Analysis of the Place of Outdoor Architecture in the Legibility of Spaces

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Abstract
Public places form the most important parts of the city. One of these spaces is urban streets in which social interactions and the hustle and bustle have reached its peak in terms of scale and quality. One of the principles and characteristics for designing street refers to its legibility. A person who looks at the appearance of legible city and is familiar with it, can absorb the sentimental fresh appearances of the city without any defects in his primary main picture of the city. He is completely aware of where he is living and has control over it. Different factors are significant in a street's legibility. One of the most important is the buildings' facade that is considered as skeletal element of the street and the city. The frontage is an element that today is regarded as an inseparable element of the urban framework. The present study which is descriptive-analytic, based on the concepts of legibility, collected the principles and factors for the further coordination and harmony of the frontage and walls. Finally, standards are proposed in order to create and strengthen legible frontages for streets and urban views.

Keywords: Street, frontage and sidewalls, legibility, urban view

Introduction
The first thing that comes to mind when the streets are mentioned, is the prominent role of multiplicity and transportation or passage. The street is one of the most important elements that form the city's shape. Cultural and social symbols as well as the establishment of spatial connection elements and urban activities are always considered by urban planners and urban programmers. Urban streets are the emanation of the city's civilized life and the place where the citizens' events and social activities in life and urban living take place. Therefore, the street plays an important role in connecting the open and public spaces of the city. As John Lang points out "The impression of the quality of a city is based on the quality of its streets more than anything else.”

It can be said that the first most important expectation of the streets is their legibility and facility to understand and consequently, the dynamic tranquil presence in them. As Kevin Lynch, American urban designer, believes the legibility or visual clarity of the urban appearance is for recognizing urban elements and connecting them in an incorporated form in the mind easily. One of the most important elements in the street that plays a significant role in its legibility is the appearance and sidewalls of the buildings. The appearance of the building should take the role of improving the quality of its surrounding environment in character and personality, view, legibility, beauty and so on and it has a direct connection to the mental sustainability. Corporation, coordination and standardization in sidewalls and buildings' appearances play considerable roles in the solidarity of activities and legibility in the streets. Therefore, the quality of legibility and reaching it as one of the most basic elements in defining and further favorability of the streets is vital to understand and form a clear picture in the minds of the citizens and audience. The goal of this study is to analyze the sidewalls and the view of urban streets in the legibility of the space.

Statement of problem
Urban signs, added to the legibility of the streets, can play an important role in the beautification of urban spaces and this fact is well reflected in the proper use of colors, light, forms
and material. Human beings based on their aesthetic nature are looking for beauty and its desirable effect. Therefore, lack of coordination and harmony which is followed by a kind of spatial dissonance and lack of organization can cause intrinsic confusion and lead to the attenuation of their attachment and dissatisfaction with urban spaces. These in turn will lead to the citizens' lack of responsibility towards safeguarding these spaces and the occurrence of some urban crimes. One of the reasons for immigration from cities can be traced back to the lack of attachment to urban spaces.

The concept of urban view

The term "urban view", like urban designing, although an old concept which has always been essentially present from the old times with the emission and formation of the cities, but as a jargon, it was presented in the late nineteenth century with the designs and endeavors of Frederick Law Olmsted, the founding father of landscape architecture, in relation with American cities. The concepts of urban view were first mentioned by Colin Gordon. According to his definition, urban view is "the art of visual and structural integration of a set of buildings, streets and places that create the urban environment" (Manouchehr Tabibian, cited in Colin Gordon). He considers the view of each city as a response to human behaviors, climactic condition, safety factors and in other words, as skillful interventions in increasing the environment's capacity. Gordon believes that each person's subjective interpretation of urban view is under the effects of sense of vision, sense of place and the content of the environment in which the person is present (Mahmoudi, 2010). Many experts have stated that the nature of the view is as an objective in relation to the process of understanding the environment. Based on their opinions, the urban view is that part of the environment or form of the city which is effective on people's action and reaction and the consequences of these acts. In urban view a part of the information from the potential environment directly turns into a tangible quality. In this sense urban view is the objective or comprehensible aspect of the environment that on its own has a form, a function and meaning (Jahanshah Pakzad, 2006). Streets are major parts of the cities' public spaces in a way that have the most appeal in their visual environment.

One of the most concise and accurate statements describing the importance of the street and the visual aspect of the city is the statement of Jane Jacobs. She says "I think of a city and what will come to mind. Its streets are coordinated because when the streets of a city are beautiful and interesting, that will be a lively city and when they are ugly and boring, it will be remembered as a tedious one. Basically, urban view is the contact surface of human and the city phenomenon and therefore, a considerable portion of the knowledge, feelings and environmental behaviors of the citizens are affected by their cities (Golkar).

The concept of legibility quality

Legibility as one of the most important goals of urban appearance is a quality and standard that can affect the people's understanding of opportunities and conditions which are offered to them by the environment. In other words, visual clarity and legibility is a visual property of the city which is studied by reading the mental picture of people about the place they live in. Legibility refers to the easy recognition of the city's parts and being able to connect them to each other in an attached form in the mind. For example, when we see a clear printed page, a readable picture of attached cognitive symbols will be formed in our minds, the same will happen with a city that has a legible appearance and view with all of its parts (districts, interesting and important buildings, streets, alleys and entrances) that are distinguishable from one another. In fact, an environment that is clear and distinguishable in the mind, not only creates a sense of security, but intensifies and adds to the experiences of the person. In general, a city that enjoys legibility looks beautiful, elegant and notable and such a city will require more attention and attracts people to itself. Understanding an
environment through the senses can not be simply done but it should be expanded and deepened (Kashanijou, Bahadori).

**Street and the subject of legibility**

The most important field of work for urban designers is the urban coordination and open spaces because the original reason for establishment of this field of study in the first place is to create places and to improve the quality of these spaces all over the city. Different researchers and theoreticians, in accordance with the importance of this subject, are introducing urban spaces and pointing out the features and characteristics of each one of them. For instance, Rob Krier regards public spaces in two general groups of streets and squares and Richard Rogers states that public spaces are streets, squares and all paths which all people have the right to cross over them freely and are inductors for establishing relations with new people. Transic in his book "Three Theories of Urban spaces" mentions the network of streets and squares as the most important urban spaces. Therefore, these places are of a great position all over the city and often have the biggest share in the area of the city. The street is considered to be more than just an empty space through which traffic can pass. Movement is the main identifiable factor in the streets but the diverse expansive function range of streets are forgotten in the shadow of the fast intercity movement which caused by model approach and the superiority of vehicle over man. In today's urban life, streets not only are the connection and relation point of urban spaces and activities to each other, but are also considered as indicators of life in the city. A good urban street is a place that associates memories and meanings for citizens, a place where citizens are always eager to go back there (Behzadfar, Razzaghi Asl, Abadi Magazine). To save and reinforce legibility and identity in different types of urban spaces, especially in streets which play prominent roles in urban and public environment therefore, they should always be in the attention and trying to reinforce them is one of the most important matters. Streets are definable in two ways: vertically, by the height of the buildings and the walls or the trees and horizontally, which is related to the length and distance between buildings.

- The following items are the observed points in designing streets:
- Green spaces and the existent flooring
- Sidewalls and bodies
- The existent benches and urban furniture
- Accessibility for vehicles and the passersby
- Places for collecting the waste
- Facilities and infrastructures (Behzadfar, Razzaghi Asl, Abadi Magazine).

**Urban space network**

What was discussed in the previous subject clearly states that constructing cities' environment has always been discussed in two aspects of dynamic urban spaces which are the same connective spaces and stable urban spaces that find skeletal form in nodes and squares. But what is needed to be discussed is the way these spaces are combined to form an urban place's composition.

In 1999, Rogers in his book called "Facing an Urban Renaissance" presented the series of his reports in the form of a book about his experiences during his presence as a special force in urban affairs which was established in Brighton, England by the Britain Government. In these reports, he states that in modern systems of the cities and the way they are expanded challenges for creating more proper access point to urban public spaces. He finds the way to this goal by creating beautiful artistic places in the form of changed networks of urban open spaces. Also, he points out to the form. He introduces the proper form of a city and says that it is a city whose formation pattern includes spaces that are connected in a uniform organized whole. He introduces them not only as
merely connective spaces of public places in districts and all over the city, but also as places that have the responsibility for connecting the society's places of living, working and entertainment. In his view, the best cities are designed based on a proper connection pattern of streets and public spaces. He believes that to reach a coherent city, the subject of the theory of urban public spaces network should be regarded as a vital part in the city's view. The picture below is a pattern that Rogers presents in his book from urban spaces network. As it is seen in the picture, the network is formed based on the composition of urban nodes and connective spaces that connect them to each other. The components of this network during their movement have different hierarchies based on the scale of their work. Among the most important characteristics of an urban place is the connection between its components and elements. Transic presents this case in the way that the theory of connection (solidarity) of public spaces is resulted from a set of paths that connect urban spaces and create consecutive spaces frames. These paths are formed in the form of streets, pavements, linear open spaces or other connective elements that link different parts of a city in a way that single urban elements turn into a solid skeleton in a system with capability to become a hierarchy. In this description, he points to a system that is formed from the connection and bonding of spaces and elements that eventually turn into a structure in which movement and efficiency are needed and activities are connected.

![Figure 1. Networks of public spaces in designing the scale of a city](image)

The use of thinking in the networks of public spaces in designing the scale of a city, a district or an urban neighborhood causes the creation of legibility and the power to understand and orientate urban spaces which result in the integration of the structure of the city and urban neighborhood. In the end, it leads to the reinforcement of urban districts and it can be said that such a network in urban designing and programming, because of the creation of coherence and reinforcement of textures, can cause the growth and development of the city's economic and social life as the roles of urban life. In this process, what causes the formation of coherence in urban places are connective spaces that connect urban public spaces. These places are regarded as the places for the crystallization of all the efforts of the civil community in the form of the physical and spiritual heart of the city and social nodes and places where cultural activities take place. Entrances of the cities, boulevards, streets, roofed and open urban markets, parks, squares and even play grounds in neighborhoods are known as forming components of urban spaces network with the goal to create public spaces network in urban expansion.

Barton presents the urban spaces network with a look at the textures of traditional cities. In these cities, urban spaces are regarded based on the needs and their required roles in different forms but the interesting point is the fact that these spaces are next to their complemented part, namely the connective spaces. They were designed in accordance with the needs of the passersby in a way that they look coherent and solid in the city's view. The picture below is from a city and shows a part of
the organic place of the city in which the city's spatial structure is formed based on a composition of consecutive space in the form of a network of urban spaces. What the picture shows of the composition of urban spaces in the form of square and street is with regard to the view, hierarchy and spatial diversity in the composition of spaces that lead to the formation of the network.

Figure 2. Connectivity between urban prominent spaces in a texture

In Iran's historical places, the coherence and connectivity between urban prominent spaces in a texture have created the sense of connectivity and consecution in the viewer that is sensed in moving in the place. But the main point here is the fact that the skeletal composition of spaces in Iran is affected by regional factors and the needs of the residents and added to that, it has followed cultural factors. Regarding this matter, Tavassoli states that Iran's cities, in spite of their skeletal compression are indications of the construction of special space and that coherence is the sum of the center of the city and centers of neighborhoods through main passages (Tavassoli, 1992).

What can be mentioned generally about the structure of the space in Iran's cities is the fact that in Iran's history, the most important urban spaces are established based upon the two elements of religion and commerce. Market in Iran's history acts as one of the main components in the city's main structure and had an internal organized and coherent official system. Iran's markets which usually are in the form of rows are often designed in a cohesion with urban public spaces. Isfahan's bazaar in connection with the Old Square and Naqsh-e Jahan square is a prominent example of this matter. If we want to consider a street that is formed of a chain of stable and dynamic spaces, the composition of the set should appear as a coherent whole. Here, each space should be connected with the neighboring space. This connection may be in the form of the confrontation of spaces or the differences in them based on the coordination, composition and materials and so on. Charisma and visual attraction increases with moving from one space to another.

Figure 3. Views of the streets' buildings

Sidewalls and views of the streets' buildings

Urban spaces are normally defined by a number of building masses with volumes and surfaces that are visible in public space. Each mass, in its turn, is consisted of different surfaces. These surfaces of the buildings are called frontages. But in urban designing, all limited forming
surfaces or masses of the space are regarded as urban bodies. Each body of urban space consists of several frontages. These bodies are limited by the earth and the sky and from one side by the neighbor building or passage way (Pakzad, 2005).

The street's sidewall which is formed in different eras, in fact, bears the cultural and environmental values of the society. It also is a very important and effective factor on the street and its legibility and identity plays a vital role in the description of street (clarity and legibility).

**Categorizing buildings' frontages based on their effect on the spectral organ**

In this subject, the characteristics and standards for coordination and lack of coordination in the visual environment are analyzed in the form of different buildings' frontages by the spectral organ from video-ecological studies and from this point of view, these frontages are analyzed. Video-ecology is a term that was first used in 1988 in a book by Vassily Antonovich Flynn with regard to studies that have analyzed the characteristics of the visual environment surrounding human as an ecological factor. The above mentioned studies have analyzed the characteristics of the visual environments based on their coordination with vision standards and natural mechanisms of the eye for the perception of views and have stated the amount of pleasurability and discomfort in the physiological terms. With regard to this type of analysis, we analyze and categorize the artificial visual environment. The artificial visual environment is divided into three groups of "monotonous environment", "aggressive environment" and "comforting environment". This categorization was first done by Flynn. In each environment, he examines more than 100 examples of proper and improper pictures for the eye.

**Monotonous environment**

It is an environment in which because of the monotony and the few details of the elements, there is not enough information for the eye to be fixed and it is known in one glance. The reaction of the eye to these environments is that the eye floats on the picture and almost quickly passes it. This environment is known in the first look.

*Visual signs in monotonous environment*
- They have views with big even pictures and without details that are seen in the contrasts of life. They are even with very levels, monotonous and unnatural materials.
- They have views with straight and even lines in size and color and also have even distances with even angles and plumb lines form buildings.

**Aggressive environment**

In these environments, one sees the frequency of similar elements at one moment. The important sign of this environment is the high number of similar visual signs that are even in size, form and distance. In such an environment, the eye will be tired very quickly and the mind will be distressed and in case the density of the similar elements was too intense, the eye will not be able to look at it for more than one minute.

*Visual signs in aggressive environment*
There are frontages with a great number of even and uniform elements like the high repetition of windows in size, distance and similarity of form in many floors. This repetition may be seen in any element of the frontage.

**Comforting environment**

The characteristics of this environment include diversity in forming elements, diversity in surfaces and masses, diversity in the forming lines of the view and the existence of curved lines, natural forms and colors that are close and the eyes will stay on the view for a longer period of time without any pressure or forcing.
Visual signs in urban environment

- Frontages formed from surfaces that are different in size, color, texture and natural material
- Frontages with diverse, close and coordinated skyline with natural lines
- Frontages that lack several repetitive elements of various horizontal and vertical lines and big even surfaces (Mohammad Reza Pourjafar, Urban Identity Magazine)

Figure 4. Visual signs in urban environment

Presenting methods to design sidewalls and buildings' frontages in order to create coordination and harmony in them to increase the legibility of the streets

Significant factors in the coordination of the buildings that exist in the sidewalls of one street are material, color, lines, band or zones around the building, the size of the building, coordination of the windows and their details, entrances, corridors, buildings facing the sun, sun shades and finally the style of architecture.

Symbols of the city's beauty and representation

The appearance of aesthetic sense is based on two main bases of objective world on the one side and subjective world on the other. In fact, beauty is an objective-subjective concept that cannot exist without one or the other. Therefore, any kind of one-sided interpretation of the concept of beauty will lead to misdirection. Because of the dynamism in the objective and subjective conditions of human life, understanding beauty is also a dynamic, relative and historical phenomenon. Therefore, looking for absolute beauty and absolute standards for it is an absurd endeavor.

Light: Light as another embodiment of beauty and representation of urban spaces is divided into two types, daylight and nightlight. It can be said that lights also, are defined by the existence of light. Light at night has a notable function, as in providing the sense of welfare and security in citizens and the display of joy and happiness in national or religious events that in turn, cause improvement in the quality of urban spaces. The proper use of light at night can create a beautiful picture of the city in the mind of the citizens. For instance, the placement of lamps in a linear order especially when it is by the water, displays a beautiful picture of that part of the city. Also, representing valuable historical buildings and sites and also the main elements of the city with proper lighting at night can present a useful general picture to the viewer. In the use of light, the places' functions should be observed so that enough lighting will be provided. For example light that is special for the passersby is different in terms of intensity, size and the type of the lamps with roads for vehicles. The key to creating an organized environment in the street is the use of a logical lighting system to respond to related needs. In city centers, usually a system like this, should respond to two main functions: one is providing secure lighting for the streets and the other is comfort and attraction for the pavements.

Form: The aesthetic definition of form consists of the emotional and clear representation of a phenomenon that exposes itself to judgment. Aesthetic success is a function of success of the form
and transition of the content. There are various factors that can play roles in the appearance of forms such as culture (religion and religious beliefs, values, etc.), social and civil characteristics, regional characteristics and the dominant political conditions in the society. Paying attention to coordination of color and form is also among the important factors and reinforcing the effectiveness of any of them leads to a better transition of content to people. The choice of forms in urban spaces should be done in coordination with the space and its audience and the size of the form and the amount of its effectiveness should not be overlooked. When a form is used in the main node of the city and it is of little dimensions in comparison with the space, its effectiveness capacity decreases. On the other hand, if a big form to be used in a square with a small radius for beautification, not only it will not have the desired effect in the minds of the citizens but also it will distress them. For example, installing a memorial statue with big dimensions in a square with a small radius will lead to a drop in the visual quality of urban spaces.

**Materials:** The type of the materials and components that are used in the beautification of urban spaces can play a decisive role in determining the urban identity next to other factors like reinforcing the legibility and representation of urban spaces which is of great significance. The utilization of regional materials in the frontages of the buildings in urban facilities will lead to the state where urban spaces in different cities are not even and similar and each city will have its own unique characteristics. Therefore, the materials and components, added to their technical characteristics, can also have symbolic meanings and characteristics and it is not only their decorative aspect that should be paid attention. This issue is seen today in the majority of Iran's cities. Materials and components are only elements to decorate without being affected by the region and cultural characteristics. In this way, there will be no more effects of regional architecture and its characteristics that distinguished cities from one another.

Signs and their roles in the legibility, representation and attachment to locations as presented in the first part of this article are among the important effective factors on understanding the city's appearance and distinguishing different urban spaces that can be analyzed from different aspects such as aesthetic and symbolic characteristics and their significant role in improving the quality level of urban spaces and eventually creating the sense of attachment to the place of living in the citizens. In general, three groups of signs can be considered in urban spaces. They are graphical, symbolic and natural signs.

**Recognition and analysis of the state of appearance and view**

- Recognizing and analyzing the topographic state and the possible domains of height dominance
- Recognizing and analyzing the state of visual qualities on the surrounding signs of the comprehensive domain (great scale)
- Recognizing and analyzing access points to views of the city's area
- Recognizing and analyzing the state of seeing the signs that are in the comprehensive domain
- Recognizing and analyzing visible natural and ecologic (environmental) qualities
- Recognizing and analyzing visual barriers

**Recognition of appearance and view**

- Recognizing and analyzing the state and quality of the appearance of the sidewalls, skyline and other urban factors
- Recognizing and analyzing the ecological state of the plants, natural view, presence of the water, plant species
- The quality of the appearance of the earth, landscaping, green spaces in the margins of the passage (natural and artificial green spaces)
- Recognizing and analyzing urban furniture like bus stations, trash cans, benches, telephone kiosks, public restrooms, etc.

### Table 1. Historical records

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<td>Scientific Study, Urban Management, 31, 2013</td>
<td>Adjusting activities along the network creates livelihood and encourages the presence in that space.</td>
<td>Searching for forming standards of urban spaces network in historical places of Iran (case studying: Isfahan, Dardasht)</td>
<td>2013</td>
<td>Sahar Esmaeilian, Mohammad Reza Jaafarpour</td>
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<td>Seasonal Magazine (draft) of the Public Affairs Department of the Ministry of Housing and Urban Design, Ideal of the Orient, 2013, 3-6</td>
<td>Guiding and leading construction in the margins of the street</td>
<td>Describing services of designing urban space (street)</td>
<td>2013</td>
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<td>Scientific Study Seasonal Magazine, 4, 2012, 4</td>
<td>Pavements are public domains in which many options can be presented to improve people's living quality.</td>
<td>Study and analysis of effective factors in the improvement of spatial qualities of pavements to increase the amount of social interactions</td>
<td>2012</td>
<td>Shahab Abbaszade, Soda Samari</td>
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<td>Urban Identity Magazine, 2013, 2-9</td>
<td>These sidewalls, aside from coordinating and respecting the architecture style, height and other structural factors have legibility and clarity and define the path of a street in a desirable way.</td>
<td>Effective factors on the role played by frontages and sidewalls in improving the legibility of the streets in the urban view</td>
<td>2012</td>
<td>Mansour Bahadori, Mohammad Reza Jaafarpour</td>
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<tr>
<td>Contemporary Sociology Magazine, 4, 2009, 6</td>
<td>Urban signs, added to making the cities legible can play an important role in the beautification of urban spaces and this is reflected in the proper use of colors, lights, forms and materials.</td>
<td>A work on urban anthropology / typology and its role in the legibility of urban spaces (case study: the city of Isfahan)</td>
<td>2009</td>
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Conclusion

Streets and different prominent and important elements in urban view and society require special attention and necessities in urban designing and programming because of having a special unique role in organizing the environmental qualities of the city. The subject of legibility in the street is also of a high significance. Among the factors that can have considerable effects on the legibility, clarity and also identity of the street are the sidewalls and the frontages of the buildings that are regarded as the vertical elements of the street's structure. Sidewalls and frontages are always in the view of the people who are in the street. The sidewalls, added to the coordination and respect to the architecture style, height and other structural factors, have legibility and clarity and define the path of a street properly. They also should create a sense of visual continuation and consecution and the desire for continuing the road and also should have diversity and should be memorable.

An urban set should be considered as an organized system whose structure is the purposeful composition of different components with different scales and functions. As it was also discussed in this study, this organized structure is not created by the random establishment of some spaces, but gets its wholeness from special characteristics and principles. Therefore, if needed measures are not taken to keep its authority and integration, it will die and cease to exist. Hegel states "...the sense of beauty is not a feeling that is given to us by the nature so that we could distinguish the beauty instantly in the utmost stage of inherent like a blind instinct. This sense needs training and the trained sense of beauty is what we call the taste." Therefore, in Hegel's view, the sense of beauty is a subjective matter, the result of a trained taste. Surely, the person who has studied aesthetics and is aware of the principles of designing and aesthetics will not have the same level of the sense of beauty as that of a person with lower education level. Therefore, the sense of beauty is a relative matter and to call an object, a building or even a city beautiful which is different in the views of different people. The sense of beauty that is accompanied by joy and desirability has a close relation with the sense of attachment. Therefore, with regard to the studied subject, the characteristics of a beautiful thing are different in the views of the common people with those of the experts in the fields of aesthetics and designing and this refers to Hegel's idea. In the view of the common people, a beautiful city should have desirable green spaces and should be clean with proper lighting in the night. The desirable lighting of urban spaces especially public and crowded spaces because of the legibility of the city's environment in the view of the common people is one of the most important aesthetic factors of the city. It also should not be forgotten that the proper use of lights in coordination with spatial conditions, using colorful lights to distinguish some spaces especially symbolic spaces are all effective in the legibility of the city and also cause improvement in the city's visual quality.

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