



# The Hierarchy of City Spatial Organization in Terms of Establishment of Land Use Factors (Case study: District No. 2 of the Municipality of Hamadan)

Mostafa Zafarivahid<sup>1</sup>, Esmaeil Shieh<sup>2</sup>

<sup>1</sup>Department of \_Urban Planning and Design, Qazvin Branch, Islamic Azad University, Qazvin, Iran  
Email: [zafarivahidm@gmail.com](mailto:zafarivahidm@gmail.com)

<sup>2</sup>Professor University Science and Industry Iran, Tehran, Iran , Email: [es\\_shieh@iust.ac.ir](mailto:es_shieh@iust.ac.ir)

**Abstract:** *The spatial planning of the city is the result of crystallization of the citizens' mentality in their collective environment and space. Each civilization dominates a purposeful order that is raised from their perception about the world, society and urban elements in their living environment. The most important reason for cities difference is their different spatial planning that has emerged due to the differences in the order of each city as a system. This study aims to determine the hierarchy of the spatial planning of the district No.2 of Hamadan in terms of establishment of land use. This research is an applied study. This type of study can be used to carry out reforms in the organization physical, economic, social, etc aspects. Based on a comprehensive understanding of the spatial planning of the city, this study is trying to make and deliver the right policies and strategies to guide urban development. Due to the lack of a coherent a spatial organization in district No. 2 of Hamadan, it was suggested that this district takes shape of a total six regions which are consisted of three sub-neighborhood and six areas formed two districts that totally make up the six areas that required use of each of them was allocated in proportion to population centers, areas, neighborhoods and sub-neighborhoods. It is essential that urban management systems, by completing and upgrading what is presented in this article, in decision making, scrutinize the spatial organization of every city location data and avoid transient decisions and mere attention to the small scale without considering the role of each section in the further and more massive layout.*

**Keywords:** *The Spatial Organization, Use, City, Urban Hierarchies and Divisions.*

## 1. INTRODUCTION

Today's world is the urban world that unfortunately its result is avoiding natural environment and accepting unwanted unbalanced conditions that emanates from uneven relationship between humans and urban space, and city is the reflection of the organized thinking in a spatial and cultural district with its own laws. In short, the definition of city is not easy, because on the one hand it is structured from forms, spirit, people, green space, natures and natural materials and has different physical, morphology, social, cultural and ethical structures; on the other hand, the city introducers has different expertises and attitudes, each one has defined it in accordance with his vision. But the arrangement of elements and public spaces in the form of a coherent spatial pattern while can make this element meaningful is the factor of creating urban life and life stream in the system. This dimension of urban spatial coherence different from the performance and economy dimension and constitutes the substantive idea of spatial order that it is engraved in the minds of citizens and spatial pattern gives meaning to them. But outside the labor market and consumer transactions, dimension of city spatial pattern performance has the qualitative and substantial dimensions that guarantee the presence of urban life within this system. The totality of spatial pattern skeleton was perceptible for citizens and crated

special identity. Thus in geographical landscape city a spatial composition is defined from different population aspects. With the Industrial Revolution cities were the focus of economic activity, particularly industries. As a result, villagers in search of work moved to cities that this results in new spatial relationships. Despite successes in many countries, especially developing countries, crises came into existence in the spatial organization. The spatial organization of city is a dynamic phenomenon that is constantly changing and evolving. As a result, urban spatial identity will be transformed with the emergence of new elements tailored to the new needs of cities. As a result, effective interventions are necessary at spatial scale. A holistic view to systematical and purposeful elements should be considered to improve the conditions of the space order to provide a strategic management. Rapid population growth in our country after the implementation of land reform and intensification it after the Islamic Revolution to due to lack of urban infrastructure commensurate with the acceptance of cities suffered populations caused unrestrained physical detachment. The process of urbanization and urban development in critical situations and in transition of societies faced with various problems that inappropriate spatial organization of the city is one of them. Of the main problems caused by inappropriate spatial organization that the city development is facing today is uncontrolled growth of the metropolis. Now many of the efforts to improve the situation and monitor the development of the city have been fruitless. This failure is caused by this issue that the development organization of the city which takes shape based on complex interactions between market forces and public investment regulations, often is not investigated and prosecuted that consequently major inefficiencies due to the weakness of the spatial organization is overlooked. The complexity of urban spatial organization prevents the realization of many efforts to its analysis and communicates urban policy and the city form. In most cases producers of the city have been relied on the comprehensive city plan that are usually prepared for a ten-year horizon and ensuring that cities are in accordance with municipal purposes.

## **Theoretical Foundations**

### **The Urban Space Definition**

Urban space is an example of geographical space and it is a part of the Earth's surface which includes all urban structures such as squares, streets, buildings, fountains, parks and other urban elements with the physical and socio-cultural profile (Shamaei and Pour Ahmad, 2005, 89). Urban space is a scene in which the collective life story will be commenced (Pakzad, 2006, 81). The urban environment is nothing less than the daily lives of citizens which are consciously or unconsciously perceived during the day.

### **The Concept of Urban Space**

It means thought reflections of a bunch of elements, or classes, based on the non-variable characteristics (i.e., attributes and relationships between them). Each concept is representative or representation of a category that the word category refers to a set of characteristics. Concepts are mental class that are used to grouping the objects, events and properties and this special ability helps people to define their surrounding information and group meanings based on their attributes (Pakzad, 2006, 74). In other words, a society that fails to provide an appropriate basis for the activities and behaviors of its members cannot claim that it has cultural richness. Each behavior that is done by human is basically relies on culture and culture as a set of moral and material achievements of the society affects architecture, urbanism and urban spaces. Prosperous, capable and healthy society needs spaces that not only works for the welfare of individuals and groups but also encourages good behaviors and avoids bad behaviors (Pakzad, 2005, 1).

### **Urban Space Constituents Physical Components**

Space can be identified by limited elements and its character is based on the order among these factors and elements. Elements and components of urban space include: floors, exterior, roof and space-based elements that include urban furniture and green elements (Pakzad, 2010, 74-89).

## **Land Use**

Land use or how to use the land includes review of land use in relation to a variety of activities ranging from health care, residential, office, commercial and ... (Shia, 2013, 8). Planning for urban land use, means spatial organization and activity space and urban applications based on the demands and needs of urban society. This planning in practice is the core of urban planning and classifies and maps the different types of land use (Ziyari, 2006, 10). Urban land use plan is one of the most important tools to achieve the social, economic and physical objectives. Not only it has effects on public and private investment decisions affect, but it plays important role in the city's urban growth and the quality of the physical environment (Saeed-Nia, 2004, 4).

From the perspective of Alain Bertho the city is a complex phenomenon, the complexity is due to the developments and changes that constantly enter in its shape and structure. According to Bertho, spatial organization of the cities can be distinguished with multiple components:

1. Spatial distribution of population
2. Travel patterns of citizens
3. Average pattern of physical density

Spatial distribution of population means a chart of people's presence and the spatial distribution of population in inactive hours. (People's presence in their settlements). Travel pattern means distribution of mobility and movement people from their home to their work places and physical density pattern or building density is the average levels of infrastructure to the unit level (ibid). Traditional shape single of spatial organization of the cities is single core; however, Alonso believes that cities in the development process tend to have a multi-core format. Bertho's spatial organization theory is the formation of a core in the heart of commerce and activity center. According to Alain Bertho the spatial pattern of the city as single-core and multi-core can be influenced by the interactions of transport, spatial distribution of economic activity and places (Alonso, 1964).

## **Equipped Axis and Alignment Vision**

Edmund Bacon sees the order of the city environment foundation in a way that it is affected by movement system and believes that it is necessary for communications network structure to have conformity with the geographic context and provides the context for the spatial construct (Bacon, E., 1967). In this regard, Bacon gives special importance to the main backbone of the city that in the form of urban structure shapes an organized body, and other activities and structural elements (key buildings and civil symbols of the city gates and other natural elements) can be organized in connection with the main backbone of the city. In other words, Bacon believes, the equipped centerpiece of a city in dynamic way has changed over time and organizes the spatial order.

## **Urban Armature Layout View**

Ericsson introduces urban armature in this way: The so-called urban armature is used to express and describe a central point which is composed of civil buildings, urban spaces, street network, vegetation, symbols, etc., with specific organization and configuration (Erickson, B. 2002). Bill Erickson calls the main structure and established order between the elements of the spatial organization, "urban armature" According to him; urban armature is a model for understanding and detecting the spatial organization of the city. Ericsson believes that urban designing is a hierarchy of the decisions and policies of the city. Some of these decisions are substantial decisions that act at the city level and some decisions are of smaller scales. In this regard, the first step of the designing process is defining the two levels. Group A is consisted of key elements that affect structure, form and function. The second group is composed of elements that affect the mass of buildings and urban elements while their composition details does not have any important effect on the overall functioning of the system. Discussion of urban armature is of strategic issues of urban design (Zekavat, 2005, 12).

### **Single-Core Pattern**

Single-core pattern city was introduced by Alonso. This model that was product of housing transportation was generalized by Mills and Muth, and finally by Fujina was completed with a uniform framework. In this traditional model, ancient cities were considered as single core cities. Accordingly all the activities were at the center of the city that is CBD and all the workers and residents of the suburbs of the city were traveling to the commercial activity centers (Mori, 2008). In this model, city is considered in the form of a circular residential area with a central business district where all the jobs are there (Anas et al., 1996). In the past, the relative success of this model was primarily due to the compatibility with a competition model in the CBD and hence its success is proof for this theory (Mori, 2008).

### **Kenzo Tange**

Kenzo Tange should be considered as one of the pioneers of urban planning based on the original design and main skeletal structure. He believes that a developed city acts as a living organization and organism that no fixed and uncompromising design as the master plan can remain it in place, but only the plans that can regulate and provide simultaneously can be successful for Metropolitan. Tange in studying the problem above pays attention a particular subject. First Community to fulfill a variety of city functions which together are mutually necessary relationship sees. He considers the communication essential to manifest different applications that have mutual relationship. He believes that human being innately need direct relationships. Transportation is the substantial part and application of a city and builds the structure of a city. On the other hand Tange gives attention to the issue of space, especially in urban areas special. In his view, in the contemporary urbanism, the speed and scale that new technology made them possible, has destroyed the old spatial order. In addition, modern information technology and systems have a profound reflection in spatial organization. He concludes that the spatial organization is a network of energy and information. Spatial organization is an organization on a wider scale and informs the establishment of closer links between the elements and the flow of energy "(Hamid et al., 1376, vol. 1, 22).

### **Rob Carrier**

Rob carrier is a theorist in urban issues; he states that due to the loss of the city wholeness by dividing the city into functional components (by functionalism), city is fragmented and elements do not form an integrated system. Carrier believes that the integration of all activities when they find physical media, the urban fabric will be shaped and explaining the physical space is the same mix of activities which, in turn, makes the integration of human behavior and society. Tour, shop, talk, work and social communication cannot be separated from each other absolutely. In his view, realizing this issue would require a hierarchical system of distribution of land uses in the city to work together, but the scale and intensity and weakness are different. This pattern can guarantee the vitality of urban space and resources to meet the high costs of extensive transport network (Hamidi et al., 1997, vol. 1, 35). Carrier sees the modern urban spatial organization the reason for bringing scattered and inconsistent spatial composition due its lack of attention to the creation of urban spaces, particularly at the scale of implementation, and it is unable to respond to human needs and motivations. In confrontation with the negative consequences of modern urban development, he searches for good order and discipline in the pattern of the last cities (Hamidi et al., 1997, vol. 1, 35).

### **Subject records of the study:**

This article continues the researches that were conducted in the past, such as Noori's and Daneshparvar's studies. Rapid population growth in our country after the implementation of land reform and intensification it after the Islamic Revolution to due to lack of urban infrastructure commensurate with the acceptance of cities suffered populations caused unrestrained physical detachment. The process of urbanization and urban development in critical situations and in transition societies faced with various problems that inappropriate spatial organization is one of them. Of the main problems caused by inappropriate spatial organization that

today city is facing is uncontrolled development and growth of the metropolis. Now a lot of efforts have been fruitless to improve the situation and monitor the development of the city.

## Analysis Methods and Assessment of the Under Study Area

### Area Position

Zone No. two is located in the east of Hamadan between Shahid doctor Mofateh Boulevard in West. Shuhada Street - Khezrian - Khuzestan Boulevard. - Paradise Boulevard in North. Ayatollah Beheshti street in south. Covers an area of 1002 hectares and its density is 64 persons per hectare

### Population

According to the collected data districtone two has 19323 households and a population of 64400 people.

Hamadan population based on the 2016 population and housing census was 651,821 people. In this way region's share of the total population of Hamadan was 9.88 percent.

### Family Dimension

Based on population and housing census in 2016, the number of households in the city of Hamadan was 190,929. The household dimension is 3.70 in Hamadan. Assuming that only one family lives in each housing unit and that there is no residential empty unit at the local level, the number of households in Zone two can be obtained by counting the housing units. The number of households in zone two were 19323 and family size obtained as 3.33.

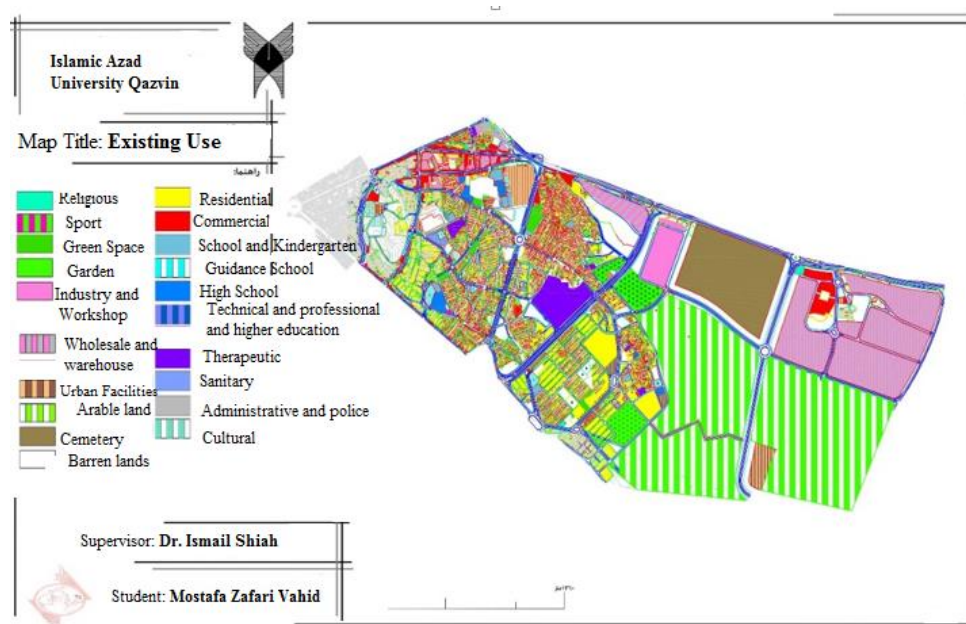
### Land Use Studies

Hamadan Municipality zone No. two is 1002 hectares the total area of which 38% is dedicated to the full texture and the rest was dedicated to the empty texture.

Empty texture of this area is 624 hectares that 329 hectares of farms constitute the empty area. Barren area of this zone is about 60 hectares. Filled texture is 377 hectares of which communicational and residential network with 43% and 36% dedicated to the filled texture of the city. Dedicated section to services in the area takes 21% of texture filled with 79 hectares and 12 square meters per Capita. Form Industries and workshops with 6.5 percent, health with 4.17 percent, and education with 3.3 percent and business with 2.3 percent have the highest level of the services texture in this zone.

**Table 1:** The physical characteristics of zone two of Hamadan Municipality in 2006, Source: Naghsh Consulting Engineers

Description		Surface (m <sup>2</sup> )	Percent of the total (m <sup>2</sup> )	Per capita (square meters)
Texture filled	Residential	1358590	13.56	21.09
	Services	943630	7.9	12.3
	Passages	1622460	16.2	25.19
	Total	3924680	37.69	58.63
Other uses		6243990	62.32	96.9
The total level		10019900	100	155.58



**Map 1:** The under study area

### Evaluation and Analysis based on Studies

Before the proposed plan for the area, in the subject of analysis and understanding we should pay attention to the possibilities and limitations of the development of area and we should evaluate a variety of solutions that can be used to the scope as development pattern.

### Development Limitations and Barriers

The development restrictions are those elements or factors which could pose an obstacle on the way of growth and development. These elements can be physical growth or economic and social development.

#### The physical limits of area include:

- Agricultural land and orchards in the eastern and southern sides of the area
- separating east and west part of the area by the main artery that takes observance of privacy the way in the development of the city
- Old Structures in the central part of the area and settlement with low incomes consider this important issue, that any intervention to restore and improve texture without government grants and incentives are unlikely.

#### Social and economic limits ranges include:

Low level of cultural and recreational spaces such as parks, shopping mall and ... are considered as culture problems in the area. But residents' commuting to the downtown will have traffic burden and economic cost for them.

- The municipality has not had stable income and the costs are on the shoulders of the residents of this area, which would be associated with residents' economic problems.

- The absence or lack of spaces such as cinemas, theaters and other cultural places indicate extreme cultural poverty of the area.

### Analysis by the Model Oregon

Version of "Oregon" by Oregon branch of "Association of American planners" and has been written by "Steven Ems" to promote and support the long-established urban planning and. The overall objectives in the formulation of the model include:

- Easy understanding of the plan for the future use
- People's participation and involvement in a way that it is in the form of intuitive destination
- Planning process and understanding its role in the process.
- Motivating people to learn more about their city and future destiny.

Oregon model is consisted of four steps process that each of these steps is founded based on a simple question:

1. Where are we now? (City Profile)
2. Where are we going? (Statement of the process)
3. Where do we want to be? (Vision statement)
4. How to get there? (Action Plan)

In this part because of the high volume of tables {argon} many examples of them are given.

**Table 2:** Models of Oregon Analysis, Source: author

Structure	Where are we now?
<b>Check use and activity system</b>	<ul style="list-style-type: none"> <li>- about 30% of the area is formed of first type old structures</li> <li>- special status of the northwestern area and its role in the cultural and religious field (hill Mosalla)</li> <li>- lack of per capita (education, sport, health, cultural, green space, installations and equipment) at the district level, district and region in per capita according to standard</li> <li>- high density and low density residential net index of residential gross index</li> <li>- empty fields and wasteland areas</li> <li>- large areas of agricultural land and orchards in the areas</li> <li>- uses annoying presence along the axis of Shuhada Street and the Khezrian Boulevard (Mass of repair workshops and small workshops)</li> </ul>
<b>Reviewing of public open spaces system</b>	<ul style="list-style-type: none"> <li>- failure to observe the hierarchy (local user with improper positioning)</li> <li>- the lack of a neighborhood center</li> <li>- lack of consistency of new tissue with old tissue</li> <li>- opportunities for the development of recreational centers and centers of religious activity and leisure (hill Mosalla)</li> <li>- a reduced role for social street in front of their passage</li> </ul>
<b>Check system of urban landscape</b>	<ul style="list-style-type: none"> <li>- lack of visibility in the areas and the presence of only performance indicators</li> <li>- the lack of identity in terms of perceptual and visual elements</li> <li>- visual disturbances of skyline in the context of full and empty parts of the areas due to frequent</li> <li>- Distressed areas with the poor quality of urban landscape in the North and North West (physical disturbance, visual, social, etc.)</li> <li>- lack of light in some passages</li> </ul>

	- lack of appropriate urban furniture
<b>Check the systems of navigation and access</b>	<ul style="list-style-type: none"> <li>- neighborhood residents' access to bus stops, taxi (public transportation) in neighborhood areas</li> <li>- low width passages</li> <li>- lack of public parking in the areas</li> <li>- lack of sidewalks with good width in the range of</li> <li>- existence of secondary arterial Ayatollah Motahhari and facilitate residents access</li> </ul>
<b>Evaluation system of Physical Form</b>	<ul style="list-style-type: none"> <li>- spontaneous development of industrial zone at the entrance of Malayer</li> <li>- existence of suburbia and informal settlements and exhaustion, microlithic buildings, high density in East areas</li> <li>- Unorganized state of martyr Beheshti town margin</li> <li>- lack of urban infrastructure under construction within settlements martyr Beheshti</li> </ul>

### Suggestions

As it was mentioned before, the features of each region or area or urban neighborhoods are different with each other. We can pay attention to the net and gross densities of urban planning. It is obvious that urban design criteria play the most important role in this plan. In this regard, the relationship between per capita, planning, and zoning and neighborhood service broadcasting were in direct contact with design and had cyclic state. Of course, urban designing perspective in the design of an optimal environment, beautiful and identity and the various factors of the artistic, cultural, social, economic and natural to urban design as well as the type of techniques that are effective in urban planning and design infrastructure network, in this case, is the determining factor. One of the factors that should be considered among the proposed plans for the city is devising land use plans based on different measurement model based on a hierarchy and the proper spatial organization of the city and acceptable the proposed model can be determined.

### Suggested Process of Neighborhood, Zones and Areas Constructing

One of the ways of urban public service broadcasting and the necessary cohesion programs in various areas of the city is considering division of the city in different areas of the city. In this case the future city due to the current situation has the following hierarchy.

The city in terms of elements is made up of a few points.

The partial status of city center and areas that help the city center should be considered.

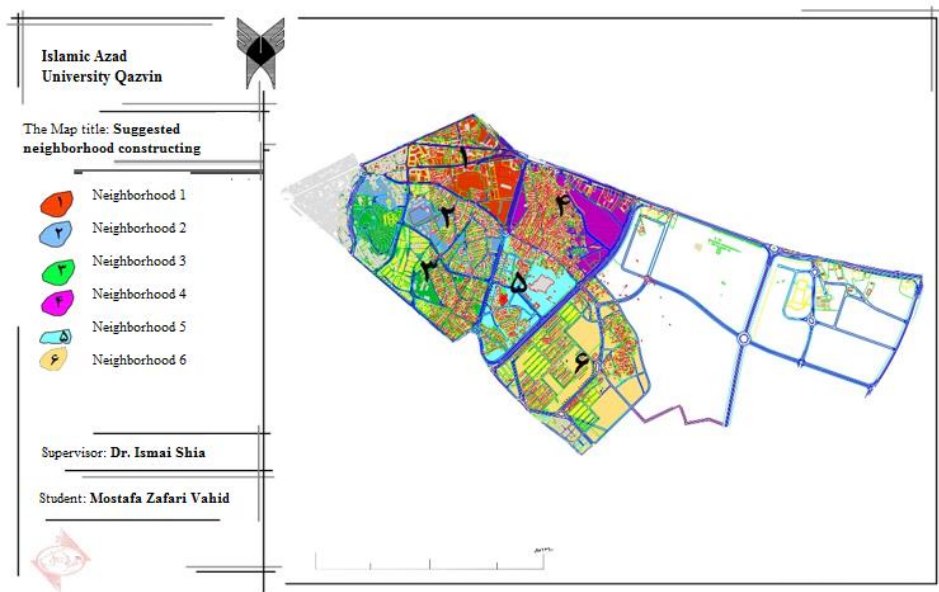
In any metropolitan area in terms of the hierarchy of urban areas and their number is designated based on central area.

In any urban area, the scope of neighborhoods and neighborhood centers are determined

Center of neighborhood and the neighborhood may be specified as the case.

So in this process we divided this area into two urban areas, 6 districts and each district is divided into 3 sub-districts.





Map 2: Suggested neighborhood constructing

Suggested use

In order to have more accurate and easier planning each city is divided into the area, district and the neighborhood, existence each or all of these users are required in a city subset. Also noteworthy bottom-up management attention is focused on neighborhood planning. The creation of the neighborhood planning is essential to the region. In this process, the area which has 2 urban districts, six neighborhoods were discussed that areas of each district is divided into 3 sub-neighborhood.



Map 3: Suggested use

## Conclusion

Spatial organization, as correctly stated is the basis for any decision-making in urban development. It is essential that the various actions take place at different levels in perfect harmony with the city Spatial organization that this association can be developed, and it can be able to perform the conceptual functions of "public structure with a focus on mobility structure", "create a hierarchy in towns divisions" and "reinforcing visualization and urban identity factors". The role and status of urban elements in the main skeleton should be determined and explain that the internal layout of the city should not go towards chaos. In other words, the rebellious nature of town, in the case that we do not pay attention to the main spatial organization and space infrastructure will be changed so much that no regulation, identity and coherence will be left for cities. Since Hamadan has been considered as of our country's history and civilization capital and always played a national and international role, considering its spatial organization and especially the sample of the current study is essential in shaping urban form in layers. In a way that the most important part of system of decision-making has been defined as urban planning in the context of achieving the strategic policy of the city site location plan. This study aims to determine the hierarchy of spatial organization the Hamadan district No.2 in terms of establishment of land use. Due to the lack of a coherent Spatial organization in district No.2 of Hamadan Municipality, it was suggested that current area should have six neighborhoods take that each one should be composed of three sub-neighborhood and two areas were accounted for six neighborhood that make up the total area that their use was investigated in proportion to population in centers, areas, neighborhoods. It is essential that urban management systems, by completing and upgrading what is presented in this study, in decision making, scrutinize every city spatial organization location data and avoid transient decisions and mere attention to the small scale without considering the role of each section in the further and more massive layout. We can also by providing policies and strategies highlight the readability and optimal transmission concepts in cities spatial organization as key areas of urban planning and by this process we can obtain more readable and associate cities.

## References

- Pakzad, J. (2006). Urban design theories and processes. Tehran. Shahidi Press.
- Pakzad, J.(2007) Course of ideas in urban development. first volume. Department of Housing and Urban Development. New Towns Development Corporation
- Pakzad. J. (2010). Essays about urban design. Tehran. Shahidi Press.
- Hamidi, M., et al. (1997). The skeleton of Tehran. Tehran Engineering and Technical Consulting Organization, Volume 1
- Zakavat. K. (2005). design policies status the guiding system and Urban design. Essays Journal of Urban Development, Number 13 and 14.
- Zyary.k. (2006). urban land use planning. Tehran University Press.
- Said Nia.A (2004). Land use. The Green Book of municipalities. Publications of the country's municipalities and village administrators
- Shamaei AS, pour Ahmed of (2005). Upgrading and urban renewal from the geographic perspective. thran Tehran University
- Shieh. A. (2003). The city and region in Iran. Tehran. University of Science and Technology
- Alonso, W. (1964) "Location and Land use" HarvardUniversity Press.

Anas, Alex, and Ikki Kim, 1996, .General Equilibrium Models of Polycentric Urban Land Use with Endogenous Congestion and Job Agglomeration,.Journal of Urban Economics, Vol. 40, pp.232.256.

Bacon / Edmund (1967) "Design of Cities" by Thames and Hudson Lt., London.

Erickson, Bill (2002), Approaching. Urban Design. TheDesign Process. Edited B Marion Roberts & Clara Greed, Long man. England.

Mori, Tomoya. 2008,Monocentric Versus Polycentric Model in Urban Economics,Kyoto,Institute..