Redesig of Urban Spaces with an Emphasis on the Relationship Between the Physical Environment of the City and the Behavior of Citizens (Case study: *Adl* Street in Qazvin)

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Abstract

Urban spaces are considered as important elements in the urban structure. These spaces are scenes in which the general activities of urban life take place and they are able to provide an opportunity for the development of innovations for the people and to act as a recreational and constructive environment in an urban collection to provide a setting while every human being would need to perceive his or her position. One of the factors in satisfaction and gratification of citizens toward the city and urban spaces is the effective connections of spaces and different land uses with the states and behaviors of the individuals. A theory is necessary to describe the urban spaces and to make models of reality. Therefore, new paradigms like environmental psychology and behavioral sciences came into being which attracted the public attention to a viewpoint to conduct the human studies in urban design. According to this, we must identify the behavioral patterns of the space users by identifying the behavioral mechanisms of the citizens in physical environments to provide multi-functional, flexible spaces that are responsive to the citizens.Unfortunately, in spite of many capabilities for enhancing the behavioral patterns and social interactions of the people, several urban spaces are degenerated due to the lack of attendance and attention to their physical environment as they are no more hosting citizens.The following research is a descriptive-analytic type which is done in a qualitative method with the aim of redesigning the urban spaces with regard to the influence of the physical environment on the behavior of the citizens. An effort was then made based on the field data and registering the behaviors by observations and through the subjective images of the citizens, it was analysed by using subjective questionnaire and SWOT matrix, and eventually a number of recommendations are presented to organize and redesign the *Adl* street in Qazvin in order to enhance the behavioral pattern of the citizens.

Keywords: Urban space, Physical environment, Behavior of the citizens, *Adl* street in Qazvin

1. Introduction

Nowadays most of the world's population reside in cities. Cities which are manufactures of the human being but it will ignite emotions, sentiments, and stresses unconsciously because cities are the living spaces of the human beings, too. To harness these stresses or to reduce the abnormalities, we should find a pathway beyond the methods that are employed by the authorities regarding their policies toward this subject. Earnings as one of the solutions to convince the rules and axioms of urban life to the citizens can cause stress and sensitivity together with respites due to its innate essence, or public education is always an expensive choice due to the cultural differences, the difference between social bases and education level of the citizens. Therefore, finding an efficient strategy for Behavior management is one of the most important responsibilities of urban design and management, the relationship between the space and Behavior is rendered through different sociology, psychology, geography and architectural viewpoints which resulted in the creation of theories which are symmetric to the viewpoints of these sciences toward this subject, while the vector sum of all of these theories has an emphasis on the relationship between space and the Behavior.

Each of the employed symbols in the urban spaces, including nodes, links, statues in the center of squares, towers and gates, also the public spaces which include collective memory for the citizens and the arrangement of urban elements with different land uses has a message altogether, as they accordingly call for the specific Behavior from the observer.

2. Statement of the problem

Urban environment makes possible a maximum of connection between people and their surrounding dwellings as it belongs to all of the citizens that gather and meet in such spaces, as a place for cultural exchange, leisure and social life, a position which is easily accessible for all of the citizens and they are active in it.

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Nowadays, identification of different spaces of a city and to make a correct design is a pathway for the wellbeing of its resident society. Urban spaces that are fit into the framework of dwellings and habitats, is distributable in different scales across the city and they mark different turning points. Valuable open spaces that play the role of a motive for the arrangement of meetings and discussions, as it invites the citizens from their private spaces and isolation to the collective and lively environments. These spaces, are considered as a part of public activity areas and are the factors in the development [growth] and dynamism of a society.

There was a general focus on the development of such spaces in old cities, and unfortunately nowadays these spaces are not much considered in urban design due to several reasons including economic issues and such

existing spaces are eliminated due to some reasons. On one hand, this point is nowadays forgotten that movement is not the only demand of the human beings from the spaces between the buildings but this movement comes along with stops, waits, and stagnation which is expected from the human behavior.

Therefore, nowadays out urban design can have a more fundamental role in the development of living spaces for humans beings.

Ald street in Qazvin is listed as the streets with lack of proper connections and interactions for the citizen in such spaces due to disregarding the physical elements, despite the presence of current potentials.

Therefore, we aimed to develop the suitable quality of this urban space by elevating the physical conditions of *Adl* street and to create a dynamic urban space for the citizens.

3. Theoretical Framework

3.1. Urban Space and its Dimensions

City is an immense work of the art which has creators as big as itself equal to its population "The ultimate goal of a city is to develop an innovative and nurturing environment for the people who live in its substrate" such an environment with considerable diversity, can provide the individuals with the freedom of choice and it paves the way for innovations and creativity, the urban space brings the most strong connection between the people and their surrounding habitat.

Urban spaces are nothing more than the everyday life environment of the citizens which is consciously or unconsciously perceived in the course of roads between their homes and workplaces (Pakzad, 2014: 32), therefore the urban space is the most important substrate in which the citizens utter different behaviors. Table 1

Table 1
Urban spaces through the viewpoint of theorists

| Scientist	Definition of urban space
Le Corbusier	The urban space is an infinite, immaterial and subjective space that just separate the buildings.
Schultz	Link between the concept of urban environment with the concept of social membership and collective residential scene (gathering despite all disagreements)
Rob Krier	He considers the urban space as "external space" of it and various type of spaces between the buildings in the city and other places and basic elements of urban spaces as the squares and streets.
Lynch	Urban space is one of the important elements in the urban readability, which he considers as a key factor in recognizing the city and the fundamental relationship between citizens and the city.
Tibbalds	Location of mutual impacts and actions between the people and neighborhoods with physical and visual of the l
Zucker	It includes special visual and dynamic connection. It has an orderly, decent and organized structure which is designed for the human activities in the terms of physical aspects.
Madanipour	It includes people, events and their internal relationships, which is the shared context for the functional social activity of society members.
Tavassoli and Bonyadi	element of urban spatial structure and the flow of cultural, social and political within
Bahraini	The scene for the occurrence of public urban life activities.
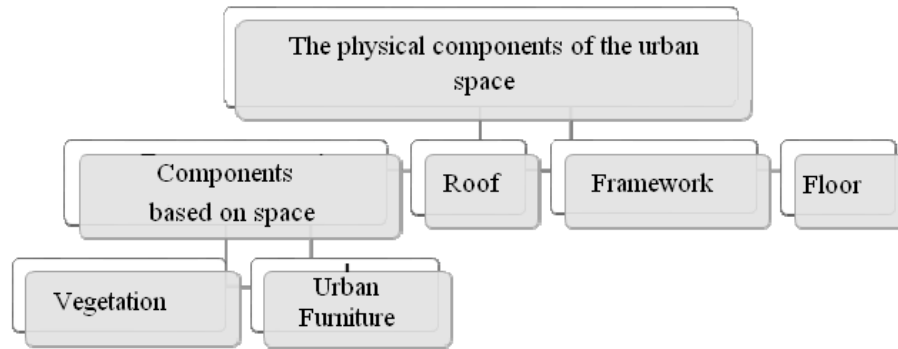
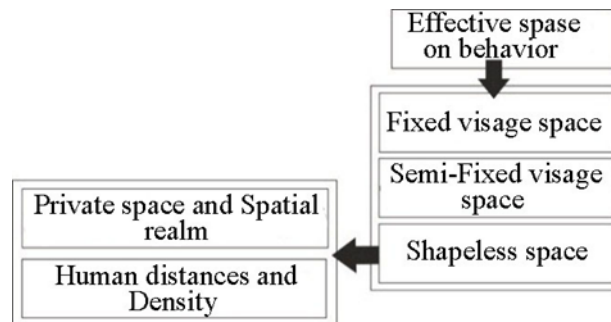Fig. 1 Constructing physical components of urban space
(Moughtin,1995 :91)

Fig 2. Impactful space on the behavior
(1376, Hall)

3.2. Environment and Physical Environment
3.2.1. Environment

Environment referred to whatever that exist in the surrounding and becomes potentially related to the individual, even though the individual does not have the possibility to receive all of the data (Pakzad, 2014: 58).

In other words "Environment is a complex and combined concept which has various dimensions. Spatial data, social, cultural, physical, architectural, symbolic, geographical and biological aspects include some of the important dimensions of the environment (Mortazavi, 2001: 31).

3.2.2. Essence of Physical Environment

The most important issue in recognizing the role of physical environment in the lives of people is the understanding the quality and quiddity regarding the definition of environment. The word environment have various different meanings which makes it difficult to come along a unique definition of it. Oxford dictionary describes it as The surroundings or conditions in which a person, animal, or plant lives or operates. "The environment is referred to whatever that exists in the surroundings and is potentially in the relationship with the individual. Although the individuals may not have the possibility to perceive all of the existing data. The environment is consists of all of the data which are transmitted from our environment". These potential data can be transmitted both from the natural and artificial environment (Pourjafar, Sadeghi, 2008: 98).

According to the different viewpoints of the psychologists, we can conclude that the physical environment is a part of terrain, geographical or cultural environment. Organizing the physical environment affects the mutual relations of the people and the geographical environment and it is slightly influenced by the changes in the cultural environment of the people. So, in fact, the physical environment is referred to the living space of human beings or to the physical space surrounding peoples in other words.

3.3. Behavior

Behavior is referred to the quality of performing an action. Human behavior is a consequence of personal motives and demand together with the capability of the environment, the subjective image of the individual from the outside world which is due to the meaning that this image makes for him or her. Therefore, each activity can take different forms to itself under the influence of situations and it can result in various types of behavior. As an instance, sitting, or squatting or lounging on a bench are the different activities regarding the action of sitting (Pakzad, 2014: 48).

Behaviors are led by the conceptions and viewpoints of the individual from the social and artificial environments (Altman, 2003).

3.3.1. Behavioral Patterns in the Environment

In urban design, the spatial behavior of human is a concept which describes the relationship between the artificial environment and its resident human beings. A "good"

spatial behavior is the indicator of a successful urban design while "bad" spatial behaviors can be an indicator of waste in the resources and a reason for the dissatisfaction of the residents (Whyte, 2009: 1). Since environmental psychology has a significant role in research the interaction between human and the environment, it is against the approaches which study the environment or human beings as separate [isolated] entities. Thereupon, this science believes that to perceive the environmental issues we should consider the dependency on the communication. Indeed, the environment is considered as the container while the human is the contained.

In the following table, we pay attention to the ideas and notions of theoreticians regarding behavioral patterns in urban spaces.Table2

Table 2
Notions of theorists regarding behavioral patterns in urban spaces

Theorist	Date	Theory	Key elements
Irving Kaufman	1967	Analysing behavior in public spaces	Intimacy between the human beings and reinforcement of social tendencies.
Roger Parker	1968	Behavioral setting	Continuous activity, territory and environment, local environment structure and behavior, timescale.
Irving Altman	1975	Environment and social behaviors	Privacy, private space, realm and congestion.
Amos Rapoport	1977	Human aspects, city form	The nonpassive situation of human being toward the environment, pedestrian
William H. Whyte	1980	Social life of small urban spaces	Emphasis on the social role of urban spaces
Habermas	1980	Theory of communicative action	Human relationship with the environment
Romedy Passini	1984	Wayfinding in architecture	Navigation of the people in urban space and attention to the specific demands of the users
altamont, Hollowell and Moore.	1985	Evaluating visage of the city	Analysing the psychological-subjective impacts of urban spaces on the people.
Jan Gehl	1987	Life between buildings	The activity groups in the urban space (Urgent, selective and
Jon Lang Hossein Bahreini Behnaz Aminzadeh et al.	1987	Creation of architectural theory (role of behavioral sciences in the design of environment)	Perception of the human being from the space, public conceptions of the environment
Hossein Bahreini Behnaz Aminzadeh et al. Laghaie et al.	1996	Analysing urban spaces in regard to the behavioral patterns of users.	Providing desirable design regulations with qualitative and quantitative analysis of the
Behnaz Aminzadeh et al.	2002	Recommended design and behavioral patterns for reforming urban parks.	Compatibility [consistency] and flexibility of local behavior through studying the hierarchy of human demands.
Laghaie et al.	1991	Revitalisation of city park in Sangelaj area with the aim of enhancing the ecologic and social quality	Identifying all physical, biological, social, cultural and

3.4. Interaction Between the Physical Environment and the Human Being

In fact, experiences of each individual in his or her own life and the skills that he or she receives is related to the environmental conditions and the results of the mutual influence of that individual and the environment that he or she lives in, as the environment influences the human behavior by developing opportunities and to persuade and stimulate (Rahbari Manesh, 2012: 1). The environment in which citizens perform their programs and activities include two-way mutual relationships. People influence the environment and the environment influences the people. Environmental recognition is influential on the formation of activities in different spaces (Daneshgar Moghadam, 2011: 29).

3.5. Sociability of the Physical Environment

In order to study the collective interactions in the space, Hall has studied the concepts of sociability. He believes that studying each space of activity demands a specific encounter depending on the normative context and current behavioral events in the space. In his studies, environments are categorized into two sets of sociable and unsociable environments (Lang, 2017). Sociable environments encourage and persuade social interactions while unsociable environment reduces social interactions (Hall, 2003).

3.6. Relationship Between Behavior and the Environment

Rappaport categorizes behavior and the environment in three layers: determinism, possibilistic and probabilistic environment.

Determinism: In this theory, physical environment has a direct relationship with the type of behavior. It seems that the environment develops a type of force [congency] to use a certain type of behavior in which the behavior and culture idea is not present.

Possibilistic: This theory puts forward the possibility or limitation of the environment and it describes how behaviors are shaped based on cultural concepts. The discussion of flexibility is presented in this case, one of the other instances which can justify environmental possibility is the situation of benches in a neighbourhood park (one is located in the corner and the other one is in the transit passage) and the impact of cultural concepts becomes important as the possibility of sitting on both benches is provided.

Probabilistic environment: In this theory, environment increases the probability of occurrence of certain behaviors due to physical conditions. In other words, the environment provides a collection of conditions which increases the probability for the occurrence of some behaviors in comparison with other behaviors. According to (Abbaszadegan, quoted by Khatibi, 2013: 5), the topic of diversity and freedom [right] of choice is presented in this regard.

This study uses the Probabilistic nature of the environment.

3.7. Environmental Psychology

We influence the environment and we are influenced by it. For this interaction to take place, we must perceive the environment, in the terms of perceiving it by collecting [deducting] the data from our periphery environment through the five senses and to organize them for recognition (Carmona, 2003: 168). Nowadays the architects and urban designers have a special attention to identification of human behavior in this environment. The point that separates environmental psychology from other subdisciplines of psychology is the analysis of the relationship between human-psyche based behaviors and the physical environment (Motallebi, 2011: 53).

According to the subject, an effort was made to relate the urban environment and physical environment with the behavior of people.

Therefore, the definition for each of them is presented, and impactful spatial qualities on the behavior and relation between the physical environment with the behavior were studied based on the theory of Rappaport.Figure3

4. Research Method

According to the goals, the following research fits in the category of applied studies since it tries to analyze one of the urban issues by using the existing contexts and basis and to provide a number of recommendations in this regard. It is a descriptive-analytic research in the terms of form[characteristic] and method since it has a focus on the relationship between the physical environment and behavior of the citizens.

4.1. Data Collection

For the collection of data, library documents, including books in Persian and Latin languages, professional journals, master theses, etc., together with internet websites and also the field research was employed.

4.2. Tools of Data Collection and data Analysis

For the collection of data a number of tools including observations, photography, data banks and computer networks are used and in order to analyse the data the physical analysis was performed which pays attention to the pathology of sidewalls, flooring and furniture in the research area, also the SWOT method was used in order to identify and evaluate the weaknesses and strengths and to determine and analyse the existing threats and opportunities and we offered a number of suitable solutions and recommendations through the viewpoint of the citizens after receiving the cognitive map and subjective questionnaire. In order to develop the maps Corel Draw, Photoshop and Autocad software were employed while Google SketchUp 3D software was employed in order to provide the recommendations.

5. Case study and the findings of research

Adl street is one of the main artery roads of Qazvin. Thi street is located in the 2nd municipality district and it is considered as being situated in the central texture of the city.

The mentioned street is among the somehow older streets of the city. One of the oldest gates of Qazvin city (Kooshk gate [Darb-e Kooshk]) is located in the vicinity of this area. Also, the diversity of land uses including schools, banks, clinics and commercial uses in this street have caused the recourse of several resident or non-resident people.
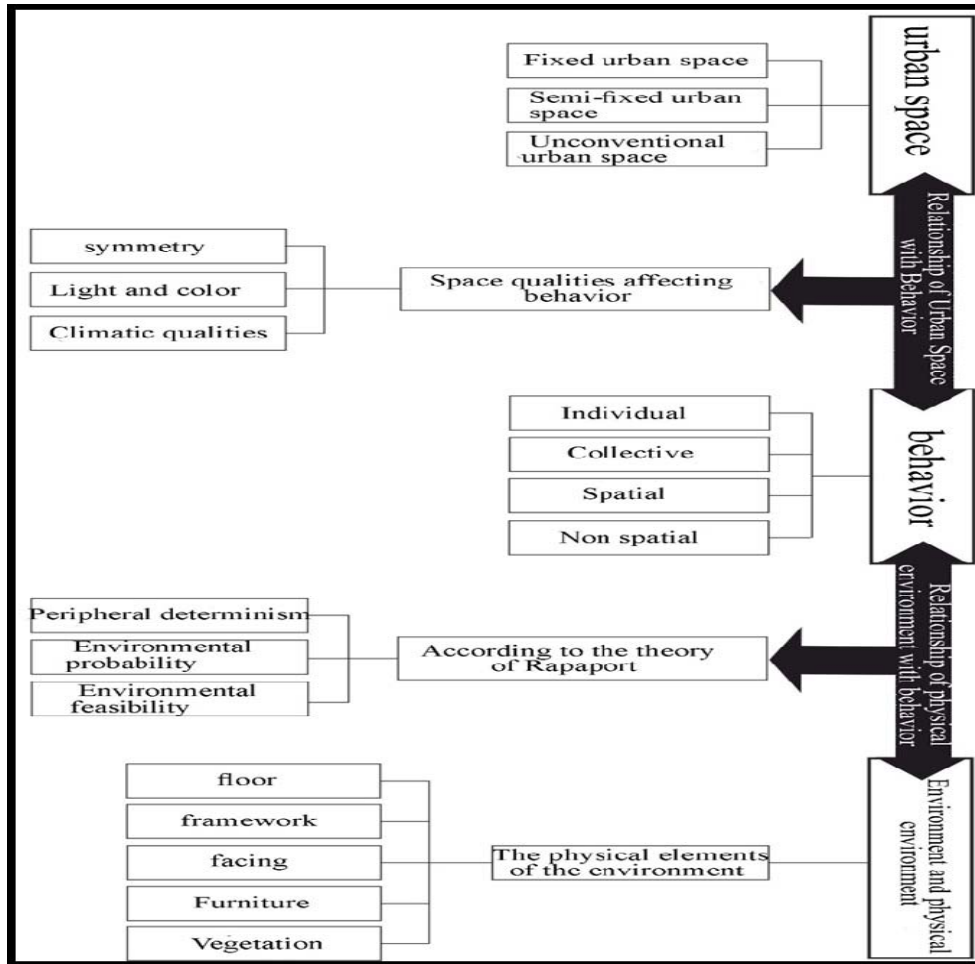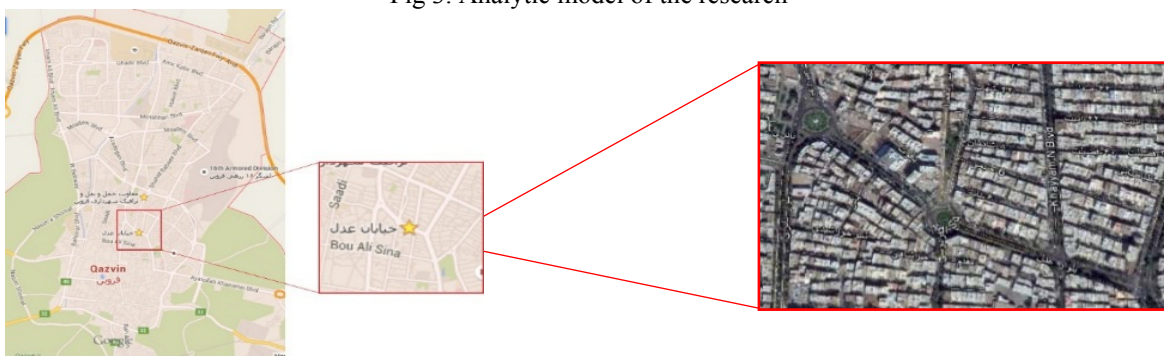

Fig 3. Analytic model of the research

Fig 4. The position of the street in the city of Qazvin

According to the studies and the achieved recognition on the case, we have reached for a conclusion that the *Adl* street is a street that is considered as the central and half-modern area of the city in Qazvin.

5.1. Scope Recognition Maps

Fig. 5.Use rmap

Fig 6. Perceptual organization map

Fig.7. Indicator Centers

6. Case Study Analysis

After identifying the case study and illustration the ap and appointing the research method, also by

recognizing the subjective image of the citizens toward *Adl* street, we will analyze the physical and behavioral dimensions in this area.

The data analysis, in general, is as following:

1. Analysing the subjective questionnaire and the illustrated cognitive images by the citizens.
2. Analysing the gatherings from the survey in different parts according to the physical

dimensions and dimensions and subsequently to extract maps.

3. Using the SWOT method to analyze the weaknesses and strengths, opportunities and threats in the research area.

6 .1. Conduct Method and Cognitive Maps

In this question, citizens were asked to locate the movement path in the research area and typical elements which they have in their minds.
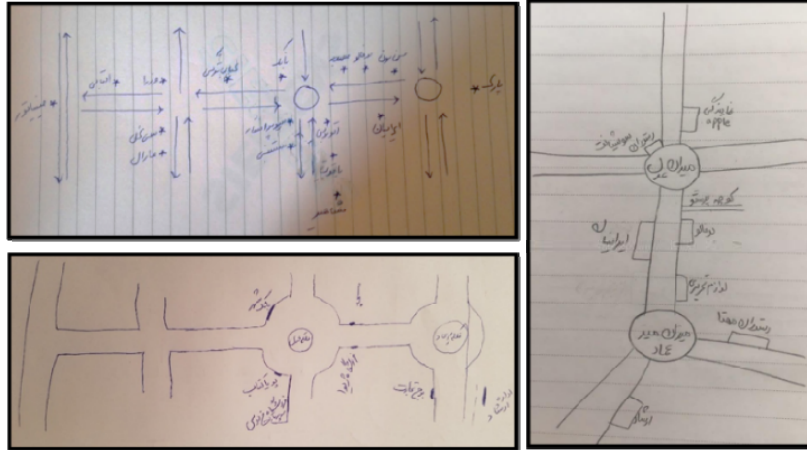

Fig. 8. Examples of cognitive maps of citizens

Analysing Cognitive Map

The percentage for use of symbols, nodes, and routes is offered in the following chart. Table 3

Table 3
Percentage of usage of the landmark , node and path

Percentage of usage of the landmark, node and path	
98	Landmark
70	Node
98	Path

As it is evident in the table, people have mentioned the symbols and routes are higher compared to the nodes which signify the higher importance of routes and symbols of the people.

After completion of illustrating cognitive maps we have figured out that some of the urban spaces have a more significance for the citizens comparing with other spaces and some of the urban spaces are also mentioned by the authors, therefore we provided a table and the degree of importance for each of these spaces are specified for the citizens. Table 4

Table 4
Percentage of urban space quoted by citizens

Percentage of urban space quoted by citizens	
90	*Adl* street
80	*Adl* square
80	Miremad square
95	Khayyam street
42	Ferdosi street
74	Modarres Boulevard
36	Darb-e-kooshk
98	Iranian Mall
90	Miremad doctors' building
95	Sansovan fast food
65	Ansar bank
32	*Adl* mosque
23	parking
90	Vozara Coffee Shop

By considering the performed studies related to the subjective images of the citizens we will figure out that the cognitive maps of the people do not reflect precise images of the real world and they include some faults within.

- The first fault in this research was that the cognitive map of the people was incomplete, they tend to eliminate the secondary details and the main important details in some cases. As an example, many of
small routes and pathways were forgotten in these maps. Also, some of the main places were not inscribed in a number of maps.
- The next fault was that the cognitive maps were falsified, for example, the distance between spaces were indicated as much shorter or longer.

- The point that has a major role in the subjective image of the citizens were the main roads and **commercial land uses**.
- Also, a number of citizens have not recognized the location of the street very well.
- The next fact is that only a few of people have remembered
Darb-e Kooshk

while is one of the important historical sites in Qazvin and this may be due to the insufficient attention that is directed to this important structure in the terms of physical environments and its surroundings.
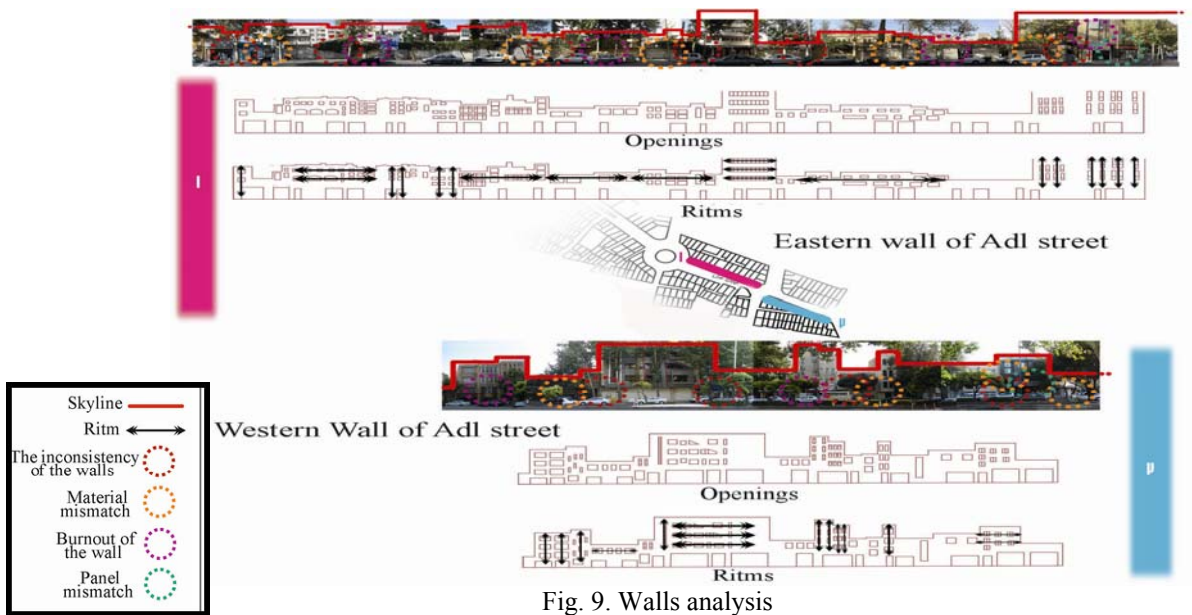
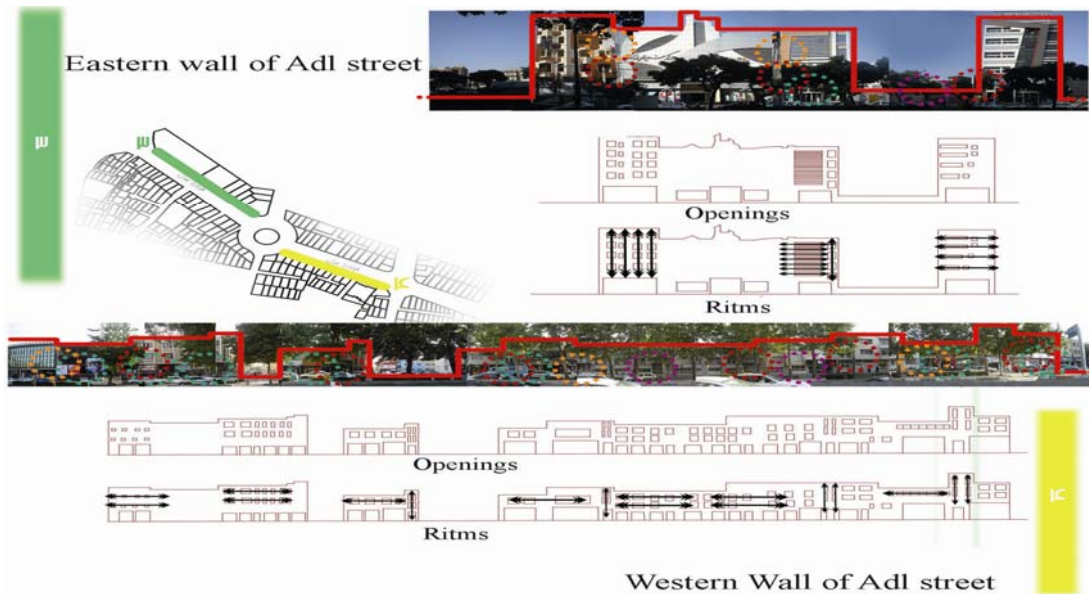### 6.2. Physical analysis

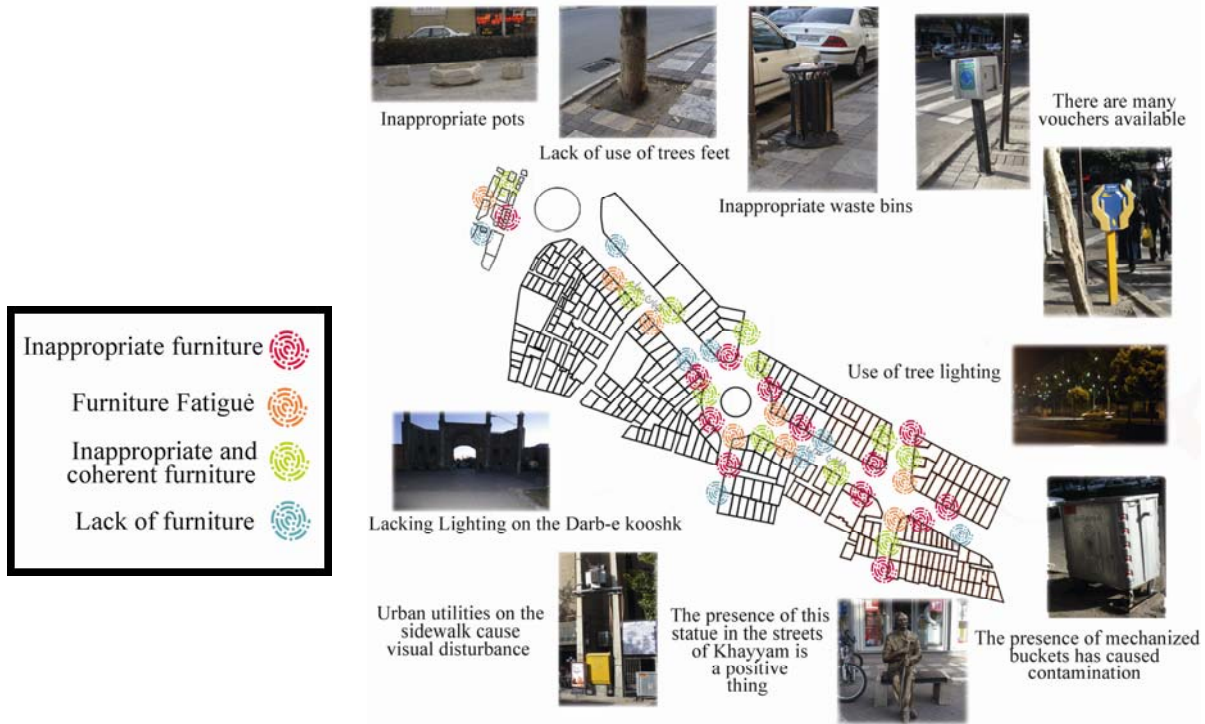Fig. 9. Walls analysis

Fig. 10. Walls analysis

Fig11. Furniture analysis

6.3. Analysis of behaviors

After the physical analysis of the area in this research we analyse the behavior of the residents.

By observations and photography in the case study area (*Adl* street), the behavioral patterns of the citizens are categorized into the following sets:

1. Standing and waiting
2. Standing to watch
3. Standing to talk
4. Sitting and waiting
5. Standing for boarding
6. Activities like using ATMs
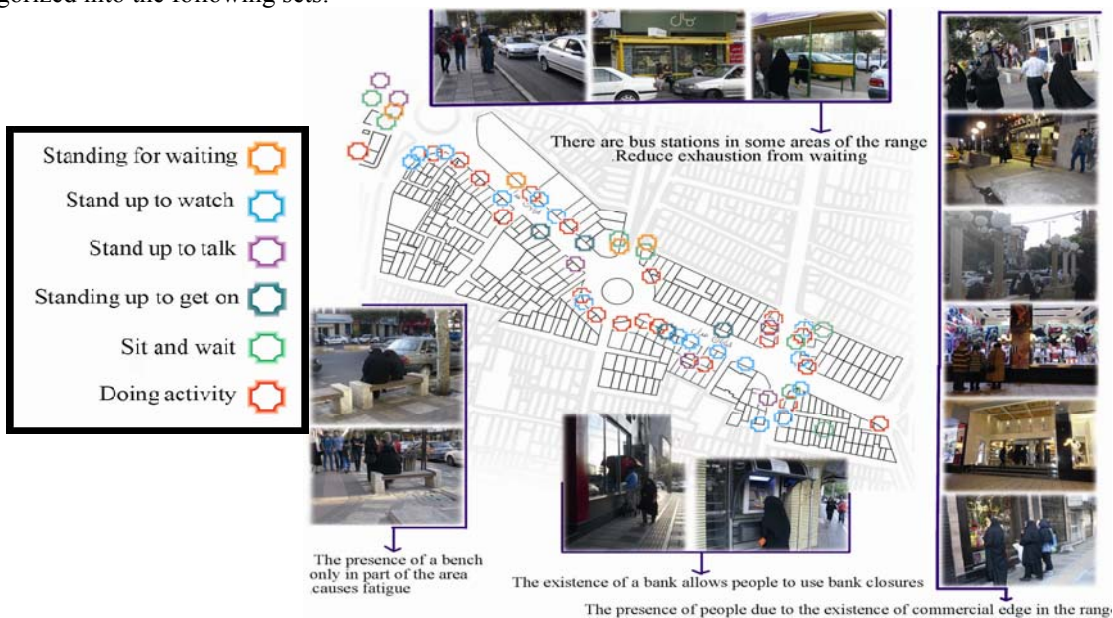7. Non-stop movement.

Fig.12. Analysis of behaviors

6.4. Data analysis using SWOT Charts.

Table 5
Data analysis using SWOT.

	Strengths	Weak points	Opportunities	Threats
Physical and structural	1. Adjacency with Darb-e Kooshk structure as the the area source of identity in	1. lack of employing local material in the constructions.	1. An opportunity to revive valuable buildings	1. the threat of flowing surface waters in uneven lands.
	2. Presence of desirable degree of the enclosure in defined open spaces and other open spaces in the area.	2. Inappropriate flooring of the pathways	2. The possibility of preserving old buildings	2. The threat of waste accumulation in the abandoned lands
	3. The comparative similarity in the buildings is present in the terms of heights of the buildings.	3.lack of applicative urban furniture.	3. Increase of the public participation in enhancing the physical condition	3. Increase in the texture decay in the absence of mandatory proceedings.
		4.The high rate of the decay in the buildings, especially about neighboring buildings of the Historical Darb-e Kooshk.	4. Spaces for the demolished buildings or abandoned spaces provide a desirable potential for developing urban spaces.	4.Debilitation of existing valuable buildings and collections in the texture including Darb-E Kooshk.
		5.The existence of supplementary and unwanted elements.		
		6. Loss of open urban spaces in the area texture.		

|	Strengths	Weak points	Opportunities	Threats
Socio cultural factors	1. Comparatively desirable security due to the activity and movement of the residents and nonresidents..	1. Lack of residents' participation on enhancing the events.	1. Opportunity for physical and functional organization of action nodes in order to increase the liveliness of the space.	1. Threat of fading the role of action nodes and social identity in the research area texture.
	2. Presence of commercial units in *Adl* street	2. Deficiency in green spaces and parks in the research area leads to the decrease in the interaction of citizens.	2. Opportunity of developing parks and green spaces in the existing abandoned lands in the area.	2. Threat of decrease in the rates of space liveliness in the area because of the physical issues.
	3. Sociability for the people in the research area.	3. Presence of destructive social factors (presence of addicted people because of the abandoned arid lands.	3. Opportunity for attending the historical element (Darb-e Kooshk) to enhance tourism by attracting the.	3. The security thread is probable in the lack of management for the abandoned buildings.
	4 - Presence of different strata in the terms of gender	4.Lack of social nodes and gathering places in the green space in front of Darb-e Kooshk.	4. Possibility of injecting special cultural activities (Cultural, artistic, etc.)	4. Comparative monotony regarding the social functions in the most of the area of the region have caused to the increase in the interactions.
	5- Comparatively desirable readability in the region	5 - lack of open spaces for the kids	5 - Capability of attracting different people due to a diversity in opportunities and actions.	

7. Recommendations
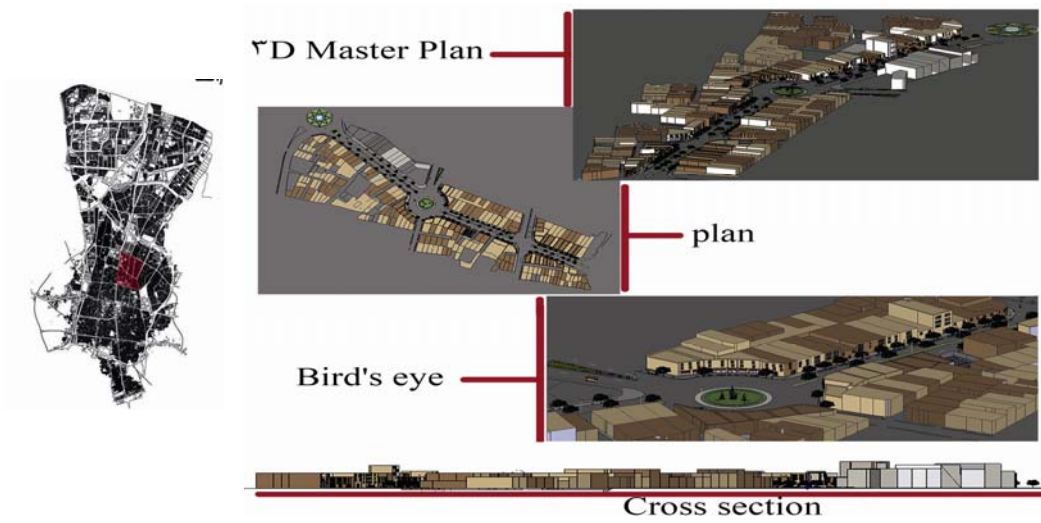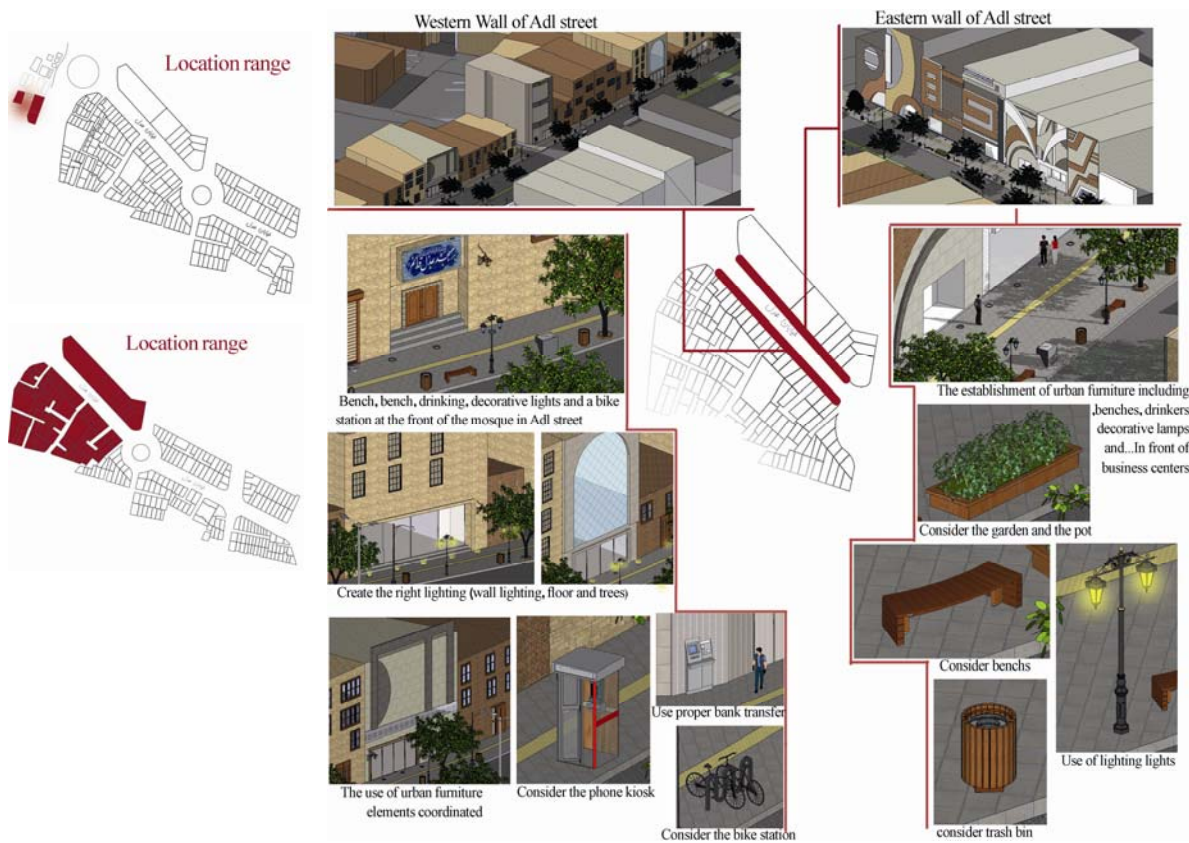

Fig 13. Recommendations of *Adl* street

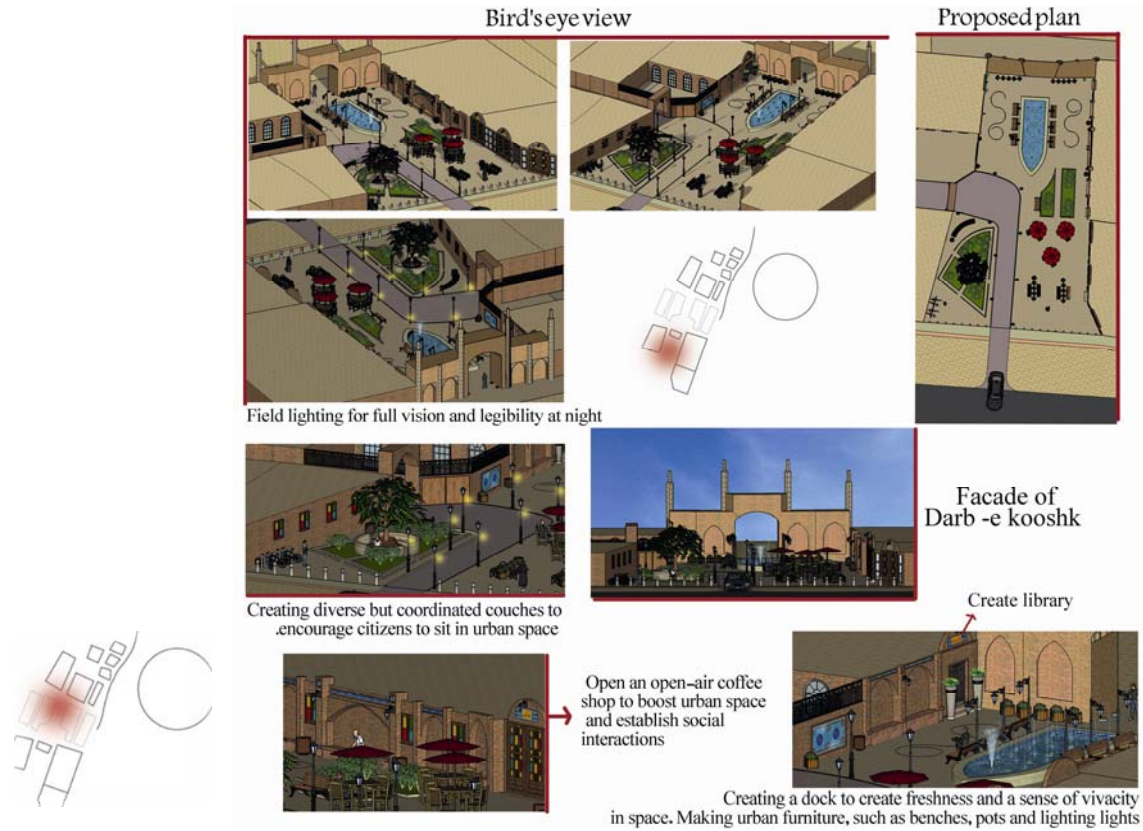Fig 14. Recommendations of *Adl* street

Fig. 15. Creating lighting for the readability and presence of citizens at night

Fig.16.Creating a hearth for shading at noon

Fig. 17 .Fitting the right furniture and water pond to create a
refreshing and vibrant city atmosphere

8. Conclusion

The scarcity of proper urban spaces is an issue which is evident in most of the urban spaces of Qazvin, especially in the area in this research. According to the fact that we consider city as a living entity, existence of this issue means that city lacks one of its organs and it is a disturbance in the physic of the city, and we cannot expect good behaviors and social interactions from the citizens with the existence of such disturbances in the city since these two topics are much related to each other.

In the following research, with the mentioned concerns which are the main goal of the research, we tried to establish a suitable connection between the physical

environment and behaviors of the citizens by organizing and redesigning the urban spaces. Based on the recognition and analysis of the case study (*Adl* street) we concluded that this area has a large number of potentials for developing a better physical environment and consequently for the reformation of behavioral patterns of citizens. Topics which include historical structures which can be defined as a spot for absorbing foreign tourists and social interactions of the citizens. The aim of the research was to develop spaces based on the demand of citizens to provide a lively substrate and suitable behaviors in addition to the visual beauty and proportions in a way that it becomes attractive for the individuals and groups of the people and to satisfy their needs.

Many obstacles and issues were situated along this pathway, issues which include the unresponsive citizens while answering the questions together with the absence of cooperation in photography and the traffic in the area, etc., but there was an effort to reach for the mentioned data accurately and by respecting the privacy of the citizens.

We hope this research can help the citizens and their wellbeing and the enhancement of the physical environment in *Adl* street.

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