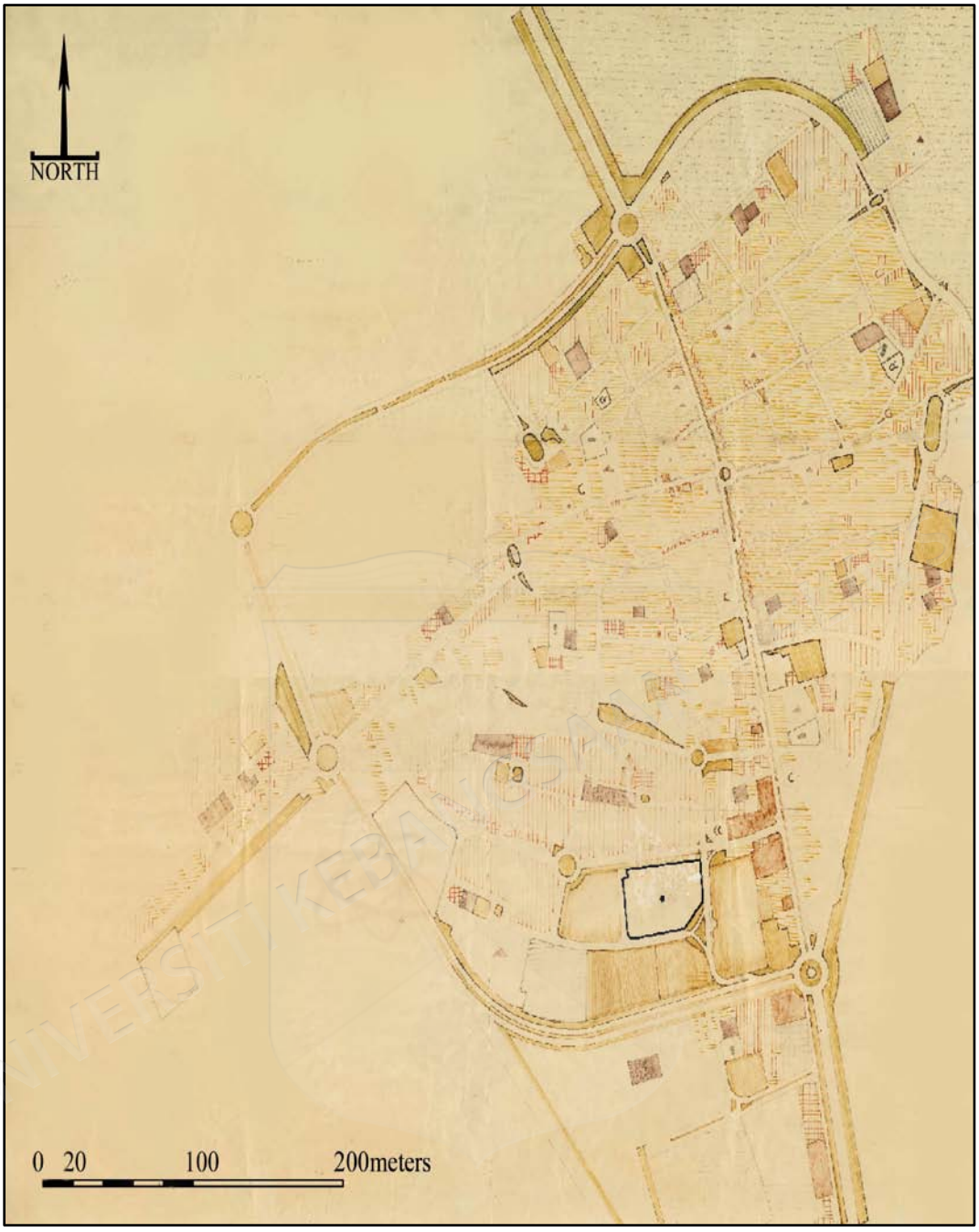

Figure 5-34First Guiding Plan of Boshrooyeh in 1984
Source: Cultural Heritage Organization of Boshrooyeh

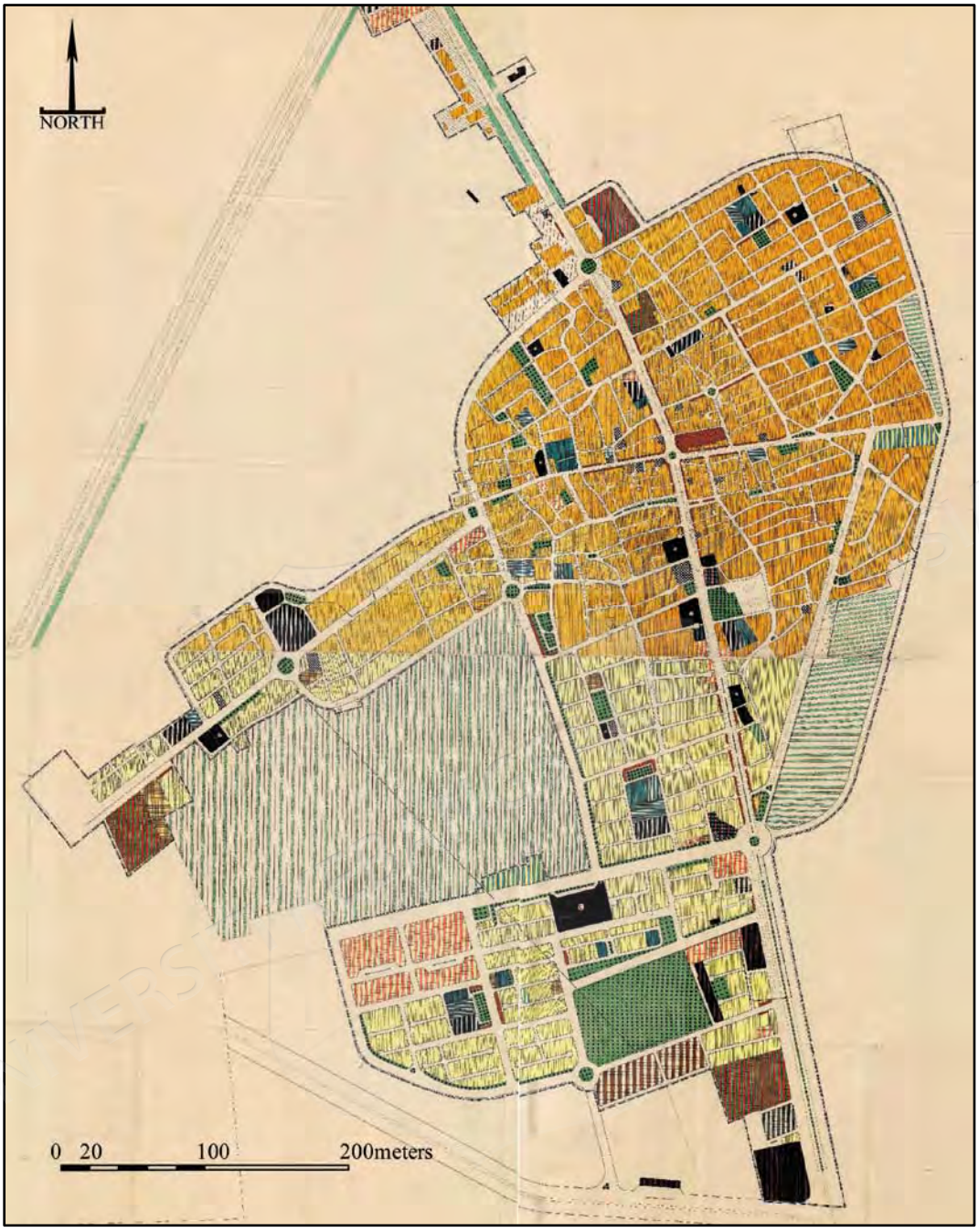

Figure 5-35 Second Guiding Plan of Boshrooyeh in 1993
Source: Cultural Heritage Organization of Boshrooyeh

After registration of Boshrooyeh fabric in the National heritage list (2003), the first Master Plan (Figure 5.36) was completed for city by a consulting company in 2005. Based on the performance of municipality report (Municipality 2010) this master plan is specified a services boundary for 10 years. Residential land area are divided to three group include low, medium and high density. In Low unity allowed constructing 18 residential units with plots between 400 to 500 square meters (land

width between 10 -15 meters). Medium density means can construct 35 residential units with plots between 230 to 300 square meters (land width at least 10 meter). High density allowed construct 70 residential units with plots between 200 to 250 square meters.

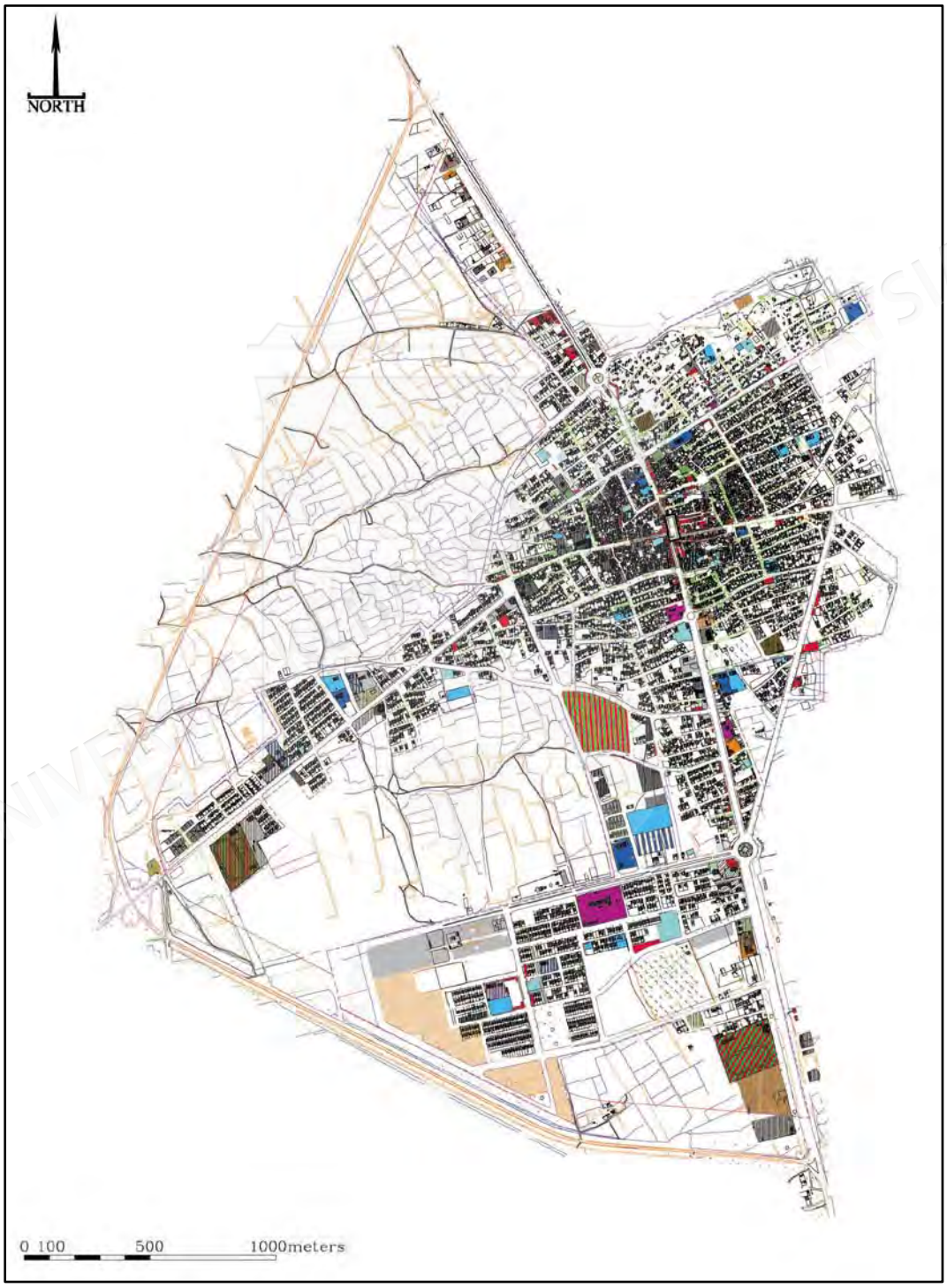

Figure 5-36First Master Plan of Boshrooyeh in 2005
Source:Tarh&Tadvin 2006

7.3.2 Whole The City

a. Difference/Similarity

According to determinate criteria should evaluate the main structure for knowing that the city lost its features or not.One of the difference sign is existence of formed values in traditional city to nowadays city. Therefore are evaluated existence of formed customs in Islamic- Iranian city and specific customs of Boshrooyeh in two dimensions, the whole city and selected area.

i. Bazaar

In contrast the Bazaar, Boshroyeh city has a central junction (Main Square) which extended to four sides. In Sar Pol neighborhood is built a new axiswhich is respondent to daily need. Although with a growing population still commercial per capita is low in the city. Likewise there is a new commercial axis between centers of Miandeh and Sar Pol neighborhood. These distributions are recognizable as a stretched rood with the L line in its north. The Main Square of city is located in the center of rood and the east line surrounded a part of remained old shopping.

Figure 5-37 Commercial Functions in Main Streets

According to the change and deformations in the main roads usage and function in southern part of Bala Mahale neighborhood changed from residential to commercial. Destruction of traditional Bazaar also brings commercial functions to Main Street and Main Square of the city(Figure 5.37). This prompted thethrong of designer and unprofessional builders to construction of different type's buildings in this area. Meanwhile there is no supervision to control and guidance of these constructions. Although Municipal laws and Cultural Heritage

Organization have taken some roles and laws that control the building height and density but these are the only limiting factor.

Described area is connected together with four axes (north, south, wes, and east). These networks are filled less important streets and alleys.Theymainly have residential function. Although the main junction has congestion due to automobile traffic but historical and new (built by municipality) axes of Bazaar are specific for pedestrians. In addition of commercial part, there are a part of ministerial and governmental functions in historical part of the city. Some of the religious places (Mosque, Religious School, and Hussainia) in Boshrooyeh are located in traditional tissue.

Bazaar in the past has been in functional and physical direct contact with religious and political centers. Central area of Boshrooyeh has been close relation with Jame mosque, Miandeh neighborhood center (with its own mosque, Hussainia, and religious school), and religious center such as Moeil Hussainia in the whole city. Traditional Bazaar is in contrast with other commercial part. Bazaar in the Iranian city was considered as a cultural and social center in addition to commercial exchange and all social and political incidents was occurred in there.However center of Boshrooyeh was unable to keep these characteristics because cultural centers (cinema, theater, and universities) in nowadays life do not exist in this center.

ii. Jame Mosque

Jame Mosque in the center of city same other Jame mosques in all Iranian cityis located in proximity of commercial and residential centers but in contrast with other cities there is no connection with political sites. In explaining the changes, Jame Mosque in 40 decade was destroyed and reconstructed in physical shape but did not moved to another location.

iii. City citadel (Arg)

City citadel in Iranian city always is located in a dominant geographic location than other city elements and separated itself in term of physical shape from other buildings. It usually was related to Jame mosque and Bazaar. Primary Arg was built

in Safavid period near the north gate of the city and was near to Miandeh neighborhood canter and bazaar and jame mosque. On the other hand Arg did not located in high position due to geographical position of city (desert city). Secondary city citadel belongs to Gajar period nearby west gate in city. It was closer to Bazaar and Miandeh in compare with primary gate.

Established the municipality in Pahlavi period was caused fundamental change in administrative system. This organization needs to a specific space therefore it was constructed in the main square and then moved to other place in west. Governmental organization is also other administrative place in the north and close to exit squareof the city.

iv. Network

Bazaar in Iranian city was one of the main elements in networks which other elements of network have been branched of it with hierarchical arrangement. Street networks have been organic arrangement, non-geographical, and hierarchical in old part of Boshrooyeh. Orientation of network was dependence to water resources and usually it was introverted without urban façade or landscape. Its function was just accessibility.

In Pahlavi period streets and networks followed western pattern and it destroyed introvert features of street. Although this is a positive change to achieve nowadays needs. Street façade in Iranian city was uniform, simple with similar material due to lack of availability to different material. In these time with availability of different and various material homogeneity of frontage was disappeared whilst should be considered continuity, connection, proportion as principles in street façade. Frontage of street in Boshrooyeh has not communicated with buildings without any specific design pattern. Likewise quick change in municipal laws makes this issue worse and it also clutters the skyline.

Nowadays design of street and network has no attention to climate issues for instance height wall was designed in old streets and alley to provide shadow and prevent wind. Further in the streets and alley was used brick for flooringinstead of asphalt. The asphalt is in contrast with climate and increase heat in the summer. In

new street network are ignored pedestrian requirements and emphasized to vehicle crossing. The other issue in design new network is ignored hierarchical principles and privacy of residential units. Organic shapes of access network also is widening to entre vehicle. The important transition in network is shape of networks which changed to reticular structure.

v. Other elements

Some of elements in Iranian cities still have retained their importance especially in Boshrooyeh;

1. *Tekyeh and Hussainia:*According to high per capita of religious function in Boshrooyeh are seen many Hussainia and Tekyeh in the city. They are in proximity of street and network like past. Some of them are managed by people and are active in Moharam time.
2. *Gates and City wall (Baro):*City wall was one of the defense equipments which remain a small part of that. All Gates also was destroyed. New towns in their development do not need to defense equipments instead has been established police stations in cities. North and South Square as entrance to city are considered as gates. Furthermore junction of ring road (beltway) with Ghaem Boulevard in west is other gate of new city.
3. *Cemetery:*In Iranian city usually cemetery was located in outside the city. With growing the city it is located in the middle of the new town between central and southern squares in the east.
4. *Religious school:*These centers are still active in Boshrooyeh. In Iranian cities always there were located in adjacent to the mosque. In Miandeh neighborhood center can be seen this adjacency.
5. *Image of the city:*Mosque is indicator elements and affective in skyline and image of the city in a way that was recognizable from a distance way. Despite of new construction, Mosque still are as specific elements with its effective minaret in the skyline and the city image.
6. *Orientation:*Orientation has been climate-geographic and Symbolic and ideological concept. The main orientation of building was toward north-west and south-east that is based on climate and wind

direction. The other part is tends to north- east and south-west sides due to the direction of Mecca and ideological concept.

vi. Urban Tissue

Urban tissue covers residential neighborhoods (large part of the city), and connects the different elements of main structure. Neighborhoods as a basic element of Islamic city have been fundamental change. In the old town classify and differentiation of neighborhoods has been carried out based on common ethnic, cultural and religious. In the old town also has been a high social interaction. In currently Boshrooyeh this feature is change, and neighborhoods also change in physical. Height and façades have not harmony, and they are exchange to the diversity or sometimes turmoil. Urban tissues with low-density and compact are exchange to the low-density and loose.

b. Continuity/ Evolution

Study of Continuity means evaluation of preserved traditional or customs in whole the city and selected area. Evaluation ofdifference and similarity criteria indicates that affective customs in the whole city scale are preserved more than traditions related to the urban fabric. Components of the city like mosque, network, city citadel (Arg) are still remaining but they fundamentally changed based on their shape and scales.

Likewise Main Square has changed in its nature, Bazaar completely destroyed, and network changed in term of physical form and remains in its essence. Every change has effect in main structure from component elements to whole the tissue and these cannot be seen and analyzed separately. Therefore can be concluding that despite of stability of the main elements of Boshrooyeh but components elementschanged fundamentally. Hence past traditions in city tend to declining.

Study of evolution in physical structure means to preserve local, region values due to the global developments. As expressed in regional traditions, architecture and urban design (micro) of Boshrooyeh, this city was changed and evolved in its physical dimension. Initial core of city was formed in the Timurid period and had structural development in Safavid period that continued till next period (Gajar) and

Pahlavi. In Pahlavi period to now can see most developments in the City. Thefirst developments were started by widening the north- South Street and according to Housman approach and Municipal Law and their legitimacy to intervention.

Building construction tends to flat roof instead dome ceiling and brick instead of adobe due to the arrival of new materials and technology. Image of the city was changed from traditional to modern shape. New architectural plans (two verandas) were formed in this time which is valuable and shows maintain a central courtyard in residential architecture. The most important evolution in this period was new form of urban architecture and street with visual value (linked between Persian and European architecture).

After Islamic revolution period tradition and modernity are in contrast together and appropriate opportunity for design of urban space is destroyed due to crises arising from population growth and influx of rural migrants to cities. In this period also was providing availability to diversity of material. Traditional buildings were destroyed and are replaced with new buildings. In addition of Guiding and Master plan to Municipal law, these roles and laws become important effective factors in the city form.

Design of spaces such as parks and stadiumsare constructed in the city based on international style.The most important developments in this period are being legitimate of the building construction according to Municipal law. However city identity due to lack of attention to exist buildings type and climate situation has led to destruction.

City wall was the Fringe belt in the past Iranian city. Nowadays with destruction Fringe belt the city is not limit to the expansion. Inghelab Boulvard is the only connection of new and old tissue. This street is a strong edge which is separated traditional tissue and connected the new tissue. In edge of this tissue different commercial functions cause diversity and also contrast.

In this period extensive efforts were done to rehabilitation the Islamic identity of cities with build mosque and Hussainia. On the other hand land is

converted tomerchandise and shape of the city was changed according to this attitude and changeableMunicipal laws. Therefore traditional principles of architecture are sacrificed to economic benefits. Other evolutions in cityaretendency to Multiplicity, design the green space, and lack of appropriate pattern for design according to the contemporary needs.

c. Unity/ Multiplicity

One of the urban principles in Iranian city is coordination of components to create a whole. Hence to create a whole have to follow common patterns and principles. Whatever that has coherent identity always show itself as a whole. New city has to preserve its unity (whole) among diverse components. The main elements which can maintain the unity of city image are central core of the city, signs, network, skyline, boundaries, edges, andentrance points to the city (gate).

1. *The central and historical core of the city:* Historical core of Boshrooyeh still plays a role of bonding with other city components despite losing of many of its potential and physical form. Residents come into this area for their needs like commercial, religious, and administrative. Based on city image in Boshrooyeh traditional tissue has harmonic with it's around as can see old wind catchers are repeated in new building structure (Tarh&Tadvin 2006).
2. *Urban Signs:* Many of the sign are inside the historical tissue which has been hidden for example wind catchers which are completed the hierarchy of urban signs and have established a form of visual communication. In new urbanism, there is no sign and any specific connection with them.
3. *Networks:* North – south as main networks and west- east as secondary networks have the main role in connection between components in city and also all ways and street lead to central square and move based on water way and land slope. Impasses and internal alleys lead to passages to other neighborhood components.
4. *Entrance points to the city (gate):* Squares to entrance and exit in new part of Boshrooyeh city has the role of north – south gates but in west- east

these squares do not exist. Therefore contrast of inside and outside of the city and unity of a whole expressed just by north and south.

5. *Skyline:* Skyline has been based on urban design and climate in old city but new urbanism is depends to economic developments and changeable urban planning laws. In the current situation north-south axis due to economic developments destroyed desirable skyline. Except in the edge of this axis behind tissues still have their unity and desirable in skyline. Skylines also are going to serious damage because of new construction and buildings in these tissues.
6. *Boundaries and Edges:* Boshrooyeh has not natural Boundaries and Edges due to its climate and natural location (desert and plain) therefore connection axes of the city plays the role of Edge. In these axes Boundaries and Edges do not make unity and show Multiplicity.

7.3.3 Selected Area

a. Statistical Analysis

Table 5.5 is represented plots shape consists three groups such as Simple Tetragon (a), Tense Tetragon (b), and Polygon with various shapes (c) . Numbers of Building in every shape are 159, 71, and 68 respectively. These numbers are counted from 298 which are related to the whole buildings of selected blocks. Since selected area was included wide area then comparative and detailed studies was done with 298 units of buildings.

Table 5-5Plots Shape

Plots Shape		Development Layers					Number of Building
		Old Town	1956	1964	1980	> 1998	
Simple Tetragon (a)	**Count**	51	52	35	16	5	159
	% within	54.8%	55.9%	71.4%	45.7%	17.9%	53.4%
Tense Tetragon (b)	**Count**	9	19	8	16	19	71
	% within	9.7%	20.4%	16.3%	45.7%	67.9%	23.8%
Polygon (c)	**Count**	33	22	6	3	4	68
	% within	35.5%	23.7%	12.2%	8.6%	14.3%	22.8%
Total	**Count**	93	93	49	35	28	298
	% within	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

In 1964 Simple Tetragon (a) has the highest percentage 71.4% and lowest 17.9%. But Tense Tetragon (b) in 1998 has the high percentage67.9% and in the old town lowest 9.7%. Polygon with various shapes (c) also in old town layer with 35.5% is high andin 1980 is low with 8.6%. Results in table and figure 5.38 represent conversion of land proportions to Tense Tetragon. In the past plots shape of (a) and (c) was more than (b) it means that plot shapes of Simple Tetragon and Polygon with various shapes tends to Tense Tetragon.

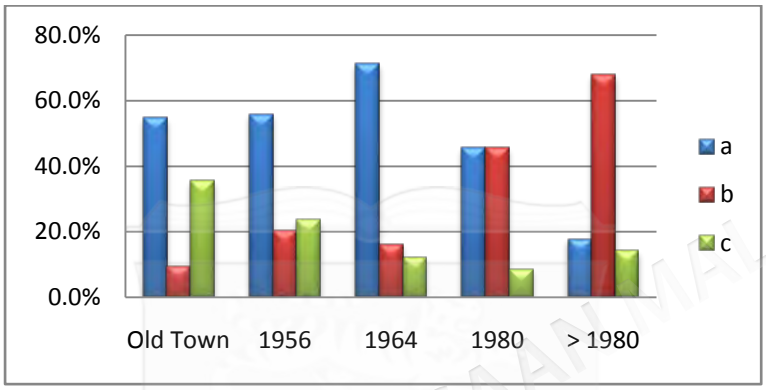

Figure 5-38Plots Shape

Table 5.6 is represented plots dimension consists less than 15 meters (I) and more than meters (II). Respectively numbers of building with these dimensions are 261, 37. In Table 5.6 also can be seen that the highest and lowest percentages in width less than 50 meters are 95.7% in 1956 and 65.7%in 1980. Percentages in width more than 15 meters show the high percent 34.3% in 1980 and low 4.3%in 1956. Although statistically percentage of plots less than 15 meters are high but as seen figure 5.39 represents gradual decrease in plots with width less than 15 m and increase plots width with width more than 15 m.

Table 5-6Plots Dimension

Plots Dimension		Development Layers					Number of Building
		Old Town	1956	1964	1980	> 1998	
<15 meters (I)	Count	84	89	42	23	23	261
	% within	90.3%	95.7%	85.7%	65.7%	82.1%	87.6%
>15 meters (II)	Count	9	4	7	12	5	37
	% within	9.7%	4.3%	14.3%	34.3%	17.9%	12.4%
Total	Count	93	93	49	35	28	298
	% within	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

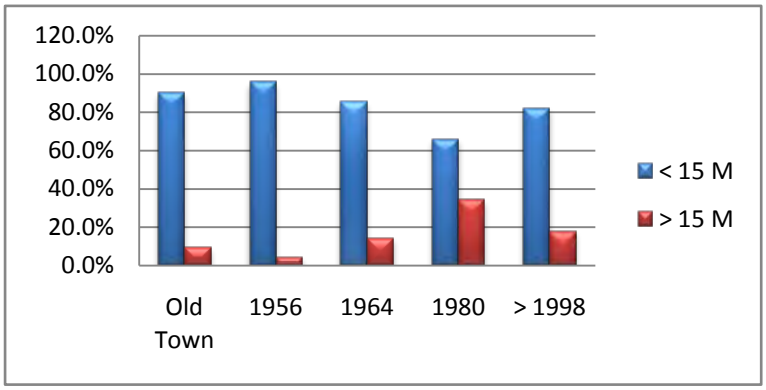

Figure 5-39Plots Dimension

Table 5-7Plots Orientation

Plots Orientation		Development Layers					Number of Building
		Old Town	1956	1964	1980	> 1998	
NW-SE	Count	70	81	42	33	15	241
	% within	75.3%	87.1%	85.7%	94.3%	53.6%	80.9%
NE-SW	Count	23	12	7	2	13	57
	% within	24.7%	12.9%	14.3%	5.7%	46.4%	19.1%
Total	Count	93	93	49	35	28	298
	% within	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

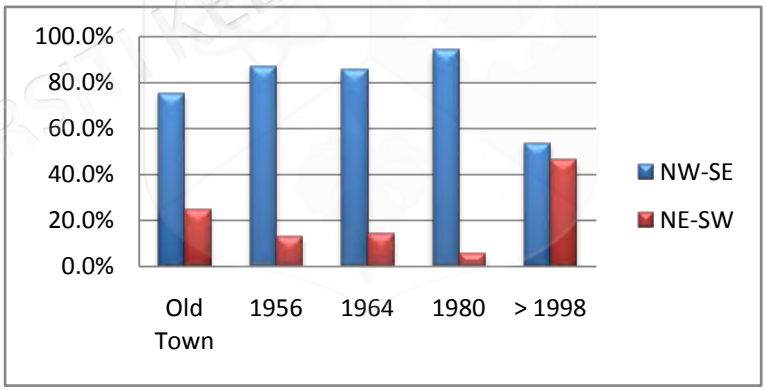

Figure 5-40Plots Orientation

Table 5.7 shows plots orientations which are consists North West-South East and North East-South West. It can be seen that numbers of plots in North West-South East are 241 and 57 in the other orientation. Plot orientation in NW-SE shows the high percentage 94.3% in 1980 and low 53.6% in 1998. In the NE-SW the highest percentage belongs to 1998 with 46.4% and low with 5.7% in 1964. Figure 5.40 represents gradual decrease in plots orientation in the NW-SE and increase plots

orientation towards the NE-SW. new urbanism dose not attention to the prevailing wind. While attention to climate and prevailing wind which is necessary in desert cities makes the city sustainable.

Table 5.8 represents buildings shape includes five groups such as Simple Tetragon, Two Veranda, Three Veranda, Four Veranda, and Polygon. Respectively numbers of building in every shape are 69, 26, 72, 66, and 65. In 1998 simple tetragon has the highest percentage 42.9%and lowest 11.8% in old town. The highest and lowest percentage of two verandas is 16.3% in 1964 and 2.2% in old town. In contrast three verandas and four verandas have the highest percentage 34.4% and 32.3% in the layer of old town and the lowest in 1998 with 7.1% and 0%. Shape of polygon shows the high percentage in 1998 with 35.7% and low 16.3% in 1964.

Table 5-8Buildings Shape

Buildings Shape		Development Layers					Number of Building
		Old Town	1956	1964	1980	> 1998	
Simple Tetragon	Count	11	23	11	12	12	69
	% within	11.8%	24.7%	22.4%	34.3%	42.9%	23.2%
Two Veranda	Count	2	8	8	4	4	26
	% within	2.2%	8.6%	16.3%	11.4%	14.3%	8.7%
Three Veranda	Count	32	19	10	9	2	72
	% within	34.4%	20.4%	20.4%	25.7%	7.1%	24.2%
Four Veranda	Count	30	22	12	2	0	66
	% within	32.3%	23.7%	24.5%	5.7%	.0%	22.1%
Polygon	Count	18	21	8	8	10	65
	% within	19.4%	22.6%	16.3%	22.9%	35.7%	21.8%
Total	Count	93	93	49	35	28	298
	% within	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

As results figure 5.41 indicates that shape of three verandas and four verandas is gone and decreased. It can be seen that the other shape of buildings increased like simple tetragon, two verandas, and polygon. In the middle layer (1964 to 1980) shape of two verandas had more increased in compare with 1998. According to hot and dry climate style of building follow the internal architecture. In contemporary building form can be seen that internal architecture is converted to external architecture. Hence dwelling building lost its characteristics and is transformed in imitation of the west architecture.

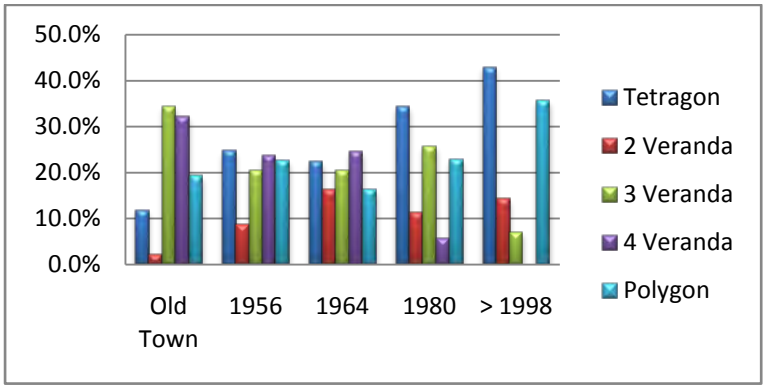

Figure 5-41Buildings Shape

Table 5.9 shows buildings dimension into the follow plots includes width less than 15 meters (I) and more than 15 meters (II). In width less than 15 meters numbers of buildings are 281 and 17 in width more than 15 meters. In 1956 width less than 15 meters has the highest percentage 97.8% and lowest 82.9% in 1980. In contrast the highest percentage in width more than 15 meters is 17.1% in 1980 and lowest 2.2% in 1956. A result in table and figure 5.42 represents the high percentage and rates of width less than 15 meters in the past and today except for the years between 1964 and 1980 that width more than 15 meters shows the high rate.

Table 5-9Buildings Dimension

Buildings Dimension		Development Layers					Number of Building
		Old Town	1956	1964	1980	> 1998	
<15 meters (I)	Count	88	91	46	29	27	281
	% within	94.6%	97.8%	93.9%	82.9%	96.4%	94.3%
>15 meters (II)	Count	5	2	3	6	1	17
	% within	5.4%	2.2%	6.1%	17.1%	3.6%	5.7%
Total	Count	93	93	49	35	28	298
	% within	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

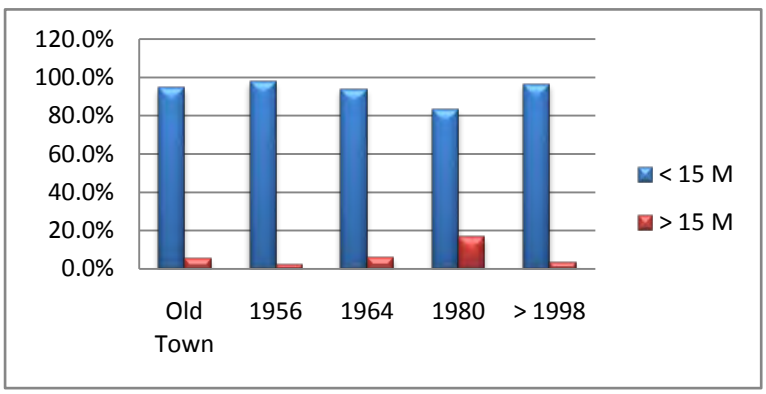

Figure 5-42Buildings Dimension

Table 5.10 represents buildings arrangement which divided to seven groups according to position of building in lands such as North (N), North (N-2) yard in contact with 2 or 3 sides, Middle (M), South (S), South (S-2) yard in contact with 2 or 3 sides, Whole (W) yard in contact with 4 sides and North and South (N-S). Numbers of building in explained position are 26, 92, 1, 14, 49, 70, and 46.

Table 5-10BuildingsArrangement

Buildings Arrangement		Development Layers					Number of Building
		Old Town	1956	1964	1980	> 1998	
North (N)	Count	2	8	6	6	4	26
	% within	2.2%	8.6%	12.2%	17.1%	14.3%	8.7%
North (N-2)	Count	30	21	9	17	15	92
	% within	32.3%	22.6%	18.4%	48.6%	53.6%	30.9%
Middle (M)	Count	0	0	0	0	1	1
	% within	.0%	.0%	.0%	.0%	3.6%	.3%
South (S)	Count	2	10	1	0	1	14
	% within	2.2%	10.8%	2.0%	.0%	3.6%	4.7%
South (S-2)	Count	21	15	7	5	1	49
	% within	22.6%	16.1%	14.3%	14.3%	3.6%	16.4%
Whole (W)	Count	32	23	13	2	0	70
	% within	34.4%	24.7%	26.5%	5.7%	.0%	23.5%
North and South (N-S)	Count	6	16	13	5	6	46
	% within	6.5%	17.2%	26.5%	14.3%	21.4%	15.4%
Total	Count	93	93	49	35	28	298
	% within	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

In 1980 buildingarrangement in North (N) shows high 17.1% and low2.2% in old town. Percentages of building which have yard in contact with 2 or 3 sides are 53.6% in 1998 and 18.4% in 1964. In 1998 percentage of middle is 3.6% and low in other developments layers. Also in south 10.8% shows the low number of buildings that have orientation to this side.Percentage of buildings in south (S-2) yard in contact with 2 or 3 sidesare high in old town with 22.6% and low 3.6% in 1998. In building arrangement in the whole land percentage shows high 34.4% in old town and low .0% in 1998. Position of building in North and South (N-S) has the highest percentage26.5% that belongs to 1964 and low percentage 6.5% in old town.

Results in Figure 5.43 indicate that the highest numbers of buildings are located in W, N-2, andS-2 in development layers. Results also shows increase and change the location of buildings to the N, M, and N-S and decrease building in W, S, and S-2. North (N-2) show the highest percentage compare with other position and its trend is rising. Totally buildings are reduced in their variety of arrangement.

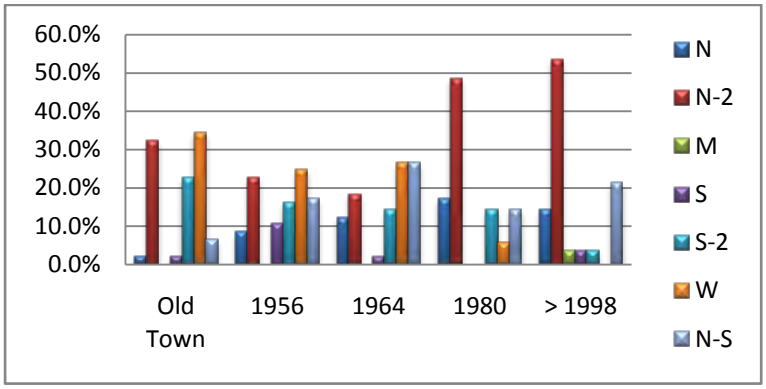

Figure 5-43BuildingsArrangement

In Table 5.11 It can be seen thatbuildings ageconsistfive groups such as less than15 years, 15-30 years, more than 30 years, Traditional, and Combination (new construction among previous period). Numbers of Buildings less than 15 years are 50 with high percentage 89.3% in 1998 and low.0% in 1964. In period 15-30 years can be seen 77 buildings with high percentage 34.7% in 1964 and low 10.7% in 1998.60 numbers of buildings belongs to more than 30 years with 60.0% in 1980 and 0% in 1998. Also 76 numbers of buildings exist in all layers which 44.1% in old town and 0% from 1980 to 1998. In the combination period only 9 buildings are counted with 4.3% in old town and .0% from 1980 to 1998.

Table 5-11Buildings Age

Buildings Age		Development Layers					Number of Building
		Old Town	1956	1964	1980	> 1998	
< 15 years	Count	14	7	0	4	25	50
	% within	15.1%	7.5%	.0%	11.4%	89.3%	16.8%
15-30 years	Count	20	27	17	10	3	77
	% within	21.5%	29.0%	34.7%	28.6%	10.7%	25.8%
>30years	Count	14	23	28	21	0	86
	% within	15.1%	24.7%	57.1%	60.0%	.0%	28.9%
Traditional	Count	41	33	2	0	0	76
	% within	44.1%	35.5%	4.1%	.0%	.0%	25.5%
Combination	Count	4	3	2	0	0	9
	% within	4.3%	3.2%	4.1%	.0%	.0%	3.0%
Total	Count	93	93	49	35	28	298
	% within	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Results in figure 5.44 represented that according to percentage in combination in old town amount of new construction increased in old town. Also age of building less than 15 years in old town and 1956 with percentage 15.1% and

7.5%are evidence of this claim. It can be seen in figure high percentage in Middle layer of development between 1964 and 1980.

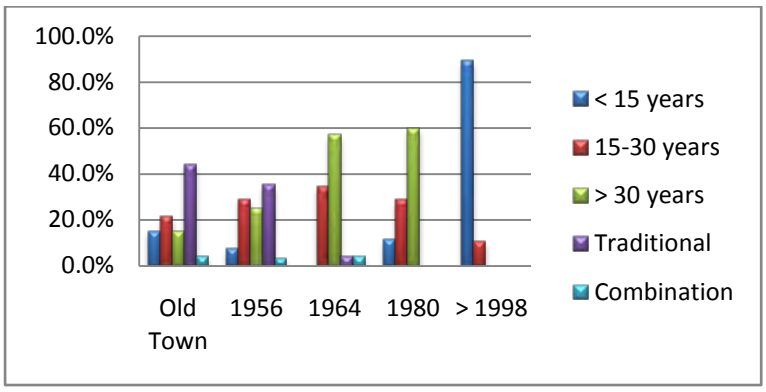

Figure 5-44Buildings Age

Table 5-12Buildings Material

Buildings Material		Development Layers					Number of Building
		Old Town	1956	1964	1980	> 1998	
Brick	**Count**	22	25	13	20	28	108
	% within	23.7%	26.9%	26.5%	57.1%	100.0%	36.2%
Mud	**Count**	69	67	35	15	0	186
	% within	74.2%	72.0%	71.4%	42.9%	.0%	62.4%
Combination	**Count**	2	1	1	0	0	4
	% within	2.2%	1.1%	2.0%	.0%	.0%	1.3%
Total	**Count**	93	93	49	35	28	298
	% within	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

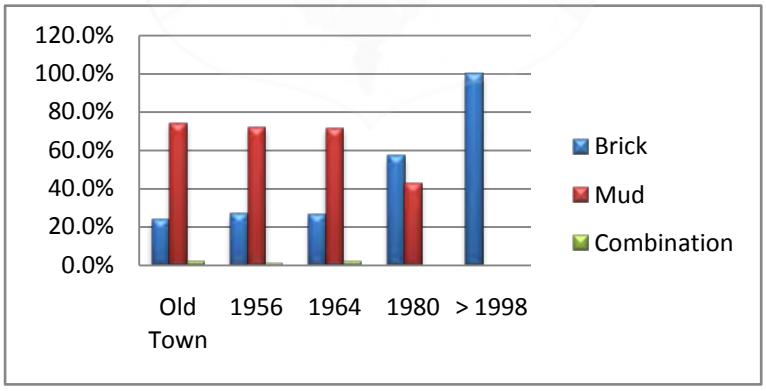

Figure 5-45Buildings Material

Table 5.12 and figure 5.45 show buildings material in Boshrooyeh city that has low diversity and divided to Brick, Mud and combine of brick and mud. 108 number of buildings used brick and 186 from mud as material. In 1998 the highest

levels of use is belongs to brick with 100.0% and in old town with 23.7%. Result shows gradual increase of brick in building material. In old town 74.2% of building used mud material. The percentage 0% shows that did not used mud in 1998. In old town also combination of mud and brick has the highest percentage 2.2% which arises from increased the new construction.

As seen in table 5.13Buildings height in Boshrooyeh are not more than 4 floors. Buildings Floor in selected area was considered with three groups such as one Floor, two floors, and three floors. It can be seen 288 building have one floor, 8 numbers have two floors and 2 numbers with three floors. The highest percentage of one floor are belongs to 100.0% in 1964 to 1980 and lowest 89.3% in 1998. It means that in 1998 buildings tends to high rise.

Table 5-13Buildings Floor

Buildings Floor		Development Layers					Number of Building
		Old Town	1956	1964	1980	> 1998	
One Floor	Count	90	89	49	35	25	288
	% within	96.8%	95.7%	100.0%	100.0%	89.3%	96.6%
Two Floors	Count	3	2	0	0	3	8
	% within	3.2%	2.2%	.0%	.0%	10.7%	2.7%
Three Floors	Count	0	2	0	0	0	2
	% within	.0%	2.2%	.0%	.0%	.0%	.7%
Total	Count	93	93	49	35	28	298
	% within	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

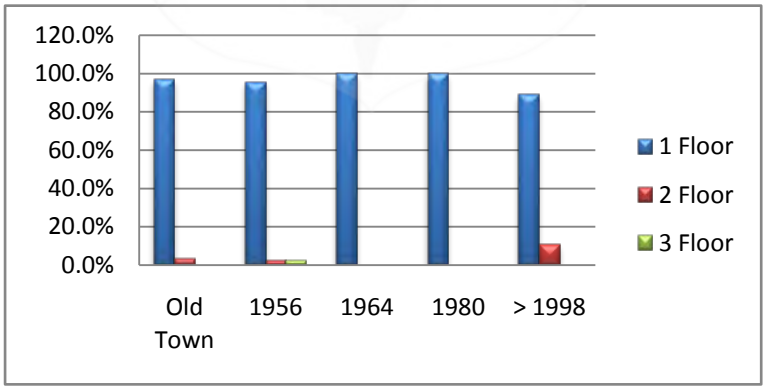

Figure 5-46Buildings Floor

Also as seen in two floor buildings 10.7% is the highest percentage in compared with other layer such as 1964 and 1980. In old town due to new construct

can be seen 3.2% of two floor buildings in this layer. The highest percentage for three floors is 2.2% in 1956. Results show (figure 5.46) increase in the height of buildings in the city. These increases of the height in buildings in old layer of city destroy the characteristics of the historical core of Boshrooyeh.

According to internal architecture and climate, building façade in Boshrooyeh was simple and had not any decoration. Internal architecture had more attention to inside than outside. Table 5.14 shows Building's façade which is divided to five groups. Numbers of buildings which do not façade are 23 numbers. Respectively the numbers of every façade are 118 for one façade, 126 for two façade, 29 for three façade and finally 2 for four façade.

Table 5-14Building's Façade

Building's Façade		Development Layers					Number of Building
		Old Town	1956	1964	1980	> 1998	
No façade	Count	7	14	2	0	0	23
	% within	7.5%	15.1%	4.1%	.0%	.0%	7.7%
A façade	Count	46	35	22	8	7	118
	% within	49.5%	37.6%	44.9%	22.9%	25.0%	39.6%
Two façade	Count	36	32	22	22	14	126
	% within	38.7%	34.4%	44.9%	62.9%	50.0%	42.3%
Three façade	Count	4	11	3	4	7	29
	% within	4.3%	11.8%	6.1%	11.4%	25.0%	9.7%
Four façade	Count	0	1	0	1	0	2
	% within	.0%	1.1%	.0%	2.9%	.0%	.7%
Total	Count	93	93	49	35	28	298
	% within	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

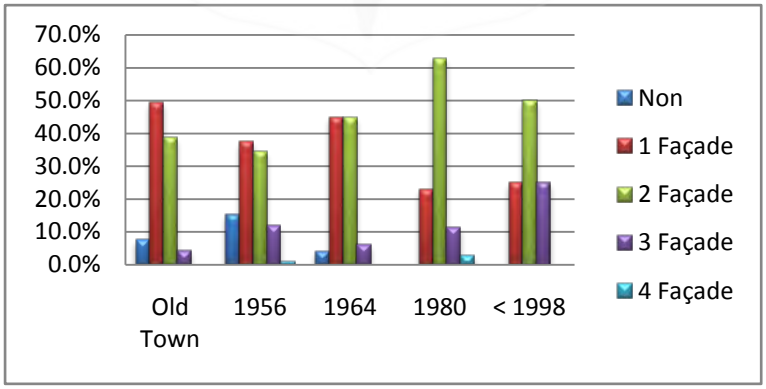

Figure 5-47Building's Façade

Results represent increase in 2 façade and 3 façade and decrease in 1 façade and 4 façade. The highest percentage of 1facade belongs to 49.5% in old town. In

1980, buildings with two façade had the high 62.9%. Also high percentage to 25.0% of three floors is depends to 1998 year. As results in figure 5.47 it can be seen reduction of a single façade building and convert them to two and three corner buildings and also loss of compression in tissue and crossing from internal architecture (traditional) to external (modern).

As seen in Table 5.15 and figure 5.48 buildings roof is divided to flat and dome. Numbers of buildings are 88 with flat roof and 210 with dome roof. As expected the highest and lowest percentage of flat roof, are 100.0% in 1998 and 14.0% in old town. In contrast 86.0% of buildings in old town have dome roof. In this way the lowest percentage 0% belongs to 1998 year.

Table 5-15Building's Roof

Building's Roof		Development Layers					Number of Building
		Old Town	1956	1964	1980	> 1998	
Flat	**Count**	13	17	10	20	28	88
	% within	14.0%	18.3%	20.4%	57.1%	100.0%	29.5%
Dome	**Count**	80	76	39	15	0	210
	% within	86.0%	81.7%	79.6%	42.9%	.0%	70.5%
Total	**Count**	93	93	49	35	28	298
	% within	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

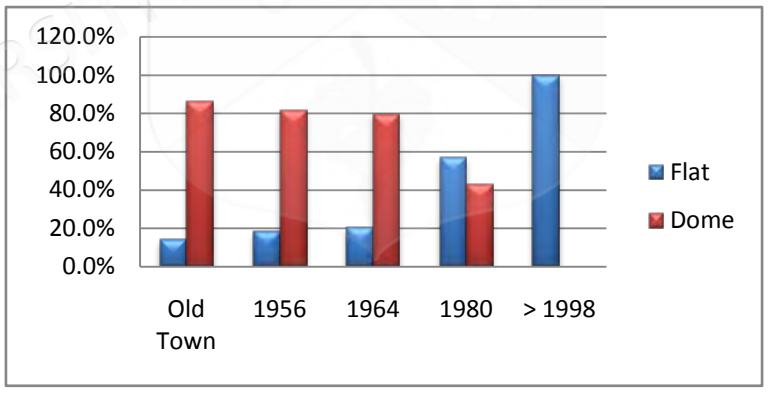

Figure 5-48Building's Roof

As a result was seen gradual increase in construction of flat roof and decrease (loss) in the dome roof of buildings. Therefore it can conclude that increase of flat roof in old town with 14.0% shows amount of destroyed in characteristics in the historical core in all dimensions of urban space in Boshrooyeh. Dense tissue of internal architecture in Boshrooyeh is declining, destroyed and opening. Changes in

city happened in the loss of main structure street and blocks and every detail such as buildings, plots and etc.

b. Difference/ Similarity

Study of physical tissue in Boshrooyeh cityshows that some urban design tradition remains in combination of middle and organic tissue with influence of the old tissue. Street and passages in middle tissue is constructed in order and regard to old network and street. However new tissue (low height) is constructed continue to those streets but has more regular network.

Current's style is taste and manner of general population and people. Most of people have not any specific pattern to follow so there is erratic and disarranged style which is used in the entire city. New buildings are built without attention to climate conditions so can be seen these attribute in them like:

1. Lack of climate issues in windows design, material and height of buildings.
2. Lack of attention to traditional buildings pattern.
3. Building façade tends to luxury and avoids of traditional pattern and simple façade (Table 5.14)
4. Deconstruction of façade pattern (thatch), wooden window, and dome ceiling (Table 5.15) and wind catcher that was appropriate with climate of Boshrooyeh
5. Forgotten of urban design traditions and construct new building. Changes occur in width (Table 5.9), plot shapes (Table 5.5), building arrangement (Table 5.10) and position, planshape (Table 5.8), building height (Table5.13) although speed of changing is not equally in these features.

c. Continuity/ Evolution

In urban tissue that is concluded street/block, plots, and buildings most influential traditions are gone. The overall continuation of old patterns (streets, hierarchy movements, plots, and blocks) is not seen in the physical urban fabric. So that street/block and buildings are changed, and plots are continue. Non-combinative,

non-coordinated, and reticular urban blocks have been created to allow cars into the tissue (Figure 5.49).

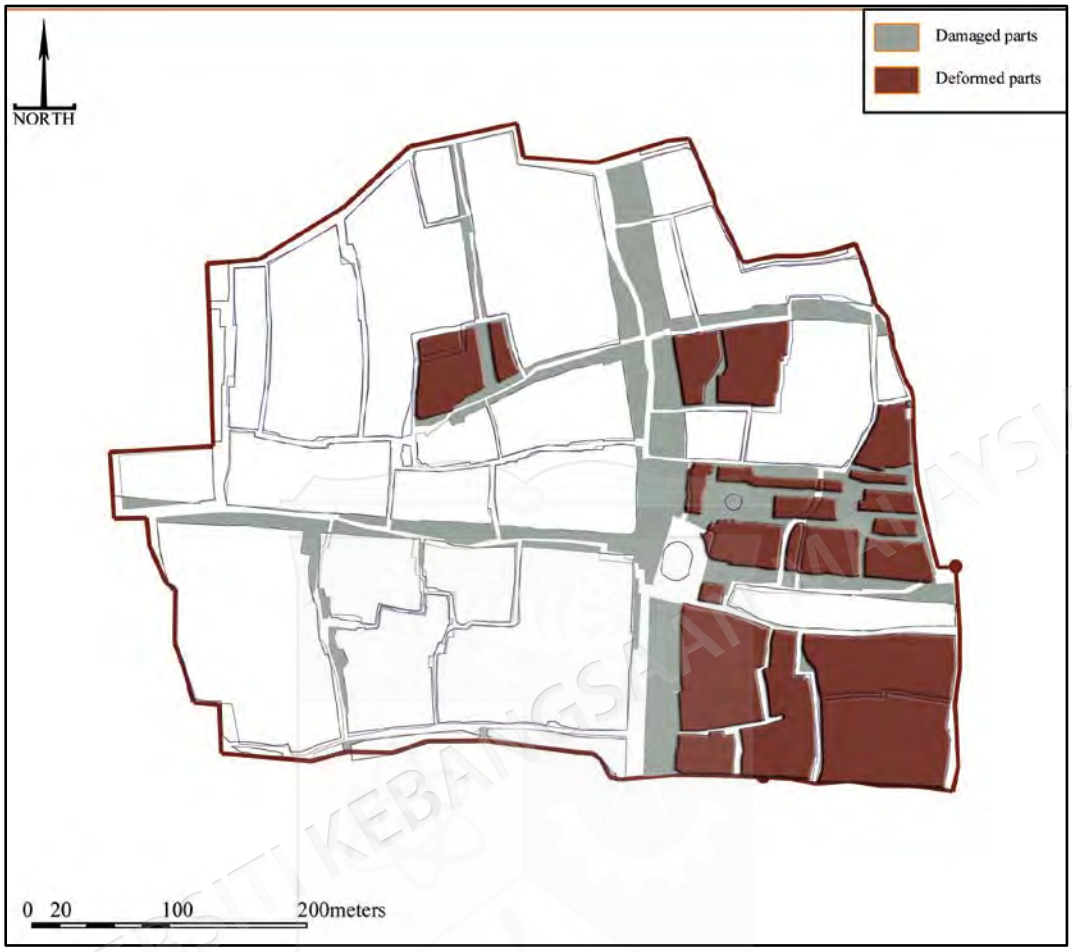

Figure 5-49Comparison BetweenOld and New Blocks inside TheCity Wall(Between 1956 and 2010)

Another reason for these changes is development of the city. Despite to high capitation of residential in city seen that residential neighborhood is stretched to marginal and center of the city is going to be empty. Another reasons is change in traditional network due to lack of provide needs spatially entrance of vehicles. Approval and implementation of municipal regulations and laws without attention to current buildings pattern has caused the discontinuity in the urban fabric. Results in table 5.8 show that shape of three and four verandas was decreased and other shape of buildings like simple tetragon, two verandas, and polygon increased. Whereas that central court yard pattern has ability of conformity with nowadays needs and climate. But theatrical laws are ignored due to lack of supervision.

Typology study in tissue is shown that until the end of the Pahlavi physical change was continued according to old tissue. The main reason for delay in changes was remoteness of Boshrooyeh from significant cities. Comparative homogenous of economic and culture of people has created homogeneous tissue with low changes and diverse. After Islamic revolution most of changes was happened after approval of density law (construction permits in high density). Likewise in urban environments tend to multiplicity and social heterogeneity. Tissue developments tend from homogeneous urban texture to heterogeneous tissue. In new building and structure can seen different geometry form, similar building plans (Table 5.8) and reduces in the variety of plots arrangement (Table5.10), and variation in height and façade (Table 5.13 and 5.14).

d. Unity/ Multiplicity

Hierarchy movement and networks have changed a lot, and very different from the traditional pattern. Nevertheless, the current network structure is along the old city passages. Hierarchy movement is the most important unifying factor in Boshrooyeh (Figure 5.50).This historical comparison reveals how contemporary urban design may incorporate or disregard inherited street patterns(Conzen & Whitehand 1981; McQuillan 1990; Whitehand 1990).

Selected area has maintained its primary organic network of street and those are considered as unifying elements. Inghelab Boulevard is the main splicer elements of tissue in this area. Strengthen unity was provided by repeat the pine trees in buildings frontage of this area. Residential tissue of this selected area was almost the same and considered as a factor for the unity. According to Tables 5.5, 5.6, and 5.7 similarity in plots patterns especially in old tissue and in residential area has an effective role in unity. Multiplicity in buildings also shows according to their arrangement, dimensions, periods, heights, material, and façade (Tables 5.8 to 5.15).

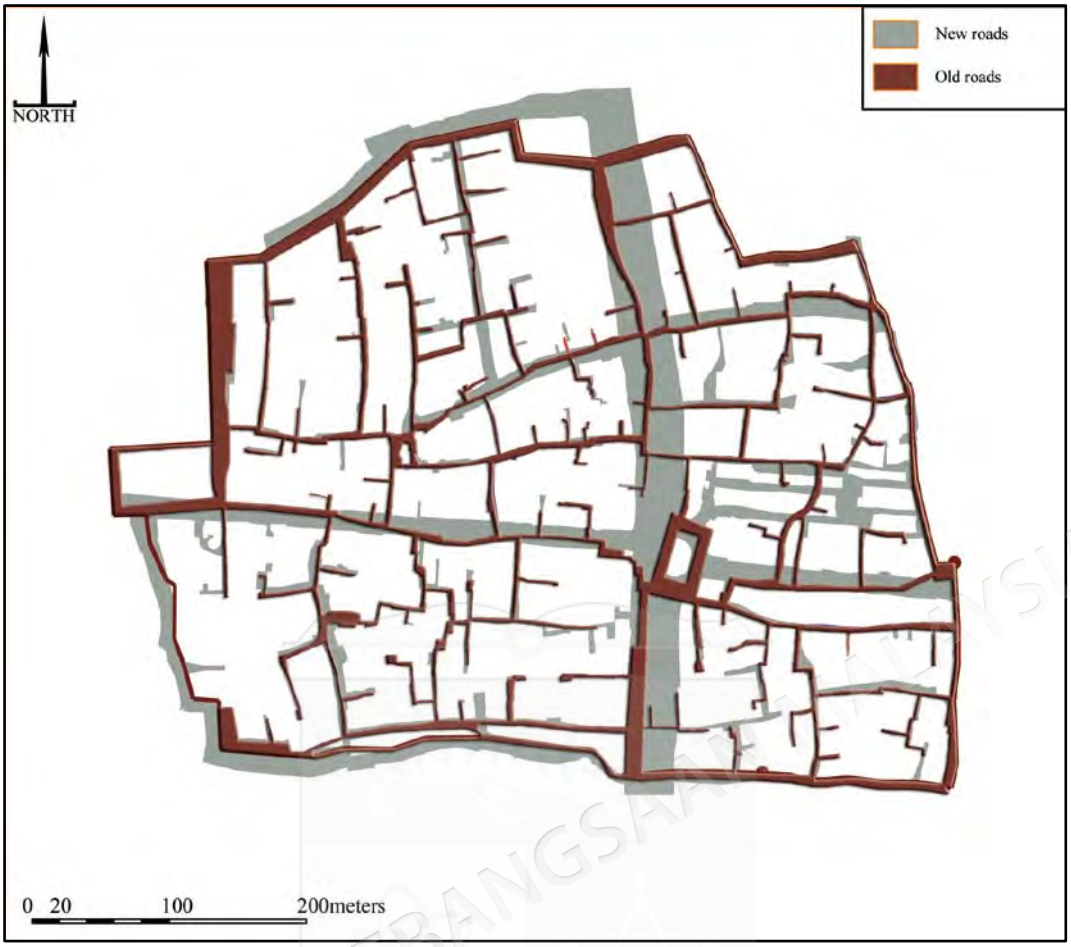

Figure 5-50Comparison BetweenOld and New Roads inside TheCity Wall(Between 1956 and 2010)

7.4 ZONING AND SUGGESTIONS FOR IMPROVEMENT AND PROMOTING CONTINUITY

The main factors affecting the city character according to the analysis of the studies are as follows; 1. land and building becoming to portable capital, 2. municipal laws, 3. government's desire and people's desire, 4. natural features, 5.urban design and architectural traditions.

i. *Land and building becoming to portable capital:* This was obtained from the urbanization trends in the contemporary period. Increase the economic value of land and buildings has caused it to become a means to earn. So, the construction goal has more money than providing valuable conceptual. More investment on buildings has occurred in the commercial and administrative center and the West.

ii. *Municipal laws:* At the beginning was developed authority to allow for government intervention in the urban fabric of Iran. After urbanization and its problems, rules were developed with the aim to limit and control indoor buildings. Most important law affecting on city form is observing %60 indoor and %40 yards. This law can limit diversity in the urban fabric, and it is regardless of tradition (central courtyard).

iii. *Government's desire and people's desire:* Iranian cities are always political – administrative places, and their growth has been influenced by government. With the increasing in city population, its image has changed and people's desire more can be seen in residential buildings. This is more obvious after the Revolution period. Since the control building height and indoor area are under the city rulers, people's desire more can be seen in façades and decorating.

iv. *Natural features:* City location in the plains and desert has a specific image to it.Despite the neglect of builders still can be seen as the dominant phenomenon in the perspective of the city.

v. *Urban design and architectural traditions:* Relationships between the main elements can be noted for the major traditions, which forming to the city shape (physical and conceptual). Main square, bazaar, Jame mosque, and Miandeh mosque have weak relationships. Network function has access and also business, contrary to the past. Residential neighborhoods still have certain boundaries. Economic advantage is the main factor in choosing the residence location.

7.4.1 Zoning

Every city has its own character and therefore, there is a way to understand it. Traditional city has shaped based on the specific principles and roles. Every city in its changes over the time should maintain the continuity in shape and character. Urban morphology helps the researchers to understanding this continuity in the character of the city. Boshrooyeh city after revolution (the rapid growth of urbanization) is constantly changing and going to be lack of memory and character in its continuity.

In this way, after the morphological analysis of the Boshrooyeh and its character components (Street/Block, Plots, and Buildings), distinguished the tissues by building typology as a base for define the zones. The zones have separate components and domains. The proposed zones and its characteristic components can contribute to the character and translate of the city as a framework for changes and future development. According to (Kropf 1996a; Oliveira 2006) the zones can act as the guidelines and a part of urban design and management process. Zoning is an obvious morphological dimension that has impact to recognition of the character and creates a reverse process for prevent the loss of the city character.

According to the obtained results, building type used to determine the zonings. Based on dispersion of the various types of construction in the entire city was determined the different type of zoning (eight zones). The determined zones (figure 5.51) are includes following description:

1. In the *organic* zone, dispersion of the buildings types (four and three verandas) are considered for determine the zone. Most kind of these buildings are located in the center and traditional part of the city. This zone is the organic part of the city construct (figure 5.26).
2. In the *middle* zone dispersion of the various types of buildings (two verandas separate and connected) used to determine the zone. This zone established around the organic zone (figure 5.27).
3. *Low height zone* is a zone that dispersion of the new buildings types are with low density. This zone is located around the middle zone that shows the circle shape of city development. Developments of this type of buildings are along the main axis of the city (figure 5.28).
4. *High height* zone, it can be seen the combination of new buildings in regular and geometric street network. Building and the courtyard are located in front of each other. Government apartments and new buildings can be seen in this tissue. This tissue did not formed around and central core of the city and also make its self separately, heterogeneous, and unrelated to the City.This zone determined base on the buildings types of this zone which are quite new, reticular, and high density. This zone is divided into two axes; old axes of the city (West- East), and South entrance

gate toward the West. This zone is shaped separately from the city (figure 5.52).

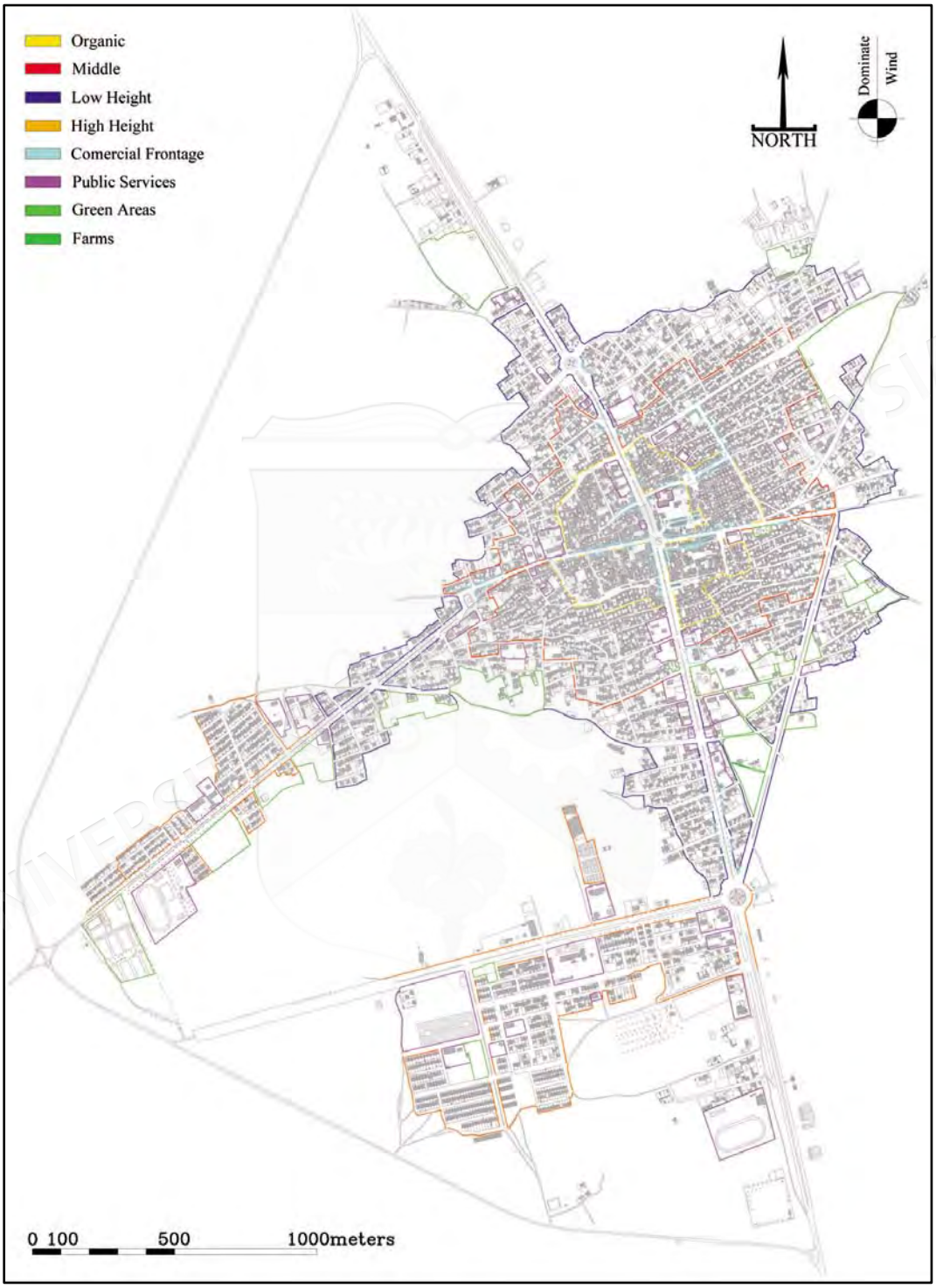

Figure 5-51 Purpose Zonning for Boshrooyeh City

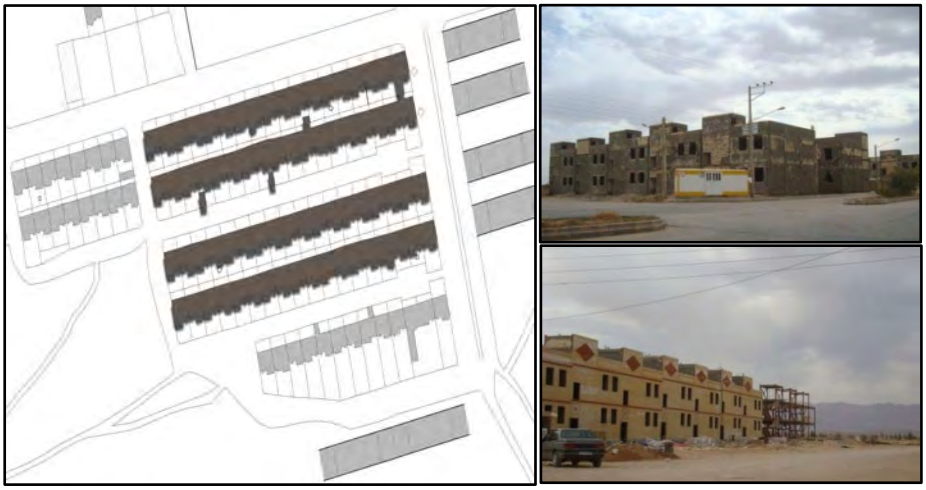

Figure 5-52 Examples of High Height Zone

5. *Commercial frontage* is the other zone which determined based on the dispersion of commercial function which is shaped in the frontage of the street. According to significance of the street and axes of the city in the most part of the frontage of the street are seen the commercial function. This zone is shaped in the four sides of the main square leadings to the four main street of the city. Every street due to its important has the dispersions of the commercial function (figure 5.53).

Figure 5-53Examples of Commercial Frontage Zone

6. *Public services* are the zone of services which shown dispersion of the services centers in the city. This zone is consists the services such as athletic, religious, administrative, health and medical, education, and cemetery. It is dispersed in the city and in the new part of the city has amore systematic arrangement than old part and sometimes seen along main streets to provide a better service (figure 5.54).

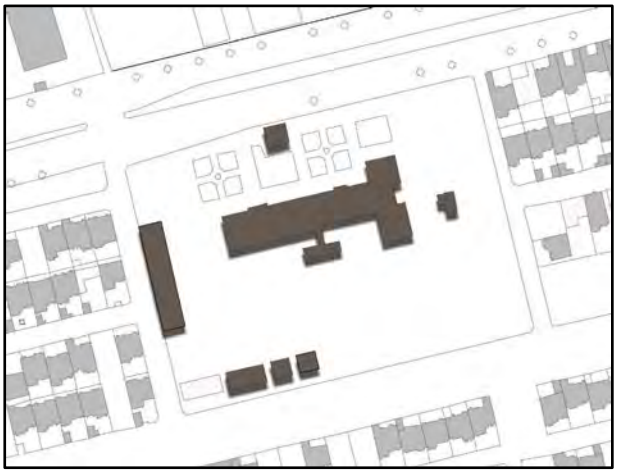

Figure 5-54 Examples of Public Services Zone

7. *Green areas* is a zone belong to the green spaces which is dispersed in the city and is consists parks and local green areas. These spaces are seen more in the new part of the city especially in the South and West (figure 5.55 left).
8. *Farms* zone shown dispersion of the farmlands that are surrounding the whole city. These zones are changed due to the development of the city and new construction on the buildings. However, parts of these lands remain (figure 5.55right).

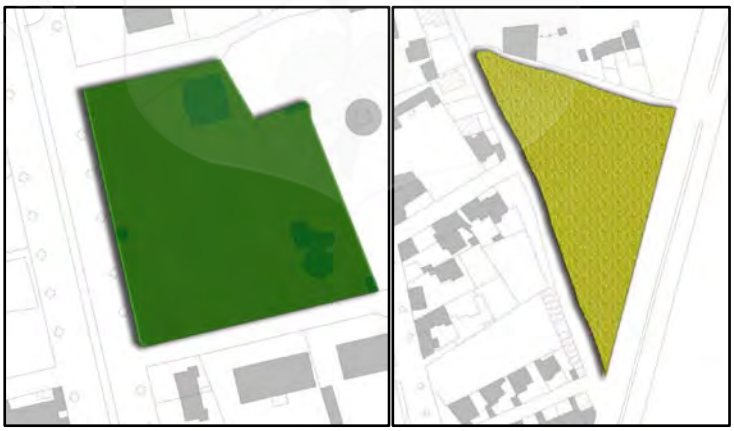

Figure 5-55Examples of Green Areas, and Farm Zones

7.4.2 Suggestions

To create the quality of form and identity used the main factors affecting the city character. Quality of form create by simplicity in form, continuity, distinguished the

tissues, transparency of intersection points, diversity,arena of vision, awareness of movement, name and meanings, and etc (Lynch 1960). According to the analysis provide the suggestions for blocks, plots, and buildings. In this section, also present the appropriate form, dimensions, orientation, width, material, number of floor in entire the city as followings;

1. In the dimensions of block suggest to: Width of blocks between 50-100 meters, and for coordination it can be less than 50 meters.According to presentedguidelines by Bentley (2008) longitudinal size of the blocks should be small to provide a more accessibility.
2. In the orientation of the block, plots, and buildings due to the climate of the city and dominant wind should be toward NW-SE (North West- South East).
3. Widths of the plots are less than 15 meters and to continuity with the past suggest the plots with width less than 15 meters.
4. Form of buildings should be match with the climate of the Boshrooyeh and use the central courtyard. The shape of buildings with four, three, and two verandas (separate and connected) are the shape is required to use the central courtyard. The form of buildings is affected to the arrangement of the city. Hence, buildings with the central courtyard are suggested.
5. Width of the buildings base on the width of the plot should be less than 15 meters.
6. Material is anidentity element which affect to the image of the city. Expert and urban designer, and organizations and government should bring the materials that are suitable and appropriate for the buildings due to the hot and dry climate and also does not limited the people in their choose. Hence, Consumers can choose their intended materials.
7. In the image of the city should utilize the elements such as windward for coordination between old and new tissue. In this propose, government and services buildings can play an important role in the image of the city.
8. Based on the zoning floors of the buildings should be formed from low density (center of the city) to high density (new tissue). According to Bentley (2008) increasing the height of the buildings reduce flexibility.

Based on Allain(2009)There is a reciprocal relationship between various elements of the urban form system (plots, block, functions, and buildings). Allain also believed form is essential components of city identity.Some author like Krier (2010) argued that urban blocks are the cells or fundamental core of urban design structure. The second element also is buildings.

In this study, urban morphology is tried to find the physical values and transfer it to the future. This transfer is associated with traditional value of urban form. Traditional values of urban form make the responsive environment(Mahmoudi & Fanaei 2009).This does not mean that cities must be designed in the same way they were in the past, but it does mean they should be designed in the light of what is known about the ways in which collections of buildings and other urban elements can become living cities(Hillier & Stutz 2005).

The new suggestions should reduce the heterogeneity of urban form and present the valuable factors for new urban design and planning. In the design of suggestions also mentionedresearchers' arguments and the successful urban patterns. In general, the following suggestion presented based on this study to solve the lack of identity;

i. Suggestions for revise the laws of municipality for strengthen the connection between physical construction of the buildings and traditional pattern in different neighborhoods in the city;

- Separation of the city to indicators neighborhoods with its identity. Boundary of neighborhood provide this matter according to the historical area, important natural edge or man-made edge (main roads, highway), governmental area (municipality)(Bahreyni 2009)
- Granting facilities such as tax exemption and bank loans to encourage participation of people in urban conservation. Falamaki(2004; 2005) also mentioned successful samples in England based on these laws and facilities.

ii. Suggestions to prevent the pattern of pluralistic in construction of the façade;

- Development of design criteria by identify and separation of involved area of the residence and officials (urban designer and planner) in the design of building's façade (Bahreyni 2009).
- The buildings with more than two façades are not suitable for this climate and city. Therefore, suggest that buildings use one or two façades.

iii. Suggestions for preservation of valuable traditions, architecture, and urban designs;

- Design of passageway and streets with respect to the hierarchical principles and keep the Privacy of residential area (Bahreyni 2009).
- Repeating of alternately elements (material, color, arboriculture, windward, special form of openings, and etc) in the image of the city for establishment coordination in the city.
- Emphasizing the superiority of the traditional city core.
- Preservation of the physical and functional connections between three main pillar (religious, commercial and governmental center) and also relation of these three main pillars with the adjacent residential tissue.
- Emphasis on the role of mosque as a indicator element and sign in the image of city.
- Emphasis to the role of entrance gate as a distinctive element from the surroundings.
- Emphasis to the role of urban sign in make the relation between city components.
- Emphasis to the role of park and green spaces as unifying factor between city components.
- Avoid the construct the height buildings near the residential area with low density. Allain(2009) argued that high construction of buildings in the center of city cannot be considered as the best yields of the land and compensate of deficiency. Because for high density needs to more accessibility, parking space, and other requirements.
- Maintain the distinct features of traditional tissue and middle zone through identifying the physical value and using them in the new design.

- Reduce conflict and different between zones through create connection and facilitate the zones.
- Provide accessibility between the urban spaces.

vii. Suggestions for preservation the natural features and promotes their impact in the physical construction the city;

- Attention to the appropriate orientation in order to protection fromunfavorable winds and directs the dominant and suitable winds and also creates the shadow in the design of urban streets.
- Follow the land slope, geographical, and topography in the design of the urban streets.
- Provide a view to the indicators natural points.
- Use the local vegetation, trees, and water to beautify the streets and passageways. According to Allain(2009), green spaces provide the formation of the urban tissue in every scale.
- Use the suitable material with climate for flooring the streets andpassageways.

viii. Suggestions for provide accessibility, hierarchy of the place,and public realm;

- Improved the passages network by separation of roadway from passageway. For instance, separate the green space by using the different flooring. Attention to the passage network is affective in the quality of city life. Movement into the city, walking, and shopping generate the social interaction between people(Sabri 2000).
- Reduce the using the vehicles and increase the passageway and public transportation.
- Assuage of traffic in traditional part of the city and establish the ways surrounding this part (Falamaki 2005).
- Create the public realm in the city to encourage the social relation between people. Making the public space is a part of process to create the attractive space for improve the city image(Madanipour 1996; 2003).
- Creating lively and active edges for these spaces was seen as an important condition of their success(Jacobs & Appleyard 1987).

- Make a logical connection between old and new part of the city, and streets (Duany et al. 1991; Falamaki 2005).
- Arrangement and regularize is a important factor that has to be considered in creating the urban space (Cullen 2003).
- Provide hierarchy of the space by determined the border between public and private area which are influence on the image of the city and its features. Benefits of the hierarchical principles in the city structure also expressed by (Newman 1972; Madanipour 2003; Habibi 2008).
- Revise and revision of the old boundaries (Figure 5.56) and also create new boundaries for the conservation programs in the organic and middle tissues based on provided zone.According to the results of study presented the different and new boundaries in the city(Figure 5.51).

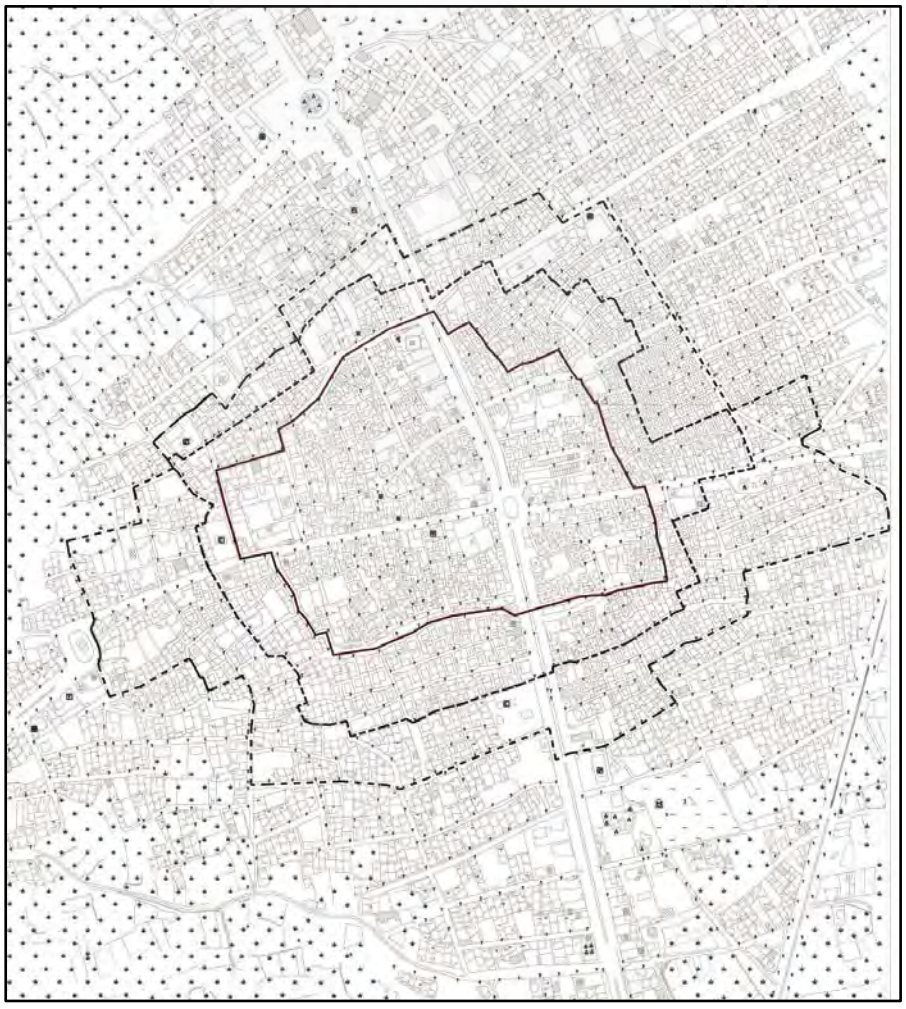

Figure 5-56 The Current Boundaries for Conservation Areas
Source: Cultural Heritage Organization OF Boshrooyeh

ix. Suggestions for provide the amenities;

- Conducted urban furniture in different functional spaces.
- Implementation of public parking in public functional area.
- Encourage the people to live in the center of the city by return the city center to the residential function and provide facilities and services for them. According to (Habibi 2008) growth of the city inside not only does not mean abandoning the city's outer areas, but also is following the order to the facility and equipment inside and out.

x. Suggestions for provide a appropriate function and image;

- Organizing the functions network utilized to minimize the lack of coordination between functions. Functions can be together to have a same level and situation.
- Mixed land use and mixed housing type which invite diversity of people and build community identity (Leccese et al. 2000; Ohm et al. 2001).
- Sequence of signs in the city provides legibility and identity in the city space and elements. Lynch(1960)and Sitte(2006) mentioned to the important of sign in the creating the good and memorable image of the city. Appleyard (1969) also expressed this subject as visibility attributes.
- Modification of skyline and utilizing the regulations and laws for adjacent buildings, height, and edges.

Usually historic centers only cover a small part of the cities. The construction of a ring road around a historic centre will provide reasonable access and will also distribute the vehicle movement around the whole area and consequently will reduce the need for widening the existing alleys. This will result in less damage to the pedestrian network of the city, and less vehicle movement in the area. The city is small enough to provide good access for pedestrians, but the new development has not been able even to solve the access problem of its residents.

Creating a historical continuity in modern urban planning without conserving the historic areas is not possible(Özaslan 1995).Warren (1995)believed that ‘The answer in conservation is to be achieved by control of modern requirements in such a

way as to minimize the change demanded of the historic fabric'.Morphological detail can certainly use for guidance.

This is a major challenge for urban design: not in designing entire new towns, but in producing what can be widely accepted as high-quality design at the local level, in the re-shaping of the existing urban fabric, in identifying, retaining and reinforcing the best qualities of past urban forms, and in persuading owners and occupiers of the rationale for, and quality of, new designs(Larkham 1996).A pressing need in Boshrooyeh is the elaboration, adoption and implementation of appropriate regulations to guide construction and development interventions in the historic fabric. For this purpose, development would be allowed without adversely the very identity of city(Taniguchi 2009).

7.5 SUMMARY OF FINDINGS

7.5.1 Identification

The researches and studies was completed by hierarchical way (of total to component) and respectively introduce the whole city, selected area and detailed study area. In all three levels were expressed characteristics of the main structure (street network) and urban fabric (inner tissue). As a result with getting smaller of the study area scale, analyzed more details. Thus identified type in the whole area the city is included areas and urban area. Whereas detailed study defines buildings type in regional scale.

a. Whole the city

The Boshrooyeh city is located in an area between the mountains and desert. Location of the city is separable into two areas: 1. Low area is mountainous in west 2. Wide area is desert (pebble field) in north, south, and east. Catchment of Boshrooyeh plain is located between east (Dasht-e Lut) and west (Shotori Mountain). Pine (Kaj) is the main vegetation in the cityzone. Networks includes organic in center and reticular structures in surrounding. The streets are located in two majors along north-south and east-west, that north-south is more significant.

The special features in the urban tissue are as follows: 1. the dichotomy of core – surrounding; 2. Land use; 3. Contrast between west and east; 4. The main shape of

buildings; 5. Scale; 6. Neighborhoods diversity; 7. The relative uniformity throughout the East - West axis, and diversity throughout the North - South axis. Typology of urban tissue in Boshrooyeh is three types: 1. Traditional tissue; 2. Middle tissue; 3. New developments.

b. Selected Area

Street network in the old core that are connected to the main axis inseparable to organic and away from that the more regular (have not reticular yet). Distance of this axis for connection to main axis is near and far depending on adjacent of the fine-grained or coarse grain texture. Main North - South axis through the along directly route from the new and old tissue. Its width has been increased in recent years, and without changing in the width through the new and old tissue.

The most important features in the urban tissue are as follows: 1. Gradual slope from West to East 2. Any visual advantage and control does not exist to the city 3. Height of the buildings is increasing relative from center to around 4. Fine-grained fabric and small plots is located in center, and coarse grain fabric and larger plots is around 5. Traditional and valuable tissue is located in center, and modernize tissue is around 6. Organic fabric is in center, and regular fabric is around 7. Centralized and cohesive fabric is in center, fragment and different fabric in around. It represents there is a strong and meaningful core in the city that other fabrics (Even heterogeneous) are located around of it 8. Variety of building materials and style of building facade is increasing relative from center to around.

Block shapes exist into two groups geometric and non geometric. More blocks dimension is with width 50-100 meters and less than 50 meters. More blocks orientation also is to Northwest-Southeast. Plot shapes existinto three groups;simple tetragon, tense tetragon, and polygon with various shape. Moreplots orientation isto Northwest-Southeast. Moreplots dimension also iswith width less than 15 meters (Figure 5.57). Building types exist three groups; traditional type (old period), middle type (Pahlavi period), and new type (after Revolution period). Types of urban tissue also exist two groups; 1. Organic tissue includes traditional tissue, and combination

of traditional and middle tissue 2. Partly regular tissue includes low height and high height (Figure5.58).

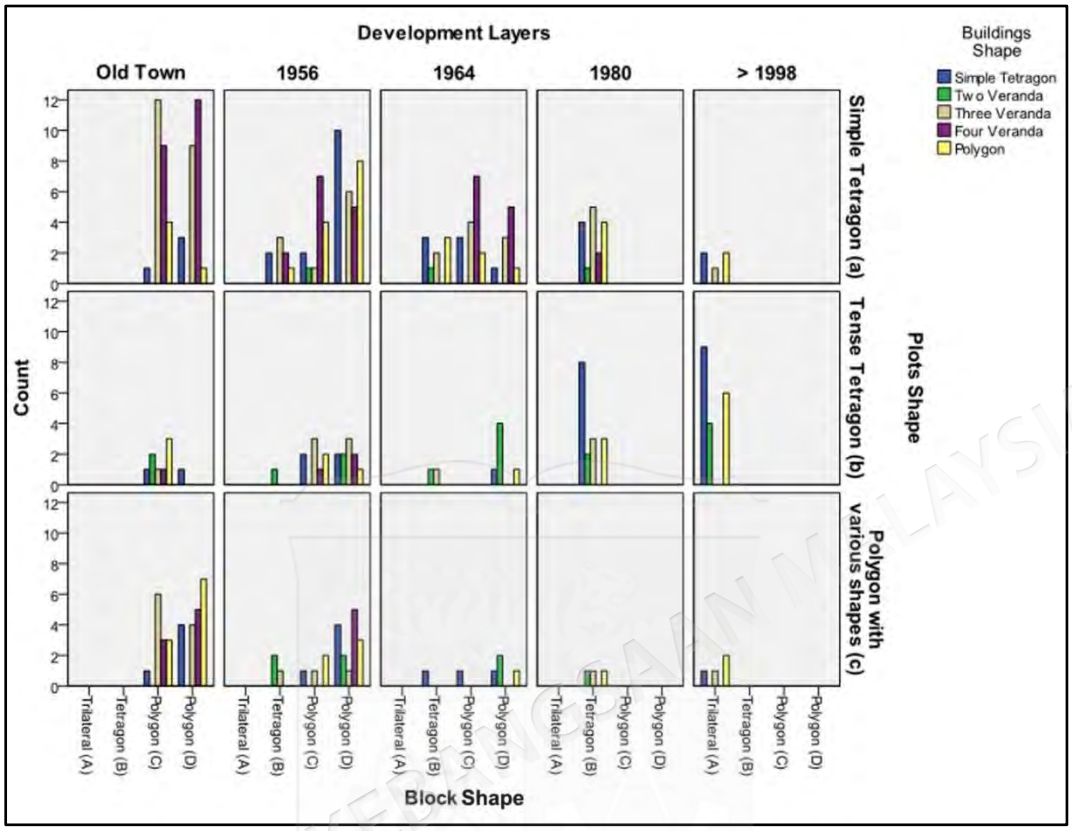

Figure 5-57Relation BetweenBuilding Shapes, Plot Shapes, and Development Layers in Selected Blocks (A, B, C, and D)

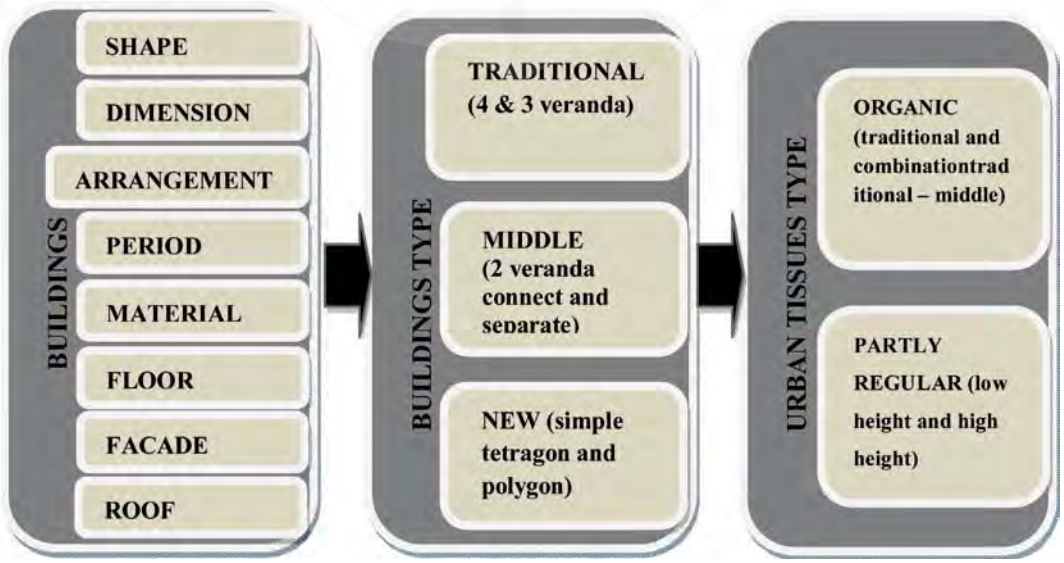

Figure 5-58 Conceptual Model of Findings

7.5.2 Evaluate

Evaluate character (physical identity) is value process, which identification phase is its prerequisite. Evaluate process is dependent of religion traditions (micro and macro). The pattern of these traditions affected the how to evaluate and give it direction.

a. Whole the city

Bazaar is changed in meaning, function, and physical. Main Square, city wall, and image of the city are also changed in meaning, function and physical. Jame mosque and gates are changed in physical, but exists in meaning and function. City citadel is changed in physical, but exists in meaning and function. Thus that municipality and proconsul are as administrative and political center for the city. Network has the highest change in meaning, function and physical from traditional pattern. Structure and backbone of current network is along the traditional network, yet (except in new development). Hussainia, cemetery, religious school, and orientation have similarity in meaning, function, and physical.

Continuity of past traditions remains in meaning and function of City components (Jame mosque, city citadel, Hussainia, cemetery, religious school, and orientation). The most important evolution has occurred in bazaar, network, Main Square, gates, city wall, and image of the city. Major evolution has occurred in network is changing for facilitate the travel of motor vehicles. Continuity of traditional pattern has not occurred in urban tissue. Major evolution is being lawful construction, and different tastes in patterns of building'sfaçade. Finally, factors that cause of unity in whole city are core, entrances, and network (Table 5.16).

b. Selected area

Main Structure and urban tissue are fundamental change. Organic structure has gradually becoming to reticular structure. Although network pattern is remain, but streets and neighborhood passages have become the wide axis. Urban tissue also is fundamental change. Gradually block/street pattern is becoming to change. Increasing use of tetragon forms, and reduces the use of polygon forms. Increasing use of blocks with 50-100 meters width, and reduces the use of blocks with less than 50 meters

width. Superiority of the blocks orientation (northwest/southeast) is maintained to the dominant wind direction.Shape, size and orientation of plots are quite different from the past. Buildings are also quite different in their shape, position (arrangement), materials, height, variation of façade, and roofs from the past.

Continuity of past traditions remains in physical of network, but major evolution is changing for facilitate the travel of motor vehicles. In urban tissue also continuity of past traditions is not remains. Evolution has occurred from traditional building type to new building type. This means buildings' shapes and position (arrangement) are not varied, and buildings' height and façade are varied. To conclude, causes of unity in selected area are core,network (Inghelab Boulevard), and organic tissue (Table 5.16).

Table 5-16Overall Analyses of Difference/Similarity, Continuity/Evolution, and Unity/Multiplicity

		DIFFERENCE/ SIMILARITY		CONTINUITY/ EVOLUTION	UNITY/ MULTIPLICITY
		Physical	**Meaning & Function**		
WHOLE THE CITY	**Bazaar**	Change	Change	Evolution	Core, entrances, and network are the cause of unity.
	Jame Mosque	Change	Similarity	Continuity	
	City Citadel	Change	Similarity	Continuity	
	Network	Change	Similarity	Evolution	
	Main Square	Change	Change	Evolution	
	Others:				
	Hussainia	Similarity	Similarity	Continuity	
	Gates	Change	Similarity	Evolution	
	City wall	Change	Change	Evolution	
	Cemetery	Similarity	Similarity	Continuity	
	Religious school	Similarity	Similarity	Continuity	
	Image of the city	Change	Change	Evolution	
	Orientation	Similarity	Similarity	Continuity	
	Urban Tissue	Change		Evolution	
SELECTED AREA	**Main Structure**	Change		Evolution	Core, organic tissue, and network are the cause of unity.
	Urban Tissue	Change		Evolution	

CHAPTER VI

CONCLUSIONS

8.1 INTRODUCTION

Identifying and Evaluating of a City Character takes the logical framework and according to specified criteria. Emotional comments have no scientific and rational prestige. The goal of this research was identification, assessment, and analysis of character (physical identity) of the Boshrooyeh city. In this research, identity meansthings, which make a city (man-made environment) different from other cities (environment). This different arises from specificphysicalcharacteristicsof eachregion. So, identity notconsideredthefeelingand the perception ofspace.

For identification and assessment of a man-made environment searchedthe criteriathroughthe concept ofidentity ingeneral and specificliterature (architecture and urban design).The mainthree criteriathatwere obtainedare; difference/similarity, continuity/evolution, and unity/multiplicity. These three criteria weregenerally, and theirpractical application wasdifficultto evaluatethe city's character. To measure the"own" and continuityofan environment, should be declared, "other"and"own".

Regionalism is the main approach, which has discussed on the issue of "other" and "own" in the built environment at last century. In design, the application of this approach is very important. This approach in architecture and environmental design raises analytical and critical perspective; maintain the “own” (according to the region characteristics) while acceptance of new ideas and contemporary technology. Thus, “other” and ‘own” were defined; according totradition, principlesandconcepts of local,while accepting globalchangeanddevelopments.

8.2 GENERAL FINDING (CHARACTER OF THE BOSHROOYEH CITY)

In this research “own” means being bound to the regional traditions. With increasing “own” intensity, distance will increase from “other”. “Other” is the disruptive for existing balance (contrast) and cannot be absorbed. In this way, continuity means strength and weakness of own characteristics. More amounts of traditions that have been maintained show more continuity.However, thisdoes notconfirm inertia,stagnation, andavoidance ofglobaldevelopments. Evolution means unaffected by positive global changes, and its important like continuity.

The regiondefinition is to raiseaccuracy twocriteria (difference/similarityandcontinuity/evolution). Boshrooyeh city is located in Iran, so in one hand, Iranian and Islamic culture effects on it (macro-scale). On the other hand; this city had been certainchangesinthehistoryof itsformationthatisuniqueand specialfor it (micro-scale). Therefore, macro-scale is including urban designandarchitecturaltraditions in theIranianand Islamicregion, and micro-scale is including urban designandarchitecturaltraditions in the Boshrooyeh city region.

The third criterion (unity/multiplicity) is slightly different with two previous criteria, and it is their complementary. Unity/multiplicity defines being bound to the regional traditions leads to the formation of a whole or not? Identity is discussed about a coherent whole, and disagrees with being fragmented. Practical method of measured against this criterion was examining function connective elements and urban elements.Afterwards, mustbe determinedwhich of theparts,components andelementsofthe city formingshouldbe evaluatedbycriteria.

Urban form is visible when crossing streets and passageways, and streets is created of buildings and spaces between them to get together. In the other word, buildings are the smallest components of the city forming. From get together these buildings is created urban blocks, neighborhoods, and whole the city. This pattern is thought urban morphologist; so urban morphology approach is one of the elements ofthis research.

On the other hand, the city is a whole combined of components, and components cannot be read regardless of their relationship in formation to a whole.

Main structure is a whole oriented approach that is necessary for understanding the relationship betweencomponents. From combining the two approaches (urban morphology and main structure) created a method that is theoretical principles of research.

8.3 OBJECTIVES ACHIEVEMENT

Studyonthe Boshrooyehcitywas conducted in two parts; identifying the city character and evaluating continuity of city character. Identifying part was including identification ofthe urban form anditscharacterization. It is obvious in this research cannotbestudied the whole the city. Therefore, need to be selected part of the city that has more physical diversity, and covers all the major developments in city's growth. However, before choosing selected areas it was necessary to achieve general information of the city shape, historical period of its development, and the most effective factors. This information was the basis for selecting the desired areas.

Hierarchicalprocessthatwas donefor thecityconsists of two parts; wholethe city and selected areas (detail study). The studyof wholethe city was included; main structure (natural and man-made elements) and urban tissue. The studyof selected areas was consisted of two sections; whole selected areas and small partof selected areas. The studyof wholethe city was also included; main structure and urban tissue.

Evaluating studies were conducted due to the results of identifying part, most effective traditions in the city shape (in both micro and macro scale), and three criteria (difference/similarity, continuity/evolution, and unity/multiplicity).These parts of the studies process were as follows; 1. To identifythe importanttraditionsof urbandesignandarchitectureinbothmicro and macroscale, 2. To evaluate continuity of city character in ahierarchicalprocess, due to the city shape andthe threecriteria, was included:wholethe city (main structure and urban tissue) and selected areas (main structure and urban tissue).

The results of identification and evaluation studies in order to analyze are revealed in follows tables. First, table 6.1 summarized character identification and evaluation of continuity in the whole city's main structure. Next, table 6.2 also shown character identification and evaluation of continuity in the whole city's urban tissue.

In addition, table 6.3 mentioned character identification and evaluation of continuity in the selected areas' main structure. Finally, table 6.4 described character identification and evaluation of continuity in the whole city's urban tissue.

Table 6-1Identifying and Evaluating of Whole the City Character (Main Structure)

	IDENTIFYING		EVALUATING	
			Remained Traditions	**Forgotten Traditions**
MAIN STRUCTURE	**Bazaar**	It's located in several centers such as the main square, around the mosque, and near the religious school	Remain a alleyand connection with the religious school and mosque	Traditional style and its proportion with the climate
	Jame Mosque	It's located southwestcorner of the main square. Miandeh mosque also is important for a special occasion	Remain the role and being indicator in image of the city	Its relationship with Bazaar and Arg
	City Citadel	Administrative functions are located near the old Arg (city citadel)	Remain the role of Arg in the government buildings	Its relationship with Bazaar and Jome mosque. Visual dominance in the whole city
	Main Square	It's located in centre of the city, and it's intersection of two main axis	Remain the location and one side	Traditional style. Its role in the function and activities
	Network	Axial,Organic, and Reticular structures includes; Boulevards, Streets, and Alleys	North-South and East-West orientation	Organic structures, passages (cul-de-sac, covered, and turn),internal, harmony in façades pattern, due to the climate, hierarchical accesses

Table 6-2 Identifying and Evaluating of Whole the City Character (Urban Tissue)

	IDENTIFYING	EVALUATING	
		Remained Traditions	**Forgotten Traditions**
URBAN TISSUE	• The dichotomy of core / surrounding • Contrast between west and east • External buildings • Non equal in scale • Neighborhoods diversity • relative uniformity in the East - West axis, and diversity in the North - South axis • Traditional tissue, Middle tissue, and New developments • Inconsistencies in the skyline • Inconsistencies in building façade • Building's arrangement is %60 of land in North or South • Diversity reducing in plans and capacity building (most in the new development)	• Remain the courtyard in houses • Northwest-Southeast orientation • Neighborhoods plurality (segregation based on ethnic and religious differences)	• Organic tissue • Pattern of the central courtyard • Harmony in height and façades • Internal pattern • Harmony of tissue in terms of materials and Typology • Low density • Architectural style

Table 6-3 Identifying and Evaluating of Selected Areas Character (Main Structure)

	IDENTIFYING	EVALUATING	
		Remained Traditions	**Forgotten Traditions**
MAIN STRUCTURE (NETWORK)	• Main axis(North-South) without changing in the width through the new and old tissue • Second axis (East-West) is changing to wide in west • Street network in the old core is organic, and away from that is more regular (not reticular) • Depending on adjacent of the fine-grained or coarse grain texture, distance of this axis is near and far for connection to main axis • Gradual slope is from West to East • Turn alley in the old tissue • Landscape design for Main axis by Pine (Kaj) trees • Major evolution for facilitate the travel of motor vehicles	• Remain some of the old passage (organic) and development the new passage in continues • North-South and East-West orientation	• Organic structures • Covered passages • Cul-de-sac • Turn alley • Internal • Harmony in façades pattern • Due to the climate • Hierarchical accesses

Table 6-4 Identifying and Evaluating of Selected Areas Character (Urban Tissue)

	IDENTIFYING	EVALUATING	
		Remained Traditions	**Forgotten Traditions**
URBAN TISSUE	• Visual advantage does not exist, because establishment in plains and desert • Height of the buildings is increasing relative from center to around • Fine-grained fabric and small plots is located in center, and coarse grain fabric and larger plots is around • Traditional and valuable tissue is located in center, and modernize tissue is around • Organic fabric is in center, and regular fabric is around • Centralized and cohesive fabric is in center, fragment and different fabric in around • Variety of building materials and style of building façade is increasing relative from center to around • Build laws has obvious effect on building shape (most in the new development) • Building's arrangement is %60 of land in North or South • Increasing use of tetragon forms than before(polygon)in blocks • Increasing use of blocks with 50-100 meters width than before(50 meters) • Plots are quite different from the past in their shape, size and orientation • Buildings are quite different from the past in their shape, position (arrangement), materials, height, variation of façade, and roofs • Three buildings types exist • Two types of urban tissue exist	• Remain the courtyard in houses • Northwest-Southeast orientation • Remain some of the old and valuable heritage buildings • Parts of organic tissue • Respect to the privacy of houses • Remain the courtyard in houses	• Organic tissue • Pattern of the central courtyard • Harmony in height and façades • Internal pattern • Harmony of tissue in terms of materials and Typology • Low density • Architectural style • Harmonyin the Skyline • Due to the climate • Pattern of the central courtyard

It thus can be concluded Boshrooyeh city changed in the elements (main structure) and components (urban tissue), and are not followed the old patterns. It was also discovered that if development continues at such a rapid rate, city character and identity will gradually destroy in the near future. The main conclusion is despite all the changes in urban spaces; traditional forms can still be used certainly not only to imitate but also for re-interpretation of our understanding of them.

Relationship of humans and the environment is established through urban spaces (streets and squares). Streets and squares are obtained from adjacent buildings and spaces(Tavasoli 1992). Pattern of buildings forms, their combination, and their façade style will be affected on the build urban space and human perception of the city. Previous studies showed these specifications of building in Boshrooyeh;

1. There is no specific pattern to the height of buildings (more after the Revolution period). Height of buildings is different in the new time period and affected by the facilities (technology), urbanism rules, and community needs.
2. There is no specific pattern in the façade style. Façade of buildings (decorating, material, and composition) is different and affected by the existing facilities, present time fashion, and owners' tastes.
3. Arrangement of building (more after the Revolution period) follows a pattern (%60 indoor and %40 yards). The buildings that follow this pattern are the same in composition and makes uniformity.
4. The buildings are being demolished and modernized for the following reasons: financial interests, population increase, traditional buildings getting old and ruined, and having weak laws.

Thesesituations are not the sameindifferent parts ofthe city. In the old (traditional) parts are more than new areas, because they have spent more historical periods. In the new parts or areas thatlandvalueislessdiversity of buildingtypes isalso less.Urbanspacethathasoccurredfrom theadjacentbuildingswasthese attributes; 1. lack of harmony and contrast in the image of the city, 2.changes in physical urban form. These attributes show the mainspatialcharacteristicsof Boshrooyehcity. Tavasoli in

(1992) believed these attributesareinopposite with urbandesignprinciples andcriteria such as harmony, discipline, unity, and etc.

8.3.1 Lack of Harmony and Contrast

It lacks of harmony are observedatdifferentscalesof urbanspace, and in some cases is so much thatit can becalleda contrast. The reasoncould be lacked of appropriatepattern forharmonyof buildings. Therefore, the urbanspacethathasoccurredfrom theadjacentbuildings is different andconfused.

8.3.2 Changes

Boshrooyeh city has become a city from the town during the past three decades. This issue has caused rapid urbanization to affect the physical space of the city. Population need for housing is increasing, and this leads to extensive physical changes. Indeed, urban space is changing constantly, and new perspective to arise with destroying the old spaces.

These results ofresearch showed (Figure 6.1); by main structure and urban tissue methods can be identifying and evaluating the character of cities.The identifyingcharacterindicated typology of blocks, plots, buildings, and urban tissues. It was also shown that main structure and its components identified in Boshrooyeh city (first objective). The second major finding was that; the assessment of continuity revealed two features; lack of harmony and contrast in the image of the city, and changes in physical urban form. However, main structure (widening of streets, Bazaar, Main Square, and Macro form) and urban tissues (blocks, buildings) of the city were destroyed; it was found that the city character still remains. The most obvious finding to emerge from this part was that there is no continuity in after Revolution period (second objective).

Tissues identified by buildings types as the basis for zones' definition, which each had a separate domain. The evidence from this study suggests that Boshrooyeh city could be a clear morphological zoning. The zones were proposed and other suggestions can be used as the framework for maintaining and sustaining of city

character and identity. The findings of this study suggest that these zones can also be used in design process and review of conservation area boundaries (third objective).

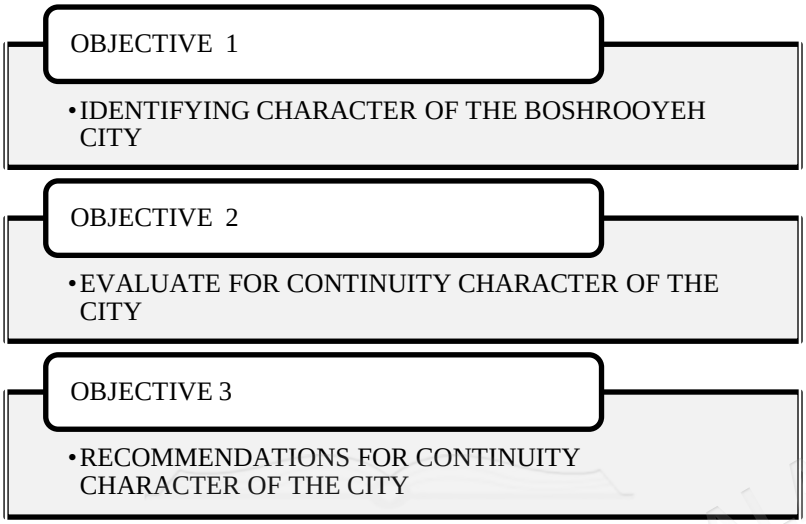

Figure 6-1 Conceptual Frameworks of Research Objectives

8.4 CONTRIBUTIONS OF STUDY

These findings enhance our understanding ofchoose the sample unit (buildings and tissue) to do better decisions in detail studies.The study also has some contribution to other interested parties in the deferent field such as geography. The most important aspects and contribution from the study are to identify the factors, elements, and components for converting the qualitative into quantitative by using SPSS and EXCEL instead of EXCEL only. The methods used for this case study (Boshrooyeh) may be applied to other cities elsewhere in the world.

In Boshrooyeh cityhas not been done good research and detailed projectsas fieldwork and texts.Only it has been noted in some papers, discussions, and desert architecture.On urban projects (Guide and Master plan) and Special Conservation plan for the present or the future of city due to specific architecture of the region has not been considered yet.With situational awareness, shortcomings, and potentials (such as this research) can be attempted more appropriatelyfor detailed design and planning. If be conducted supporting the strong projects and researches can be guaranteed more success.

8.4.1 Benefit of Knowledge

The result of this work should assist in maintaining the character of cities.In historic cities also should help to continue new developments that respect social needs, cultural and natural values, and due to the past values.With the help of this research, the principles and design tools that could bring better quality to the life in modern living environments have been determined. The research has enabled to suggest identifying design frameworks for new towns' development, and new living environments in cities.

This study ultimately leads to the adoption of new strategies and solutions, which include the identification of new methods or a revamp of the existing planning standards for historiccities, which have an implication on character cities. Generally, a greater understanding of the subject and an application of the right concepts and more appropriate measures and standards will help create more cities with character in the countries in consistent with a developed society.

8.4.2 Government

One of the benefits of this research could be a basis for suggestions offering inorder to maintain, continuity, and upgradetheBoshrooyeh city's character. The study will, first of all, help urban designers in this country (Iran) to better understand the criteria that must be met, and the characteristics that the cities must have character. This includes those that are involved in:

1. The architects and designing of cities, which include those in both private and public practice;
2. Local authorities and government such as Municipality, Cultural Heritage Organization, House Research Organization, Ministry of Housing and Urban Development, City Council, City Forum, and etc.;
3. To those in all levels of authority to preparing guide plan, master plan, recommendation, and guidelines for the development of cities.

8.5 RESEARCH LIMITATIONS AND FURTHER RESEARCHES

This single studydoes notreachdefinitiveconclusions, and it must be complete (review) by future researches. However, manyeffortshave been foraccurateup to the criteriaandmethodused, but thisprocessisstill needed to work on it. This model for thestudymustbe completeddue toscale(large and smallcities)and necessities. The present study confirms previous findings and contributes additional evidence that suggests in the future, couldbe used GIS to convert the qualitativefactorsintoquantitative instead of EXCEL and SPSS. GIS gives the speed to work andhelpsinoverlapping of differentlayers, but for use it the data must be prepared.

In the evaluation criteria, one of the shortcomings is measurement indicators. In this study to find indicators was used regionalism approach. The number and amount of living traditions with new traditions was considered as an indicator for measuring difference, continuity, and evolution. This indicator could be more accurate and complete in future studies to confirm its authenticity.

Another of the shortcomings is the method of selected areas. The first goal was the study results can be replicated in future studies. In this study identified the most important factors influencing urban tissue typology, but in the case of large cities (Megalopolis) have been not considered some technical factors. Studies in these cities can be done in different areas. Selecting these areas should also be systematic. For example, the areas can be selected that have different physical characteristics, but each one has a relatively equal (homogeneous) tissue.

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APPENDIX-A

(QUESTIONNAIRE FOR IDENTIFY THE PHYSICAL CHARACTERISTICS OF SELECTED BLOCKS)

1. Selected Areas

a. What is the shape ofstreet/blocks?

- Trilateral
- Tetrahedral
- Geometric Polygon
- Non-Geometric Polygon

b. What is the dimension of street/blocks?

- Width less than 50m
- Width between 50-100m
- Width more than 100m

c. What is the orientation of street/blocks?

- North-west/South-east
- North-east/South-west

d. What is the development layer of street/blocks?

- Old Town
- Until 1956
- Until 1964
- Until 1980
- After1998

e. What is the shape of plots?

- Tetragon
- Tense Tetragon
- Polygon

f. What is the dimension of plots?

- Width less than 15m
- Width more than 15m

g. Which is the orientation of plots?

- North-west/South-east
- North-east/South-west

2. Selected Blocks

a. What is the shape of the building?

- Simple tetragon
- With two verandas
- With three verandas
- With four verandas
- Polygon

b. What is the dimension of the building?

- Width less than 15m
- Width more than 15m

c. How is the arrangement of the building?

- North of Plot
- Two or three sides in North of Plot
- Middle of Plot
- South of Plot
- Two or three sides in South of Plot
- Whole the Plot
- In North and South of Plot

d. What is the period of building?

- Less than 15 years
- Between 15-30 years
- More than 30 years
- Traditional
- Combination of two periods

e. What is the building material?

- Brick
- Mud
- Combination of two materials

f. How many floorsthebuildings have?

- One floor
- Two floors
- Three floors

g. How many façadesthe building have?

- Without façade
- One façade
- Two façades
- Three façades
- Four façades

h. What is the shape of building's roof?

- Flat
- Do