Studying the Effect of Urban Furniture on Urban Safety

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Author's contribution

The sole author designed, analysed, interpreted and prepared the manuscript.

Case Study

ABSTRACT

Lack of attention to efficiency in the space and its qualitative elements has led to side effects such as lack of environmental visual qualities, disorder and also of space efficiencies. These matters affect the safety and security of urban spaces. To maintain the effectiveness of urban spaces, it should be logical to have compatibility among the qualitative elements and the social and cultural specifications of the citizens from the physical and psychological aspects. At other side, the inefficiency of urban furniture emptied them from their aesthetic values and so-called modern equipment including more welfare facilities for the citizens according to their ontological philosophy and creates favourite urban spaces. However, they have been converted into inefficient and polluting elements in urban spaces. But with the proposed urban furniture designing, efficient urban spaces and identity presentation elements can be created.

1. INTRODUCTION

All human activities at the interference stage and forming of the artificial environment are somehow providing his human needs. Then, by urban making (city-making) science, we have tried to provide citizens needs some extent by the artificial environment. A provision of many urban plans, something which has been focused by designers and programmers is physiological

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needs and then safety needs and at other side, according to basic discussions of psychology; condition of relative healthiness of human being is providing of all needs as a generality and this view is observed as priorities of urban furniture elements designing. In fact, the furniture element merely for providing physiological and safety needs without pay attention to affection, self-esteem and self-thriving of citizens can't create a favourite and artificial human being residence. So, at the present study, we have paid attention to ace physical space elements (especially urban furniture elements) for having efficient space such as quality and space safety.

2. THE CONCEPT OF URBAN SPACE

Urban space is organized structure based on following rules including: connection between body and urban elements and equipment, buildings and their similarities and differences and finally place of buildings, fountains and stations or other three dimensional elements. They are part of public and open urban spaces and somehow they are a manifestation of communal life. It means that its place which citizens present there and its space that all people can access it and act there [1]. At this space, there is an opportunity to break some social boundaries and occurring of prepared events and person mix with each other at new social environment (Lynch, 1972). So, the main condition for public space to be considered urban space is happening of balance and social interaction. Urban space is artificial ordered and organised space, and it acts as a ground for human actions and activities. A human being is a part of space and he creates sense to space with his values and norms. Application of urban space is creating of comfort, fun and place for walking and also place for human traffic and transaction. Because they are public and haven't specific applications, they can accept all applications or selected applications. Urban space is considered as a ground for the promotion of urban elements and facilities, and then because of this matter, we pay attention to physics of urban space from side walker view at circles and enclosed, continuous and harmonised environments for forming of efficient and favourite urban space.

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Therefore it is impossible account every building opening as urban building rather special visual communications and moving at space with mentioned features led to urban space.

If not, open space will be accountable only as a mass of buildings [2].

Every presented definitiony points out to one or some aspects of these phenomena, so, a variety of urban space definitions mainly emanates from this reality that urban space is physical and social matter (Harrow, 1985). Urban space also can create a situation for creativity and entertaining environment at the urban collection to provide ground which every person needs for his situation understanding. Designing of volumes (urban furniture) should be considered for organising of urban space to have coexistence with space. sSpace is a relation between its organising factors because it has consisted of human societies and the physical things of elements and parts. So, urban space is purposeful, and it will be ground of defined events [1].

With an understanding of basic principles of urban space independence of forms aspects of historical and spatial periods, common features are manifested at urban space that they can be called spatial quality. Basic points of this spatial quality are included:

1- Unity, 2- order, 3- geometry,4- hierarchy,5- completeness of part, 6- completeness of generality.

These principles at a combination of each other create a picture which is always based on aesthetic principles and rules and they create an atmosphere of familiarity sense with space and also according to this definition, urban space is meaningful.

2.1 Physical Elements of Urban Space

Cities are created by current relation and activities which are done at it and also factors buildings, streets and spaces which we call them urban physics. It's obvious that city life and physics have a bilateral influence on each other. At the present time, the reason for many disorders tin urban physics is complex and chaotic relations at the city. Studies, programs and plans which are provided at the field of urban programming finally led to take decisions about urban physics. Disorder of urban physics leads to chaos comfort of urban citizens should have it.

Table 1. Physical elements of urban space

			Physical elements of urban space I elements
City entrance- void and full volume- skyline- city profile	Urban body	**Urban physics**	
Edge- node- road- quarter- sign	Urban appearance		
Perspective-space-urban furniture	Urban face		
	People and activities	**Urban spirit**	
	The dynamic feature of the city		
	Sound and smell		

At the rest, we paid to constructive factors of urban physics to determine the position of urban furniture elements are at which categories and other factors have what role? According to this concept, constructive factors of urban physics are including body, appearance and face. At the first step, these three factors make this concept.

2.2 Urban Face

City face is a first and important factor which effects on the observer. In other words, just as personal encounters with the city, he sees something which we call it urban face. Following three factors make this face including:

1. Façade
2. Space
3. Urban furniture [3]

1. Façade: Buildings make more facades but sometimes some natural factors such as trees row or decorative vegetables alongside building at facade observed. Facade design has an effective role at the creation of visual influence. We can observe the best perspective design at buildings which have been made with different architectural styles. A normal observer maybe can't to recognise different styles such as a skilled designer but differences of perspective designs leads to create different visual influences [3].

2. Space: The second factor of urban face creating is space. Space like perspective is the first factors which are seen by the observer. So, it has been categorised as urban face factors with perspective and urban furniture. Our meaning of space at this project is urban spaces which define its perspective and its furniture and also we have different kinds of urban space. Space identity of square, streets and green field, the more be clarified, the more is efficient.

3. Urban furniture: Urban furniture is eassential at the creation of urban visual influence, so it should be accounted as a factor of urban face creating is space. Understanding of urban visual influence is direct; just as observer enters at urban space see them. Some experts have spoken about the practical application of it, but we have focused on more visual and aesthetic aspects of these factors. Urban furniture is an interdisciplinary course and common chapter of different courses and different branches. Many persons are responsible for it and sometimes this case leads to its inefficiency.

Designing and urban programming, industrial designing, architecture, green field architecture, internal architecture, graphics designing, civil engineering, sculpture, painting, installations engineering and graphics are some jobs which have relations somehow with urban space.

2.3 At Summary, Duties of Guidance, Control, Security, Relationship, Facility, Decoration and Entertainment at Street and City should be Done by Part of Urban Furniture

Regulation of such activities in the city is out of the ability of one or more experts. This structural variety is a base to shape some facilities in cities under the title of "urban furniture". Observing different kinds of fountain, creek, pool, outdoor pool and some others reveal the need for the speciality of establishment engineers. All traffic signs, designs and their locating and whatever else compassed in this collection require the attitude of traffic engineers. In regard with designing environmental ads and synchronisation of signs and panel, it should be said that graphic design has an important role with the aim of creating a suitable visual relationship between citizens at the level of public places.

Discussing spatial structures, flooring, curb, creek, steps and tilt-away in city view, it is essential to have civil experts besides. Sculptures and painters use their art visually and practically to give soul to cold and ice levels of city and to fill it`s empty and boring spaces.

Architects grace to spaces through designing diverse volumes, experts in design and urban programming tend to offer suitable patterns of urban life in relationship with buildings, streets and squares and by general with urban spaces.

2.4 Investigation of Urban Space Definitions in the View of Thinkers in Relation Ito Urban Science

To know what urban space is, space has been classified in 3 physical, mental and social manners and in 5 recognisable areas. In this chapter we will offer different definitions of urban space from scientific view. " most believe that urban space has been evaluated based on two physical and social aspects, that is, physical investigations have been more considered in the view of architects while social ones in the view of urban sociologists, programmers and urban geographers" [4].

Just before 20 century when there has not been any separation between art, philosophy and social institutions, the urban space was indicative of gathering and there was not any difference between urban space and its performance. At the start of this century and once modern thinking was increasingly extended, modernism considered the urban space at the result of social compulsory performances happening in cities.

The modern movement made urban space is forgotten relying on functionalism, separation of urban elements, zoning and city division into 4 main performances – habitation, leisure, job and footwork. Attenuating in the discussion offered by Le Corbusier who has been elected as representative modern thinkers in the field of urban, disconnection of urban space with any sort of social, cultural, sociological and historical information can be revealed. bBased on its new thinking, modernism considers any cultural and historical information in regard with urban spaces both waste and disadvantageous; moreover, it attempts to the best of its ability to delete those effects. And it is the achievement of modern rationalism in the modern times; therefore, in thoughts of modernists there is no concept for urban space and most of them do not consider

any differentiation between private and public space. "From their view, space is organised around a large amount of neighbourhood centres as synthetic cubism reminds it. Since according to Le Corbusier the culture is an angled thinking, the angle of convergence determines the golden principle of correlations between structures and traffic by which we mean that functionalism and the same rational aesthetic principles shape the concept of dispersed structures compound elements in the space" [5].

Therefore, in the thoughts of modernists, particularly those belonging to Le Corbusier, the street as an urban space is nothing more than traffic performance and the city space is an infinitive, abstract one which is merely separating of buildings."That the building should be simple volumes in the sea of space infinity has been changed into a habit in the thought of modern city", said Alexander [4].

Urban furniture definition: The ultimate aim of the city is to create a creative and growers environment for those who live in. some equipment and complementary facilities are required in the space around buildings and structures to shape the urban life- equipment which make it possible to live in limited spaces of stone, concrete and glass and as house furniture gives soul to them. Equipment or urban furniture, street furniture or outdoor furniture are among common terms referred to those facilities.

These facilities are well known in England as street furniture, and in the U.S as public furniture or outdoor furniture. Following definitions are among those for urban furniture:

- Urban furniture is called as a set of mobile or semi-mobile tools or practical and decorative tools which are permanently or seasonally accessible to residents in public spaces with the permission of authorities.
- Urban furniture is an integral part of a city environment and makes it possible to know its identity
- Urban furniture is of some duties, including determining directions, offering information to the citizens, offering regulations, goods and products how to be distributed or gathered, protection, shattering or places to rest, tools for children to play, usage of edible materials, offering health services.

Urban furniture elements are removable in two groups at below:

1. Functional elements such as a light lamp, traffic light, wastebasket, bench, sunshade, bus stop, public phone booths, press office, post box, curbs…
2. Aesthetic elements such as flower pot, sculptures, decorative trees and flowers, fountain, flag

Urban furniture classification: Types of urban furniture are on some bases which are practically used in line with different needs in urban areas. Awareness of these types and familiarity with their nature can be effective in logical usage of them, especially nothing that their system in space is due to their nature and function.

In this regard, types of urban furniture are considered as below:

- Determining directions and offering information to citizens (traffic panels, No street names, information, clock, panels, ads…)
- Offering regulations and traffic equipment (stop panels, stop forbidden, mandatory regulations, fixed or mobile obstacles to park, stop…)
- Protection (fencing, yard, guardrails,… safety nets)
- Shattering or places to rest (benches, stone benches, sunshades, rain gears, bus stops…)
- Tools for children to play (different types of tools for children to play)
- Lights and lighting (different types of lamps and lamp bases…)
- Cultural symbols (sculptures, symbols, monuments…)
- Offering services (kiosks, flower shop, newsstands, supermarkets, health services, wastebaskets, mug, tickets for sale, temporary tents)
- Infrastructural urban equipment

Concept of efficient urban space: The concept of "efficient urban space" is in contrast with "inefficient urban space". The inefficiency is of two objective and subjective aspects. By objective one, it means all visual elements while by subjective one, it means unsafe elements…

"… Urban spaces are those for a good life and the good life takes place when it is adapted to human needs and replete with social actions and reactions which give the particular concept to everything in its real place and cause to the creation of a calm, comfortable and safe environment. This environment plays its role in connection with city backbone and shapes city characteristics; also, urban space is an integral part of urban space and structure which is transformed based on time or place conditions. This environment has organised itself at any stage and has avoided formal or spatial perturbation" [2].

Inefficient urban space is among known issues in criminology as an unsafe location in which criminal acts take place. Today, accessibility to criminal acts leads to express of insecurity sense in society.

It is no doubt that the growth of crime has been changed into a social problem that different political systems, ignoring ideology dominated on them, are unable to stop its growth and consequences such as insecurity sense and fear in people (Najafiabrand, 1999).

Inefficient spaces are among factors which bring insecurity in any society or city

Citizens are presented in urban spaces based on conditions at below:

1. Presenter in urban spaces
2. Passer-by in urban spaces
3. Observer in urban spaces

Permanent safety of space is consideredas a vital fact for the first group (presenters) so not to endanger their habitations or occupations. Location of those one`s habitations or occupations is in a relationship with urban space and its surrounding spaces.

Safeties while passing through space is vital for the second group (passers-by) to havea healthy mobility from A to B. these people are just ones passing space to achieve B from A.

The aim of efficient urban space is to provide comfort and convenience in the city. It is; of course, a space which bring, objectively and subjectively, the safety and convenience into existence for all presenters, passer- byes and observers.

The third group is those who are temporarily in space to look around, rest, and meet the friends…. we call them "observers". Their safety during presenting in space is of great importance since insecurity of space cannot lead to conditions for a vital understanding of environment, rest, social relationship…

Jane Jacobs considers convenience, safety and urban space efficiency as among vital factors dominated on space which unwillingly impact on citizens. In general "seven common traits" are considered as efficient environments. They have been obtained through researches on how to avoid crimes they are as below:

- Access and movement: places with defined directions, spaces and entrances which provide mobility and safety
- Structure: places should have structures by which no conflict is created
- Surveillance: places which are accessible for public
- Ownership: places which boost the sense of ownership, respect, responsibility and social relationship
- Physical protection: places which embrace essential facilities of the city

Urban outdoors and public spaces are among the first places which disturb space safety as the main area of users.

Urban spaces with safety, sense of belonging and dependence will surely continue their advancement without losing identity

2.5 The Concept of Efficient Urban Furniture

Urban spaces are not of visual beauty by themselves while the man needs the existence of order and beauty in his living environment.

The city can be conceived as a dynamic and alive creature with a soul, and a body and proper urban furniture can decorate the soul of the city and give citizens the visual convenience. Urban experts believe that if necessary criteria are not observed in urban designing, the citizens cant perform their essential activities while in proper urban spaces with proper furniture, the citizens can have essential activities; nailso, they tend to attend on streets or even prefer to walk ainstead to get on the bus. Proper urban furniture is one of the factors of increase in the presence of individuals in the city and then more relation-ship of them in environment and society. Making mental health and comfort of the citizens should not be ignored. Tehran city is a city with great urban problems so that problems related to urban furniture are at low priority. Urban furniture in our country is at its first stages, and our urban management in this regard has imitation aspect. A large amount of performed designs in urban

equipment have been modelled without a study on whether making them is of a in our country; also, since our nation`s needs are not considered during modelling them, the designs encounter with a lot of problems in many cases.

Designing urban furniture in many cases lacks minimum scientific and speciality standards. Functional dimension of these elements has unsuitable and inefficient performance as the main aspect considered for them (for example, panels, pedestrian bridges, wastebaskets, public phone booths. each one is designed regarding services offering by them order to satisfy public).

Urban furniture just like any other element has effected on city physiognomy, and it should be in parallel with customs and cultures through exact and proper planning. region`s identity and environment should be considered when it is to put a bench in a corner. For example, if a concrete chair is put in a corner without correspondence with meaning, it has an effect on the social behaviour of citizens, actions and reactions. "Readability" is a concept proposed by urban designers such as Kevin, American thinker – according to this concept, if physical arrangements and designing are done with principle planning, citizens will be able to depict a mental map of that city which is closer to reality. In a readable city, even unfamiliar citizens with city space can identify the it own without perplexity and find their directions using simple signs. On the other hand, the identity dimension of the city is among important aspects which can have a great role in visual memory. All pedestrian bridges change into a symbol in town when they have an identical designing. This experience has been observed in Paris in designing entrance doors of subways and park fencings. Paris is a city replete with known symbols exactly because of these sorts of elegances. It is introduced as a city with eminent identity. Furniture installation location as an element in relation with the function will dominate all other elements. , A furniture element with desirable designing but in an undesirable place leads to inefficiency.

Then, one issue which should be observed in urban furniture is that correct location should be considered to install equipment; moreover, designing furniture in urban spaces should be in accordance with human needs. Considering survival, security in a city and the sense of belonging to it as the most important needs, urban furniture should respond to these needs.

"urban furniture in Tehran space does not respect to citizen`s dignity; however, enormous endeavours along with expenses have been applied in this field but it is not sufficient yet. Tehran urban furniture has been applied especially to satisfy the social needs of citizens. On the other hand, the issue of equipping and shaping urban furniture has been proposed as a priority in such a way that authorities could attempt more than now" (Abaszadegan, 2004).

In the urban designing category, urban spaces are not just as a place for citizens to walk along or to disport, but places, where people are presented and have social contracts to each other, are of importance, too. Moreover, besides space designing characteristics in city, equipment and urban furniture are at the second stage of importance and even it is as important as space designing according to some thinkers to improve quality of spaces. Equipment and urban furniture not only create a desirable space but they can increase the beauty of the urban environment. Giving identity to urban space depends on both form characteristics and establishment beside quality of urban spaces. It is why that today, in designing urban spaces, a great deal of attention is paid to its form and shape as well as coordination of urban furniture with the environment. The amount of urban furniture usability depends on the way citizens use and satisfy their needs. Not to be satisfied with that furniture is one reason why citizens destroy them.

To avoid an increase in disorders in the city, it is essential to coordinate disperses measures and to make a coordinated structure. Then, it is possible to tie space and element functions and to avoid the random establishment of elements beside each other or their efficiency and at the result, thei energy of the space. This fact leads to the occurrence of desirable activity in space and a decrease in space exhaustion.

Following above, we will study some cases of urban spaces which are converted to a desirable space through observing coordination and proper usage of furniture.

Case 1: seashore project "Victoria and Alfred"

The old seashore, Victoria and Alfred in Cape Town as main tourism region has the equipment and urban elements that correlate between the old and new context of the commercial port,

tourism markets, goods transformation by sea as well as a yacht.

Powerful seashore has led to same time usage of hardwood, cast iron, stainless steel and concrete in street view designing and many elements reflect the sea effects. Good design of street equipment has correspondence with pavement included in polished concrete, macadam and dark brick; moreover, it is in correspondence with concrete fencings compounded with rings.

Case 2: Lang Market

Lang Market was built in 1985. It was one of the first projects of pedestrian routes in kip town. This small market has a distinguishing characteristic in regard ito the protection of historical hall and new administrative department. Although steel design is considered for lampposts and benches, it has a decorative form using perforated paper tape for light fittings to make a bright effect and also to decrease ablaze light of sodium lamps.

The single seat has been used instead of benches to forbid people from sleeping on. Metal decorative works are beige in colour to have more display in front of the eminent pavement and grey malleable concrete pool. Some details are designed so that they remind Victorian elements.

Case 3: Pioneer courthouse square:

This square in Portland is located in Orgalan state where thousands of citizens spend their leisure times through subways. Among important elements it can be referred to:

a) Steps as an element to sit on beside creation of a communicative spaces.
b) Columns rows as an element to make a visual order to define an urban edge.
c) Usage of the fountain to make more dynamism in space.

Case 4: Unity square:

This square was located at the centre of San Francisco and gradually was being forgotten, changing into a stagnant place but by a renew design in 1997, it found its boom. Among urban furniture characteristics are:

- Desirable usage of benches and chairs
- Usage of proper lighting
- Correlation with surrounding space to make vitality

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Picture 1. Seashore project "Victoria and Alfred"

Picture 2. Pioneer courthouse square

Picture 3. Unity square in San Francisco

Result obtained from worldwide experience studies in performed projects as below:

- General shape and form of collective spaces so that they have easy usage and avoid extra gatherings
- Urban remedies so that easiness and quality of a view ties materials ctoncerning urban space characteristics, but it does not forbid modernism
- Spaces made for pedestrians
- Cleaning, security, durability and shaping these spaces which are inevitable conditions for present citizens
- Optimised usage of urban furniture elements to respond needs of the project performance location which, as was shown in the figures, was done by lighting or benches.

2.6 Worldwide Thinking Dominated on Urban Furniture

After investigation of element designing due to worldwide experiences, the method of this thinking has been considered. They are a case that observing them has led to more worldwide usage of urban furniture at the world level. Considering these cases has caused to the most optimisation of performed designed equipment and to increase in the level of space efficiency:

1. Designing anti-vandalism furniture (historical meaning of the word from vandal) Damage to urban element and furniture depends on human behavioural patterns in which today it is called aa social phenomenon. The true understanding of this fact can impact organising urban elements and furniture in urban spaces. One reason for destroying a great deal of urban furniture is due to the expansion of human behavioural patterns through not considering correct location.
   According to the definition of "Vandalism" in Oxford dictionary, this term in 1663 was used to refer to any willingly or unwillingly destruction of any beautiful, respectable and protected thing and gradually

embraced any uncultured and rigid destruction.

2. Designing furniture in correspondence with the environment: Based on green design and attention of all contemporary designers to the environment, environmental consideration should be observed in any depicted design. Of them are street details and urban furniture.

3. Regarding urban furniture capabilities: We face this fact that citizens should know in urban regions that where they are, that is to have a kind of urban and cultural education. Based on this fact, a repeated design should not be performed in all city contexts but a different part of a city can be separated using urban furniture capabilities

3. CONCLUSION

Urban space is a result of human behavioural "function" with social and common dimensions and social activities "function" pattern is due to mutual system between society and culture and the forces initiated by them can lead to the production of urban spaces if there is an urban space. This space in cities more than any other space is a field for mutual social acts and overcoming to norms and social regulations and values and it needs logical behaviour, social control, and cooperation and it is a field for freedom, variety, coordination and social continence all are among parameters coming from social though in urban space display. Proper urban furniture is one of the factors of increase in pedestrians.

Among the reasons for urban furniture inefficiency in our country, it can be referred to the following:

1. Designing in the management of these elements is limited
2. Performed designs lack scientific studied
3. Iranian needs as citizens have not been considered in performed designs
4. Performed urban furniture lacks minimum scientific standards

5. Functional dimension of these views are unsuitable and inefficient
6. Lack of observing principle location
7. Lack of beauty in performed forms (for not observing qualitative criteria)

According to above, some reasons of efficiency of space through urban furniture elements are as below: Activity can be created by these elements to respond citizen`s need; therefore, using these elements and their correct arrangement and just by optimisation measures we can to have an efficient place.

Presence of suitable urban furniture can lead to a proper distribution of functions and services and proper accessibility to them, the creation of the organisation and proper function for obtaining usability and effectiveness of urban facilities, increase in desirability of physical spaces in order to work, live, do social, economic and cultural performances. In the end, urban space can be of value through urban furniture and finds character and uniqueness.

COMPETING INTERESTS

Author has declared that no competing interests exist.

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