Identifying the Past Urban Signs to Promote Readability (Case Study: Torbat-e Heydarieh, Iran)

Vahid Ahmadi[1], Arefeh Pileh Chian[2], Faezeh Khoda Shenas[3]

1. Assistant Professor, Department of Architecture, Mashhad Branch, Islamic Azad University, Mashhad, Iran
2. Bachelor of Architecture, Khavaran Institute of Higher Education, Mashhad, Iran

Abstract

A city must have some features and characteristics that provide comfort and convenience for the human. Urban signs have always existed throughout the history. Therefore, it is so good to take a step in promoting the aesthetic of image of the city. Reduction of readability in cities that seriously we are facing today is an important issue, because it causes the lack of understanding the mental map of the city and people won't have tendency to travel in these cities. The purpose of this study was to continue the promotion of the cities' readability and find memorable signs. The research method was quantitative. For data collection was used library and field researches by Excel tool as data analysis. The case study was chosen Torbat-e Heydarieh. The purpose of the study was analyzing the signs which do not exist, but they remained in the residents memories. The characteristics of signs were identified among literature review and determined by field research. Results show that location of signs along the length or crossing the main axis of the city enhances their importance for citizens. The most common signs of the city reflect the importance of the old signs and lack of the new appropriate structures to be known as a sign in both terms of application and visual aspects. This study provides recommendations for designing buildings by using the idea of the unknown signs or even putting names on the new structures which are built in the same place to remain in memory.

Keyword: Signs, Readability, Torbat-e Heydarieh, Image of the city

Introduction

Town is full of meaning and signs that imply it and can lead to the generation of sign-semantic currents [1]. Urbanism history represents the old history of urban signs. Man can walk more easily in this town dominate it. In simpler terms "visibility" can be considered as a combination of "the ability of physical components in the environment to provide a clear picture" and "the ability of the observer to select, process, store, organize and give meaning to the picture in a mental way" [2]. Bentley [3] and Madanipour [4] mentioned that readability as the essential quality in the living environment and urban spaces plays a significant role in the sense of orientation, reducing sense of being lost, and quick familiarity and communication with the environment by people. While ensuring readability in shaping the coherent and proportionate image of the city is an important issue in urban design. So every town or part of it in order to create a clear image in the minds of its inhabitants requires that the individual be able to easily identify parts of image of the city and connected it together in an interlocking form in the mind, and in general prepares the possibility for creating a readable image of the city. In order to develop readable and

----
*Corresponding author.
vahid.ahmadi@mshdiau.ac.ir

identity oriented cities for residents, the first step is to combine and structuralize the urban environments such that one can be in the most convenient possible way and by analyzing this structure, develop and combine a modern and specific overview of the town in his mind [2]. The relationship between man and sign is bilateral; since interaction and human will relate the sign to the meaning and turn the sign into an experienced element. However, it plays an important role in the richness of individual and social character. The way the signs creates for us ahead, is not a unique and absolute path. It is like a road with myriad ancillary ways, by choosing any route the possibility for reaching other destinations will be provided [5].

1. LITERATURE REVIEW

Image of the city is real manifestation of the lifestyle and insight of its inhabitants. In a way that throughout history, geographical factors, has never had such a decisive impact on the way people's life and their insights. This image is the foundation of any interaction of the individual with the environment [6]. It can consider a set of map-image or map-perception of a city; a set that people have extracted of physical existence of a city, this extracted image is the image of city [2].

Lynch defines and describes sign factors and also offers some methods to build image of the city in a way which is in compliance with these conditions. All of these five factors (road, edge, node, sign and neighborhood) individually and particularly act in a continuous and collective mode. In the past, continuous and similar manifestations of the city were the guides for people's familiarity with the city; but it seems people are now relying more on "signs" to master its map, these indeed, as the signs are varied: each sign is different, will cause confusion [7]. Signs appear usually in the forms of words, images, sounds, smells, flavors, movements and objects. However, these things are not inherently meaningful and only when a meaning appointed to them that they will turn into a sign. Nothing is sign unless considered as (indicator), referrer, or a pointer to something other than itself; In this case, it can be a sign [8]. The sign is something in the place of something else, in other words it can denote a meaning instead of something else [5]. In another definition Moughtin et al. also define urban sign as an element or group of uniform elements which can be separated from a visual field with repetitive detailed [6]. Urban signs are responsible for facilitating the navigation and route determination for the inhabitants or the environment users, and also giving identity to a particular place. The characteristics of the signs should be such that they could be discernible among many factors. The signs' understanding is obtained completely unconsciously through relating them to familiar systems of the norms and social contracts [9]. Some authors used the word "urban sign" in a quite general statement as a reference point to decide in the space. Siegel and White's three-part theory "signs", "route" and "navigation knowledge" about the urban signs meets multiple objectives in routing. Golledge in 1999 believes that urban signs can be used as a measure of space organization or a guiding tool [2]. As Grouter believes the science of signs, each sign is investigated from two aspects or in other words is of two dimensions and it is natural if a sign has two aspects simultaneously. Syntactic aspect of sign which represents the facial characteristics like form, size, and the color and Semantic aspect of sign represents the content and meaning of the sign. From Saussure's view the sign has two folds and actually includes two parts: The Signifier as tangible part of a sign and Signified as the meaning of sign [10]. Peirce opinion in (Table 1.1) adds the indicator to the Saussure's division [2]. Lynch in his description of urban signs, presents two main features for them one of them is singularity and the other prominence. Singularity is intense contrast with the environment (differences in size, shape, position, age, or even cleanliness) and Prominence in the spatial situations [7].

1.1 The Difference between the Sign and Symbol
Sign plus public reputation in a long time regard to the characteristics of the object can be designed and

implemented. Regarding the relationship between the symbol and sign it can be stated that the sign can be a potential symbol but requires a relatively long passing of time. In other words, the role of cognition, social acceptance, and reputation is extremely important and regarding the religious symbols religious beliefs should be added to the previously mentioned cases [11]. Each symbol is also a sign but a sign is not compulsory a symbol [12]. First Classification: in the physical environment have two main categories (Table 2.1). Known signs in the urban context are detectable by any viewer in terms of scale and form. Unknown signs are not physically existent (Figure 1.1). Two dimensional signs have not the third dimension (height) and are not easily visible. These kinds of signs have a limited operating range and are not discernible from far distances. Three dimensional signs are under the known and unknown kinds of signs which have three discernible physical dimensions. The connected signs are connected to their surrounding buildings. The disconnected signs are single and disconnected from their surrounding texture and have an identifier role. The virgin signs remained in their original shape. The organized signs are manipulated and organized. The Random signs are the signs with no pre-determined plan and have identifier role. The Second Classification is including Cultural, Religious, Historical, Natural disasters, war, economic, social, Tribal Ethnic, political, social abnormalities, emotional, and psychological parameters [2]. The Third Classification presented in (Table 3.1).

2. RESEARCH METHOD
The research type is an applied research and qualitative research method. In the qualitative method after literature review, been provided Sign analysis factors based on singularity (uniqueness) and prominence. After photographing the signs, factors compared in the features that Lynch has introduced to prove being signs that was drawn for signs. These two main factors were used to analyze the elements and buildings of the city as signs. Eventually, 25 signs were selected in the city. Then, to analyze the characteristics of the signs, each of the city's buildings was analyzed and evaluated. The categorization of signs is based on a comparative analysis method. The data collection method is a survey and its tool is taking notes and mapping. The division and analysis of the signs in the survey method are based on the category obtained from the review of the literature. Also, in order to understand the perception and recognition of signs, questionnaire factors were identified based on the nature of the signs and the literature review. The factors are including: natural and man-made signs, elemental nature of the signs, addressable and index signs from the public, connected and disconnected signs in people perception, type of visual symbols, availability, uniqueness and antiquity. The factors and results of the studies are compared with

each other after accurate impression, analyze, and check. Finally, characteristics of the signs after reviewing the perceptual maps are recorded in numbers and figures in the Excel charts to achieve the priorities of their properties, which are used in the analysis of the results. This research is also drawn from correlational method whose general features include a focus on patterns that occur naturally. Measurement of certain variables and using statistics will be discussed through the method of relations model making. In the correlation method it is assumed that the researcher has measured the variables and investigates their relationship [13].

3. STUDY AREA

Torbat-e Heydarieh city with an area of 14,000 square kilometers and a population of 323 thousand people is one of the largest cities in Khorasan Razavi Province, Iran. This city is the agricultural pole of Khorasan which has many agricultural and mineral potential. Torbat-e Heydarieh city has 6 districts named Markazi, Mah Valet, Dolat Abad, Rokh, Kadkan, and Bayg based on the last administrative divisions. Many mountains have surrounded the fertile plains that are the main factor for its variability climate and diversity of agricultural products. Currently, a bright future is predicted for this city according to its sensitive location. Although, the history of this region backs to the name of Zaveh in Parthian period, but the city backs to the sixth and seventh century AH. The name of the city was chosen after being buried and in term of being city in the Safavid period [14] as Torbat-e Heydari [15]. Its foundation dates back to pre-Islamic [16].

4. RESULTS AND DISCUSSION

The study detected the signs of Torbat-e Heydarieh and used the characteristics of Lynch. In fact, study specified that signs feature categorized in two general classifications of being unique and prominence. Figure 1.4 shows the location of the sign and specific buildings in the city. Singularity and Prominence with their dimensions was investigated (Table 1.4). Survey shows types and structural numbers of 25 signs that determined in the case study. After identifying the types and structure of the sign of case study was surveyed the status of signs by Poor Jafari and Alhjh classification that present in (Table 2.4) and features of signs in the table (Table 3.4). Signs classified in Known and Unknown sign with their connection to other feature of the city. The virgin signs that have original shape were investigated. The organized signs and Random signs also were identified. After outlining the details of the signs in two categories, analysis of these tables was presented in the form of charts. First division includes

natural signs (components of natural landscapes and even urban landscapes) that allocated 12 percent, and human signs (which are man-made) that accounted the highest percentage (Figure 2.4, left).

• Constructional signs that are included structures or parts of structures, and non-constructional signs that are included three-dimensional independent elements in urban spaces. Almost half of all signs are constructional and half are non-constructional (Figure 2.4, right).

• Considering that specification of a sign has a significant impact on addressing and being index in public view, it is natural that known signs or the signs that can be recognized by each viewer allocated 96% of the total to themselves and only a small percentage includes the signs that existed in the past and now they do not exist. Because, these signs may be losing their identity over the time (Figure 3.4, left).

• Analysis shows that three physical dimensions are determined as a sign more than other, that is about 70% in this figure. The remaining 30% includes the elements and two-dimensional structures (Figure 3.4, right).

• About 70% of the signs are disjoint; individual signs that are separated from their surrounding tissue and they are highly in the consideration of people. Other signs are approximately 30% which are linked to surrounding tissue and structures (Figure 4.4).

• More than half of the surveyed signs have the feature of being unique, and it is natural that the signs which are different in form can highly be seen by people and they can be a sign. 44% of the signs do not have specific differences. This indicates the effect of other signs in being an index (Figure 5.4, left).

• As can be seen in the following diagram, good vision plays an important role in being an index that in this figure about 65% is related to good visibility from different directions. The remaining 35% do not have a good visibility (Figure 5.4, right).

• One of the most important factors that can be effective in memorizing an urban sign in the public minds are the axis in that signs are next to them and provide their accessibility. As can be seen, 62% is dedicated to the first class axis. 21% of the first class axis and the remaining 17% are the natural roads that the natural signs are in them (Figure 6.4, left).

• According to the following diagram, 52% of signs are important both in the application and visual terms, but the signs that their visual attraction is effective, allocated a greater percentage of function to themselves (Figure 6.4, right).

• About 60 % of the signs are old signs. Of course, this is not a reason for low importance of the new structures. But also, this reflects this fact that the old structures have still a great importance (Figure 7.4).

Table 1.1 Specifications of Urban Sign (Poor Jafari and Alhjh 2010)

Specifications of Urban Sign	Quantity and/or Quality
The role of urban sign	• As a corporate gimmick • As a guiding tool • Emphasis on places hierarchy • Create the skyline
Sign Characteristics	• Singularity (Unique) • Prominence • Distance and Visibility from different directions • Availability • Content and function
Types of urban sign	Natural signs Artificial signs 1.2 Constructional signs 1.1.2 Known 2.1.2 Unknown 2.2 Non-constructional signs 1.2.2 Known 2.2.2 Unknown

Table 2.1 Poor Jafari classification (Poor Jafari and Alhjh 2010)

• Natural signs		
• Artificial signs	Constructional signs (include buildings)	1. Traditionally constructed building
		2. Buildings constructed according to urban master plans with astonishing characteristics
	Non-constructional signs	In a smaller scale of urban buildings three dimension elements which are for ornament of the city
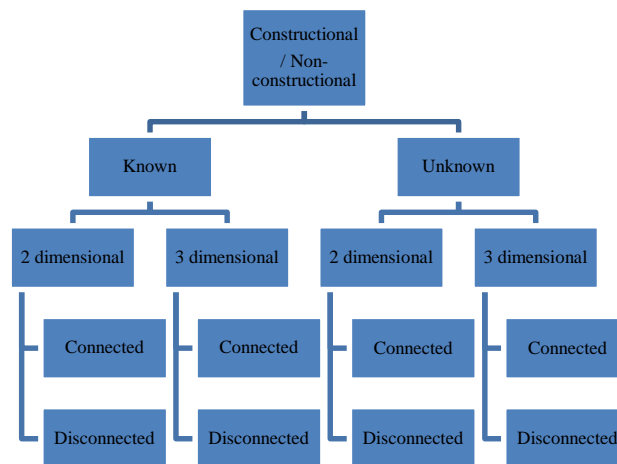
Figure 1.1 Constructional and Non-constructional signs (Poor Jafari and Alhjh 2010)

Table 3.1 (Poor Jafari and Alhjh 2010)

• **Visual symbols**	Two dimensional visual symbols	No identifying height
		Fields with special application
	Three dimensional visual symbols	Organizations
		Historical buildings
• **Verbal symbols**	Sweet, historical, and social (debris, damages, abnormalities) memories related to belief (successes and failures)	
• **Verbal-visual symbols**		

Figure 1.4 Locating signs in Torbat-e Heydarieh Map (Authors based on Google Maps)

Table 1.4 Surveying the characteristics of signs (Authors)
Antiquity (A), Intersection (I), Height (H), Different forms (D), Bigness (B), Completely solitary (C), Shape (Sh), Scale (S), Route movement (R), Location (L), Main Street (M), Becker Space (Be), Nature (N)

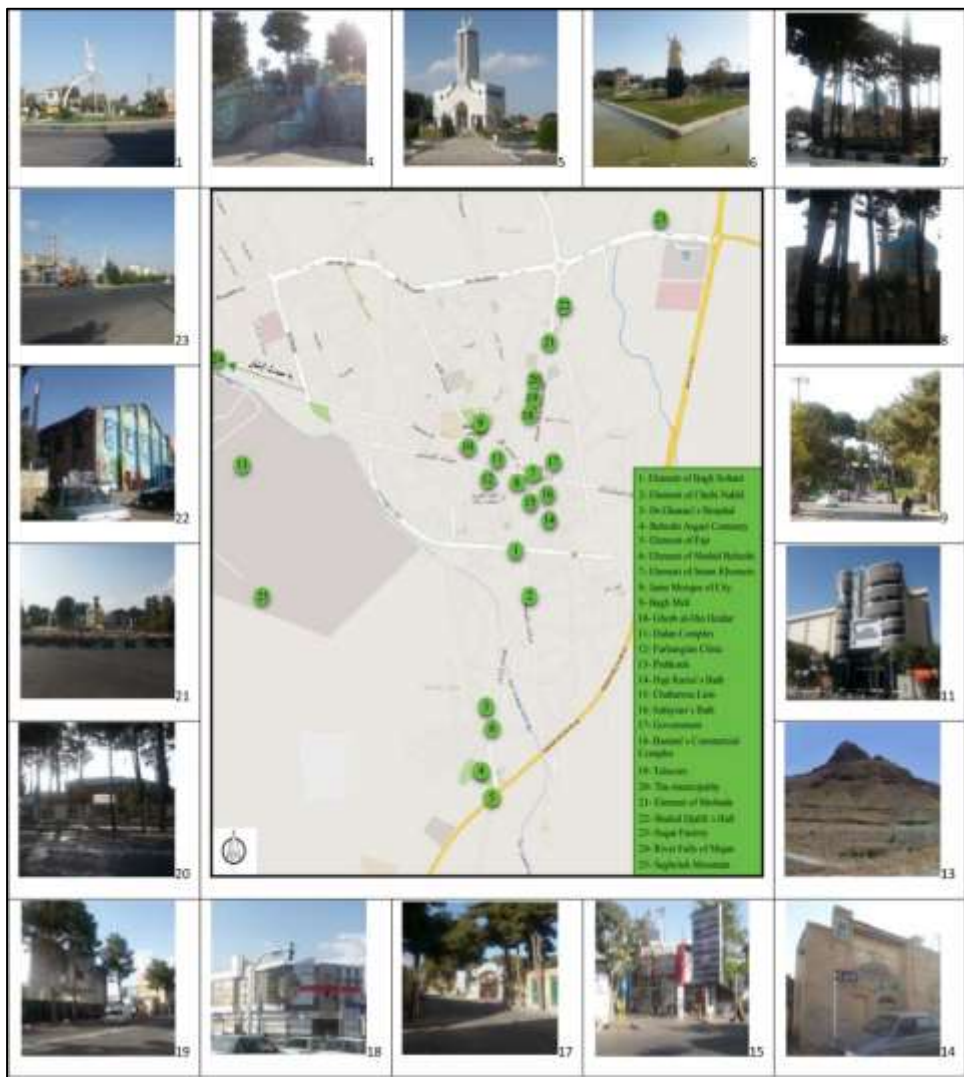|	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Sin gul	A	A	-	A	D	D	D	A	B&A	A	Sh	-	S	A	A	A	A	Sh	L	C	D	S	A	Be	Be
Pro min	-	-	I	H	I	I	I	I	H	C	-	I	-	R	-	R	R	I	M	M	I	M	R	N	N

Table 2.4 Surveying the status of Torbat-e Heydarieh's signs using Poor Jafari classification (Authors)
Man-made (M), Natural (N), Non-Constructional (N-Co), Constructional (Co), Known (K), Unknown (U-k), Connected (Con), Disconnected (D-Con)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Step 1	M	M	M	M	M	M	M	M	M	M	M	M	N	M	M	M	M	M	M	M	M	M	M	N	N
Step 2	N-Co	N-Co	Co	N-Co	N-Co	N-Co	N-Co	Co	N-Co	Co	Co	Co	N-Co	Co	N-Co	Co	Co	Co	Co	Co	N-Co	Co	Co	N-Co	N-Co
Step 3	K	K	K	K	K	K	K	K	K	K	K	K	K	K	U-k	K	K	K	K	K	K	K	K	K	K
Step 4	3D	2D	2D	3D	3D	3D	3D	3D	3D	3D	3D	2D	3D	2D	2D	2D	2D	3D	3D	3D	3D	3D	3D	3D	3D
Step 5	D-Con	D-Con	Con	D-Con	D-Con	D-Con	D-Con	Con	D-Con	D-Con	D-Con	Con	D-Con	Con	D-Con	Con	Con	D-Con	D-Con	D-Con	D-Con	Con	D-Con	D-Con	D-Con

Table 3.4 Surveying the features of Torbat-e Heydarieh's signs (Authors)
Non-Antiquity (N-A), Antiquity (A), Tangible (T), Impalpable (I), Level 1 (L-1), Nature (Na), Level 2 (L-2), Visual (V), Function (F), Visual-Function (V-F), Content (C)

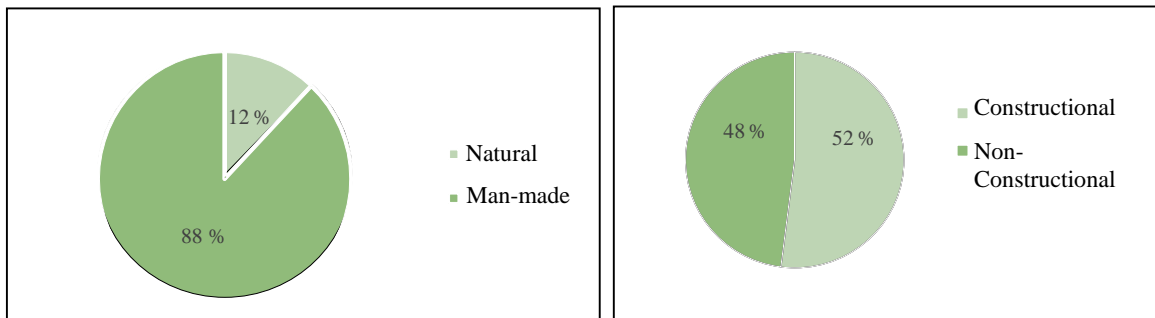|	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Singularity	N-A	A	N-A	A	A	A	A	A	A	A	N-A	N-A	A	A	N-A	N-A	N-A	N-A	N-A	N-A	N-A	N-A	N-A	A	A
Visibility	T	I	T	T	T	T	T	T	T	T	T	I	T	I	I	T	T	T	T	T	T	T	T	T	T
Availability	L-1	Na	L-1	L-1	L-1	L-1	L-1	L-1	L-1	L-2	L-1	L-2	Na	L-2	L-1	L-2	L-1	L-1	L-1	L-1	L-1	L-1	L-1	Na	Na
Visual - Functio	Vi	V	F	F	V	V	V	V-F	F	V-F	F	F	F	V-F	V	V-F	F	V-F	F	F	C	F	F	F	F
Antiquity	New	Old	Old	Old	New	New	New	Old	Old	Old	New	Old	Old	Old	Old	Old	New	New	Old	New	Old	Old	Old	Old	Old

Figure 2.4 Left; First (Left) and second (Right) division of signs

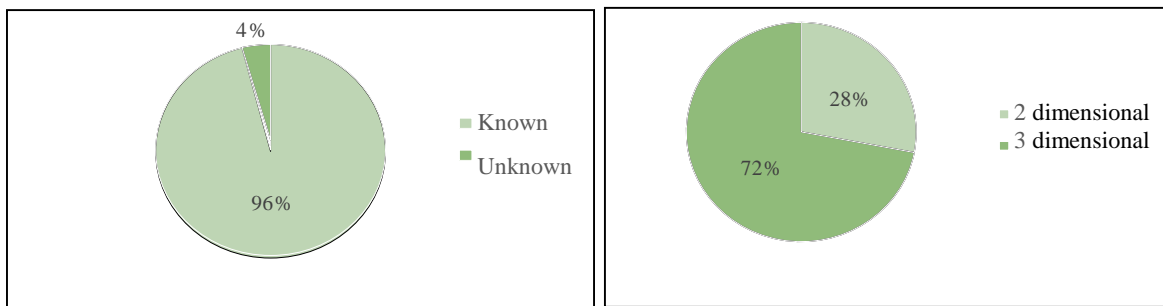

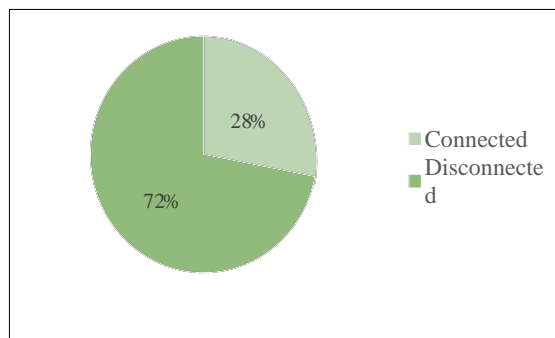Figure 3.4 Third (Left) and forth (Right) division of signs
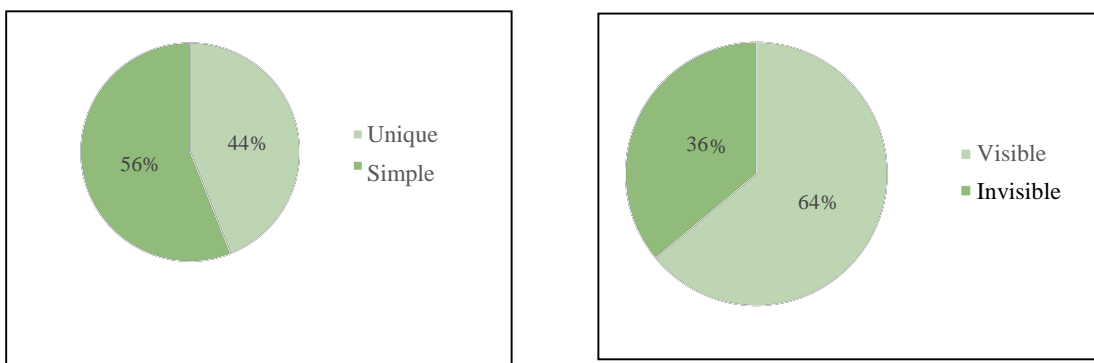

Figure 4.4 Fifth division of signs

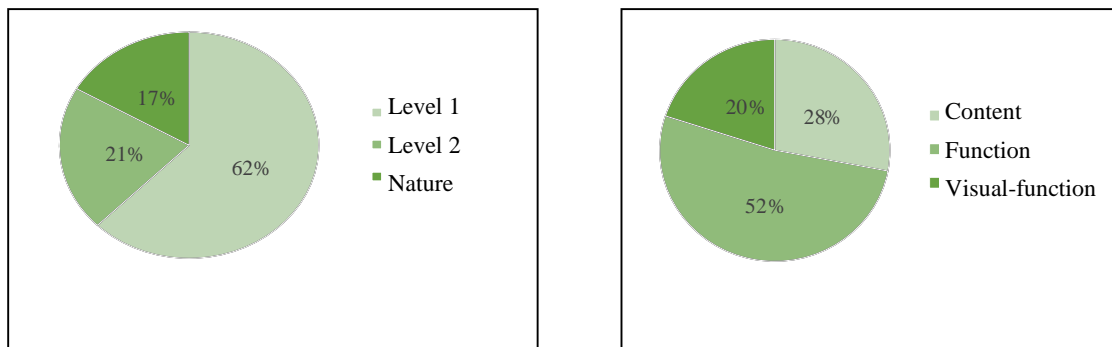Figure 5.4 Survey the unique (Left) and visibility (Right) of signs

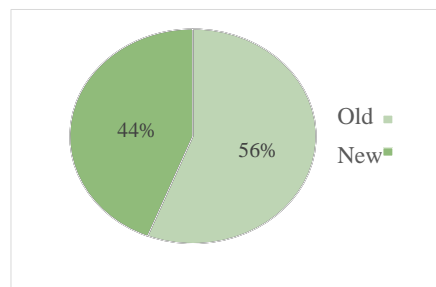Figure 6.4 Survey the availability (Left) and visual/function (Right) of signs

Figure 7.4 Survey the antiquity of signs

5. CONCLUSIONS AND RECOMMENDATIONS

About 90% of the signs are artificial and man-made. This indicates the influence of the human life on the environment. Gradually, the environment will be transferred to the surrounding regions of cities and out of the cities and they will be forgotten. Our recommendation is to create signs along the natural resources that exist in this city and bringing more people into the heart of these spaces; of course, with compliance the issues that would not result in the destruction of the original space. In this city, as the structures are considered as signs, independent three-dimensional elements in urban areas, especially squares have a great importance. According to this issue, if designers provide an element for designing each collection, certainly it would be better remained in the people's minds. This element can be set in the inter space of the collections. If a sign be specified in the people's view, it would have a significant impact on addressing and being an index. 96% of the signs are known that indicates: The signs that are unknown will be forgotten gradually. Here is an idea that may be given: collections or structures that are built and designed next to the unknown signs and spaces should have the name of the old unknown signs or even their planning, programming and studying should be based on the pattern of those unknown signs. Most signs of the city have the third dimension that is the height. This suggests the importance of breaking the skyline and makes the indices elevated for better visibility. Establishment of signs in the individual or disjoint form has caused a greater emphasis on them. Being unique and specific for a sign have a significant impact on being an index. Therefore, designers should consider this necessary issue while designing, so that their structure be seen by people as a sign. Uniqueness can be in size, location, and volume. For positioning the construction of structures, it should be noted that the location can be seen from all directions or it should be in the traffic way of the people to have a better impact on being an index in the people's opinion. Placing signs along the length or crossing axis of the main axis of the city enhances their importance for citizens. Therefore, their place can be used for positioning the signs relative to the main axis as a factor with a high influence. According to diagrams, visual aspects are not the only factor for distinguishing the urban signs. Thus, most of the signs are very important in both terms of application and visual aspects. Considering this issue plays an important role in designing and creating urban signs. The most common signs of the city reflect two subjects, importance of the old signs and lack of the new appropriate structures to be known as a sign.

6. REFERENCES

Methodology of Domain analysis "Sign-Meaning" of the City. Sholeh, Mahsa. Tehran : Journal of Fine Art, 2009.

Jafari Poor, Mohammad Reza and Alhjh, Mehdi Montazer. Symptoms of the city: Definitions of Astronomy - positioning - Planning and Design. Tehran : Tahan - Helle, 2010.

Bentley, Ian .1985. Responsive Environments: A Manual for Designers. (Translate: Behzadfar, Mostafa), University of Science and Technology of Iran. 2017.

Madanipour, Ali . 2003. Public and private spaces of the city,(Translate: Noorian, Farshad), Urban Processing and Planning Co.press, 2014.

Labyrinth Signs (Essay on the Semiotics of Architecture). Rouhi, Pouyan. Tehran : Journal of the Association of Iranian engineers in Austria, 2007.

Davari Nezhad, Masoud and Mabhoot, Mohammad Reza. City and Social Behavior. Tehran : Tahan, 2013.

Lynch, Kevin. Image of the City. (Translate: Bahreyni, Hosein) Tehran : University of Tehran, 1995.

Essay on the Semiotics of Architecture. Majedi, Hamid and Saeideh Zar Abadi, Zahra Sadat. Summer, Tehran : Armanshahr, 2010, Vol. 4.

Chandler, Daniel and Parsa, Mehdi. Foundations of Semiotics. Tehran : Sooreh Mehr Publishing Company, 2010.

Zamiran, Mohammad. Semiotics of Art. Tehran : Gheseh Publication, 2003.

Mousavi Lar, Ashraf. Graphic Design of the Signs and Symptoms. Tehran : Tarbiat Modares University, 1994.

Pakzad, Jahanshah. Articles on architectural and urban design concepts. Tehran: Armanshahr press,2011.

Groat, Linda and Wang, David. Architectural Research Methods. s.l. : John Wiley & Sons, 2002.

Khosravi, Mohammad Reza. Historical Geography of Torbat-e Heydarieh "Ancient Zaveh". Mashhad : Publication of Astan Ghods Razavi , 1998.

Ibn Khordadbeh, Abdollah and Khakrand, Saeid. Masalek and Countries. Tehran : Studies Institute and Historical Publications of Heritage of the United Nations , 1992.

Ghaneyi, Mohammad. History of Torbat-e Heydarieh With emphasis on the Eshagh Gharaei`s role. Torbat-e Heydarieh : Bakhshoudeh, 1992.