# Explanation of Environmental Aesthetic Factors of Urban Design

**ALI REZA SADEGHI[1], MOHAMMAD REZA POURJAFAR[2],**
**ALI AKBAR TAGHVAEE[3] and PARVIZ AZADFALLAH[4]**

[1]PhD Candidate of Urban Design at Art and Architecture Faculty of Tarbiat Modares University, Tehran.
[2]Full Professor and Dean of the Department of Urban Design & Planning,
Faculty of Art and Architecture at Tarbiat Modares University, Tehran.
[3]Associate Professor and Education Deputy Manager of Art and Architecture Faculty
at Tarbiat Modares University, Tehran.
[4]Associate Professor and Dean of the Department of Psychology,
Faculty of Humanitiesat Tarbiat Modares University, Tehran.

## ABSTRACT

The main objective of this manuscript is to investigate the effects of environmental aesthetics elements of urban designing on formation of the main part of the city (as the fundamental characteristics of the urban form). For this purpose, this comparative article explains the environmental aesthetic elements that are affecting the formation of main structure of the cities during the history of urbanism history (Teotihuacan, Beijing, Athena, Rome, Paris, Washington, Brasilia, and Isfahan) to pave the way for analysis of environmental aesthetics and improvement of contemporary cities' quality. For this purpose, the present study employs analytical-descriptive research methods, and literature, references, and visual documents reviews. The results from this study indicate that environmental aesthetic elements of urban designing are affecting the formation of an urban form in two ways, namely visual-form and cognitive-semantic. Visual-form elements include the quality of landscape and its factors, the quality of urban buildings and their elements, the quality of public spaces and their elements, continuity, enclosure, diversity of forms, the quality of views and vistas, and coordination with the context. Cognitive-conceptual elements include identity, legibility, concept, perceptibility, coherent mental image, customizability, social and cultural environment, and richness of activities.

**Key words:** Environmental Aesthetics, Main Structure, Form of City, Visual-formal factors,Perceptional-meaning factors.

## INTRODUCTION

There are two views on the concept of form. The first one looks at form versus content. Based on this old point of view, form or aspect is the shape and content is the performance of a phenomenon. On the other hand, according to the second perspective, form represents the aspect, structure, and the way content is developed, visualized, and expressed. From this standpoint, aesthetics is defined as emotional, obvious, and sensory presentation of a phenomenon which exposes itself to judgment.

Construction of a city or city's spatial structure shows the discipline and relationship between physical elements and uses and activities in the city. This structure is formed in the urban space and from the resultant of forces affecting the city over time. However, to such thinkers as Christopher Alexander and Edmond Bacon, construction of a city

as a whole can be divided into core and non-core sectors. In effect, it is the major part that forms the vertebral column of the city and represents stability, continuity, identity, originality, and meaning of the city. In other words, this core structure is responsible for transferring the city's message to its citizens and visitors. Other parts of the city, which comprise the non-core part of it, are taken to be environments for showing diversity, freedom, authority, and change. At this time, it appears that if we consider the urban form as all elements of natural and human-made environment that surrounds human being, which men can potentially connect with it, the core structure of the city can be a fundamental characteristic of the urban form. Since, the main structure of the city is comprised of such elements as the key axes of communication, major open spaces, public buildings, etc., with which people are always connected. (Picture1)

On the other hand, environmental aesthetics is one of the two or three important areas of aesthetics which have been taken into consideration since the second half of twentieth century. The most significant subjects, with whom environmental aesthetics is involved, are those related to understanding of the universe aesthetics and world aesthetics whose constituents are not merely objects and phenomena. They are, rather, bigger elements found in the environment. Therefore, the domain of environmental aesthetics goes beyond the limited borders of the art world and human understanding and broadens to aesthetic understanding of natural and human-made artificial environments which are influenced by the presence of men. In this regard, it seems that in this era analysis of environmental aesthetics characteristics of urban form is more essential than ever. Since, today with expansion of cities, implementation of several projects in such human societies and ever increasing changes in form of the city and main structure of metropolises, the need for analysis and explanation of the effects from implementation of urban projects and plans on citizens and environment is sensed more than ever. Indeed, analysis of human-made environment and investigation of urban plans' impact on human being and environment are the main responsibilities of urban designers to meet high spectacular goals such as improvement of the quality of human-made environment.

## MATERIALS AND METHODS

Through reviewing the previous researches in fields of form aesthetics and urban landscape in the past half century, it is evident that discussions about aesthetics in this field have gone through changes from a visual-artistic standpoint into an issue with perceptional-meaning tendencies. This is quite clear in the move from picturesque style to a conceptual tendency in the aesthetics of form and city landscape. picturesque which had an architectural focus on the artistic-visual aspects of landscape such as the plurality and diversity, humane scale, naturalism and organic order in form and color combination, has been popular by a group of scholars including Sitte, Gibberd, Halprin[1,2]**.** Despite modernists who advertise "object-like architecture", Collin takes "the art of communication" more into account, combines the Genius Loci (sense of place) with movement and brings about the constant views of the urban environment, [3]. On one hand, Collin's approach, however original and moving, is faced with criticism in the field of perception of beauty due to its focus on personal perception and feeling of an urban landscape experience. On the other hand, urban aesthetics do not have the capability to compete with Jacobs and Newman's approach which have been developed in the 60s and 70s in social-behavioral science[4,5]. In addition, it could not fit in with the phenomenological theories of Relph and Jakson[6,7] or with theoretical and philosophical factors of Norberg Schulz in the following decade[8]

These new thought trends and considerations to different dimensions of urban design weakened discussions about aesthetics and particularly those related to picturesque and Collin's approach. Gradually, urban landscape aesthetics has moved its focus from a subjective, sentimental and professional attitude related to visual qualities such as form, color and context to a cognitive-perceptional study of urban landscape. For this reason, theories of form aesthetics and urban landscape are discussed more in psychological studies of the environment than in the field of urban design. Such theories include Appleton's survival theory in beauty preferences that seeks a relation between an appropriate condition for survival and beauty[9]. In his evolutionary theory, Stephen Kaplan puts his focus on the obedience of people and the

degree they are familiar with landscape, orientation, and obtaining new data in beauty preferences[10].

Regarding what was said, explanation of environmental aesthetic elements of urban form and spaces seems essential. Therefore, the main objective of this text is to investigate the effects of environmental aesthetics elements of urban designing on formation of the main part of the city (as the fundamental characteristics of the urban form). Since, human is always interacting with surrounding environment and takes feeling, understanding, and intuition of its different aspects through his senses, especially sense of sight, into consideration. In fact, these feeling, understanding, and intuition of citizens of superficial aspects of the main structure form of the cities shape the ground for formation of coherent mental picture and good memory in them. In addition, with respect to urban design and environment quality improvement related issues, enhancement of objective and subjective aesthetic qualities (visual-form and conceptual-cognitive qualities) is very important in urban public realms, and it seems to have a fundamental role in form of legible and original cities.

This comparative article explains the environmental aesthetic elements that are affecting the formation of main structure of the cities during the history of urbanism history (Teotihuacan, Beijing, Athena, Rome, Paris, Washington, Brasilia, and Isfahan) to pave the way for analysis of environmental aesthetics and improvement of contemporary cities' quality. For this purpose, the present study employs analytical-descriptive research methods, and literature, references, and visual documents reviews.

**Environmental Aesthetics in Urban Design**

Theoreticiansof aesthetic theories are divided into three general groups including pre-modern era, modern and postmodern. The pre-modern period dates back to the times before the renaissance, i.e. the time when arts were serving the religion. (Those arts are also called traditional art). There was not much innovation and creativity in that period. Everything was reproduced in a traditional way and the artist did not have any opportunity to express his own imagination. Natural beauty (inspired by 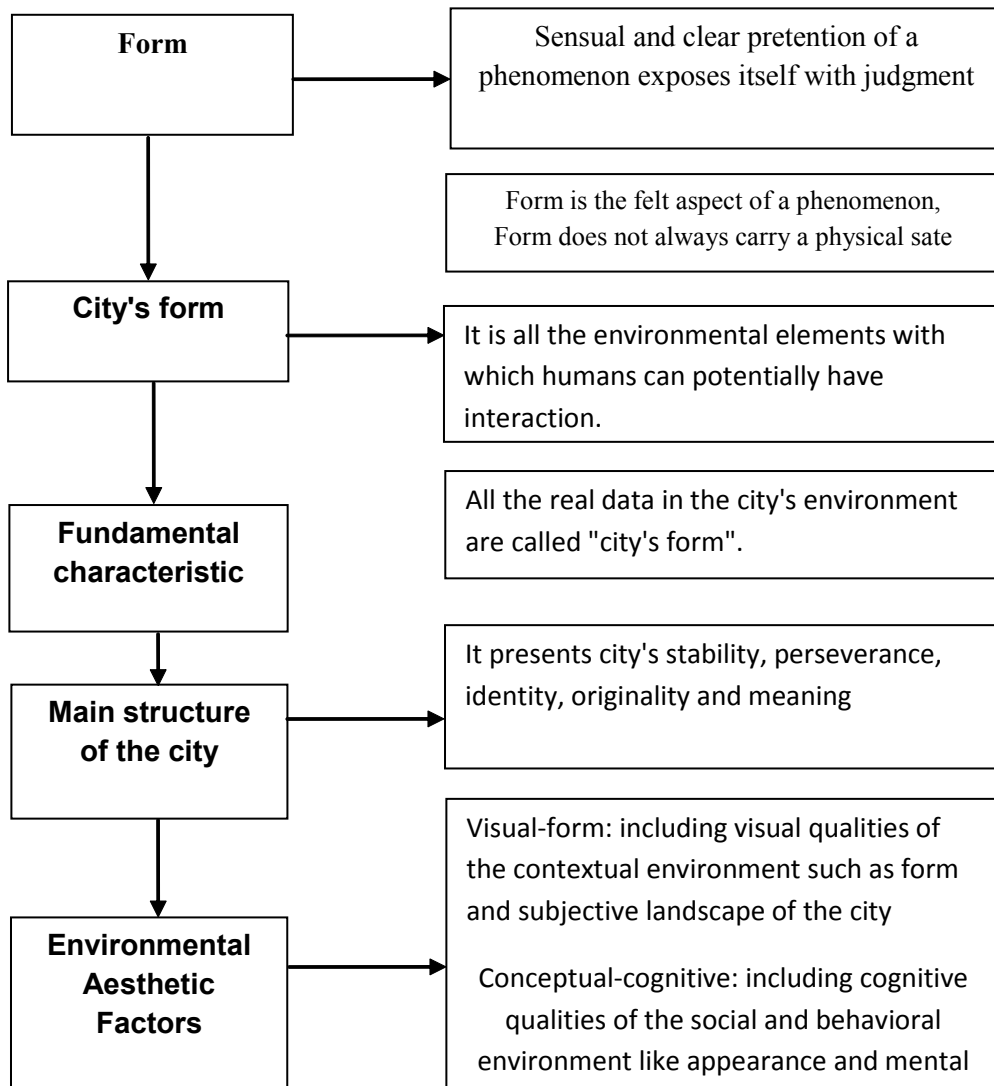the nature) is prior to artistic and creative beauty[11]. The modern period emerges when tradition is expelled and everything is renewed. This renewing starts with the emergence of new territories and fields for human beings. Modern thought is actually rational thinking, self-centered and regards objective thinking, pragmatism, emotionalism and individual intuition and is, as a result, a kind of creativity and innovation which finally values the work's integrity and independence. When defining the modern aesthetics, we can refer to Frank Lloyd Wright and Le Corbusier who are two major modernist architects. Wright takes the concept of beauty in organic architecture from nature and believes that principles and order are the basic factorsfor an evolved beauty. Beauty is a proportional display as color, line and form. This proportion is so honest as if forms and colors seek their existential cause in displaying an eternal design. Here, it should be noted that it is not only the form and color that Wright considers as important in beauty; rather, he values the systematic nature, order, balance, and the hidden integrity of nature, and Le Corbusier as a pioneer of modern techniques utilizes forms which are products of modern engineering[12]. Quite the opposite, the postmodern era focuses on plurality, does not give any credit to the work's independent nature, takes non-artistic issues such as social-political status into account, and finally pulls the aesthetic value of a work of art to the edges.Postmodernbeauty is a plural beauty that is good for every "cultural taste" and for diverse impressions of a good life[13]. But, the present era in which capitalism is dominant in relations between human and his environment, aesthetic values are being neglected as a result of economic relations and also due to the necessity of a benefit-seeking attitude toward natural and artificial environment surrounding people. Therefore, to challenge this narrow-minded way of thinking toward the relation between human and his surrounding environment, new concepts are put forward in aesthetics which are in fact framed in an environmental aesthetics. Indeed, environmental aesthetic is a concept which should not be merely limited to contexts of place, ethics and spiritual thoughts, but rather, it should inevitably be implemented in a social, economical and political body.Environmental aesthetics is a multi-senseand widespread engagement with the environment of which human beings are the main components. In environmental aesthetics, when a sublime feeling reaches its peak, experience of beauty can be truly
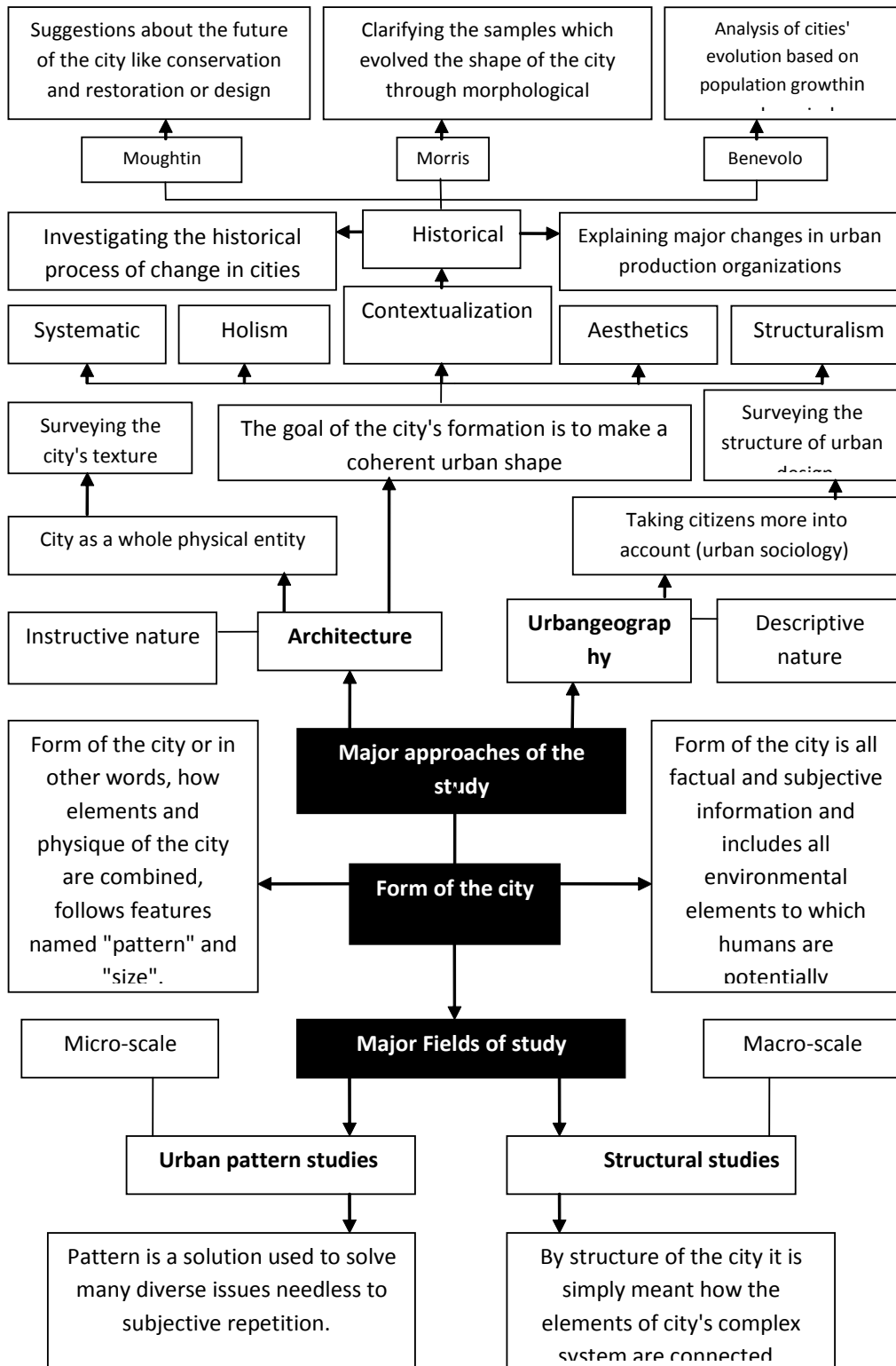
Picture1: approaches about city's form. Source: the authors using different sources

strong and contain valuable mental stimulations. In this kind of aesthetics, beauty or the sublime can be a routine and typical pleasure, present in human being's surroundings the highest level of which is in an environment filled with integrity, complexity, and mystery. In Whitehead's aesthetic theory, it is stated that size or diversity of forms along with quality of intensity and comparative magnifying, needless to a variety of qualities, are able to generate a powerful environment. In fact, in environmental aesthetics, qualities of integrity, complexity and mystery are combined together in order to give meaning to the beauty and sublime in human's surrounding environment[14]. In respect to this, Schulz makes a connection between architecture, place and cultural identity and believes that experience of the place is actually the experience of the meaning of the place; and experience of beauty in an environment is indeed an appreciation of meaning[8]. In his book, "The Image of the City"", Lynch considers visualizing space and time as the basis to reach an understanding of environment, and thus, believes that all of these elements together have a close affinity with beauty[15]. In his normaltheory of the good

| | |
|---|---|
| **Form** | Sensual and clear pretention of a phenomenon exposes itself with judgment |
| | Form is the felt aspect of a phenomenon, Form does not always carry a physical sate |
| **City's form** | It is all the environmental elements with which humans can potentially have interaction. |
| **Fundamental characteristic** | All the real data in the city's environment are called "city's form". |
| **Main structure of the city** | It presents city's stability, perseverance, identity, originality and meaning |
| **Environmental Aesthetic Factors** | Visual-form: including visual qualities of the contextual environment such as form and subjective landscape of the city  Conceptual-cognitive: including cognitive qualities of the social and behavioral environment like appearance and mental |

**Picture 2: engagement of the city's form, main structure and environmental aesthetic factors; Source: the authors**

**Table 1: Presentation of environmental aesthetic factors by urban design scholars.
Sources: the authors using diverse sources**

| Theoretician | Environmental Aesthetic Factors in Urban Design | |
| --- | --- | --- |
| | **Visual-form factors** | **Cognitive-conceptual factors** |
| Jane Jacobs (1961) | Considering street elements | Flexible spaces:The possibility of socializing Richness of activities |
| Kevin Lynch (1984) | Compatibility and Fit | Sense, Vitality |
| Violich (1983) | Urban forms reminding of the past (cultural heritage) | legibility of the environment, freedom of choice, possibility of a social life |
| Ian Bentley and Others (1985) | Visual intrusion; diversity of forms; visual compatibility | legibility; flexibility; customizability |
| Ragger Trancik (1986) | Enclosure of the spaces; fusion of edges; controlling point of views and perspectives | compatibility of interior and exterior spaces |
| Coleman (1987) | Historical conservation and urban restoration; architectural values | Cultural environments, delightfulness and variety of Functions |
| Allen Jacobs and Appleyard (1987) | Delightfulness (visual diversity) | Originality and meaning; collective life; identity and dominance |
| Prince Charles (1989) | Hierarchy; scale; harmony; enclosure; materials; decorations; art; symbols; signs and lights | Position; local community; (genius loci, sense of place and belonging) |
| Michael Soutworth (1989) | Structure; form; view and landscape | Legibility; genius loci; identity; human scale; (passerby) |
| Francis Tibbalds(1988-92) | Learning from the past; respecting the present texture | Considering places before buildings; human scale; legibility |
| Greene (1992) | Order includes: coherence, clarity, continuation. Appeal includes: scale; visual coordination; harmony | Identity includes: centre; unity; character; delightfulness |
| Brian Goodey (1993) | Coordination with the current context; diversity | Delightfulness; human scale; customizability; legibility; richness of activities |
| LPAC, (1993) | Intensity of texture; visual richness | Structure, legibility and identity, human scale, public and specific places |
| Haughton and Hunter (1994) | Diversity; concentration, proper scale, creative co-relations | —- |
| Nelessen, | The core(concentration center); street landscape; | Human scale |

| | | |
|---|---|---|
| (1994) | diversity; use of design terminology | |
| PMUDTF (1996) | Considering the context and local character; beholding capability | —- |
| Punter and Carmona (1997) | Objective urban landscape; artificial form; ground landscape | Public perception; quality evaluation; functions and perceived appeals; reminder of cultural concepts; legibility |
| Richard Rogers (1999) | Character; considering sights and positions; context; scale | —- |
| Department of environment, transportation and regions in Britain (2000) | Character, continuity and enclosure, structure of urban space, urban divisions, i.e., street decoration patterns ;( blocks, pieces, and buildings); natural landscape; scale: altitude; scale: building; exterior: details; exterior: materials | Identity; legibility |
| Summary | The quality of natural landscape and its factors, the quality of urban buildings and their elements, the quality of public spaces and their elements, continuity, enclosure, diversity of forms, the quality of views and vistas and coordination with the context | Identity, legibility, concept, perceptibility, coherent mental image, customizability, cultural and social environment, richness of activities |

**Table 2: Explanation of the role of aesthetic - form factors in the main structure of cities. Source: the authors**

| How environmental aesthetics has effected these cities | The name of the city |
|---|---|
| Structure of this city: it was a center for magnificent feasts; there were pyramids called the Sun and the Moon pyramids which were used as an axis (place) to worship gods and it also had a main rout called "Road for the Dead" and other diverse elements located around it. | Teotihuacan, capital city of a civilization under the same name in central America, (first century A.D) |

Positioning of all huge buildings in a vertical (upright) network
Its base is on a pivot which has a specific geographical direction
based on religious beliefs.
its general structure is not symmetrical
Positioning of minor pyramids' shafts is proportionate in relation to minor
axis and disproportionate in relation to the
"Road for the Dead" or the major axis.
The city is indeed a series of square-like modules.
It is influenced by two powerful axis, namely, the
king's seat and the Sun pyramid.
Dominant characteristic: diversity of combinations which are
creatively free from the dominance of symmetrical pivots.
It is like branches of a tree and has an organic growth (organized growth).
There is a possibility of pursuing harmonious functions
with the whole system.

| | |
|---|---|
| Base of the work is on continuity and hierarchy | Beijing, china |
| The focus is on the orientation of the main structure along with adding | |
| to the floors of the building | |
| Clarifying direction of the movement of the main axis with the building, | |
| kind of the movement in pavements and gaining a chain of space experiences | |
| Moving in the space and passing from the spaces with different colors | |
| Passing from one scale into another | |
| Presence of a specific rhythm of basic units from open and close spaces | |
| to the emperor's seat in the main axis. | |
| Presence of an extensive  pivot and several supporting units in the fringe | |
| Presence of a strong pivotal balance and lack of a stiff pivotal symmetry | |
| Structure of the city and its main elements surround Acropolis, Agora, | Athens, Greece |
| some entertainment and cultural spot, a religious area and | |
| at times an industrial port | |
|  Agora is the beating heart of the city and a place to practice different activities | |
| Formation of Agora in a place that was a market and meeting spot before and | |
| was located on the path of Panathenaic road or the main commuting road. | |
| Agora was in the physical center of the city between city's gate and Acropolis | |
| Around Agora, there were pavements, porches, and aprons for holding | |
| meetings and court sessions. | |
| Pattern of organizing the main structure includes two major center and | |
| several marginal (minor) ones. | |
| The link between the two major centers, that is, Agora and Acropolis, | |
| is done through a strong communication path | |
| The most important element of the city, namely, acropolis and particularly | |
| Parthenon temple, has a great visual dominance over the whole city and | |
| the meeting center and that is due to its location on the highest part of the city. | |
| Every building complex has an internal order with the new ones around one | |
| pivot which has only one center. | |
| There is a link between surrounded spaces, and a mutual | |
| adherence among the buildings | |
| There is an eternal beauty and diversity resulting | |
| from a link between spaces and the internal order of buildings. | |
| A city beside the Tiber river and surrounding the Seven Hills | Rome, the Capital |
| | of Roman Emperors |
| The river and the Seven Hills had a great impact on space | |
| order of the structure of the city | |
| There were sanctuaries and shrines, graveyards and necks (causeway), | |
| public bathrooms, stadiums, theaters and special places for meetings, | |
| markets, gardens, and also squares in central part of the city. | |
| Forums or the city's meeting place and traditional markets are located | |
| in a valley among the hills and have the view of Jupiter temple | |
| which had been considered another important element of the city | |
| The city center's growth through a series of royal forums connected to | |
| each other and in a row ( the axis) are linked and the forums are | |
| connected to the new ones. | |
| The main idea of the designers of the city monuments was to display | |
| their magnificence and splendor and their form in order to be dominant | |
| over all buildings of the city( Rome in the first century) | |
| Apart from the river and the Seven Hills, The main structure of | |

ancient Rome around 3 A.D. consisted of isolated monumental
buildings in the central areas of the city.
There were a plethora of public buildings in the adjacent and connected
complexes and all have orderly geometrical forms.
The main idea of the city's organization in Middle Ages was to make
points or centers in the space which were defined by vertical elements
and communication lines between them.
The central spots include intersections among the appealing forces
(i.e. place of ancient buildings, churches, gates, and public squares).
Endless diversity of angel communication spots and a vast variety
of marginal places having different angles in relation to each other.
When the structure was reorganized by Sixtus V and influenced by
baroque urbanization, places were designed to characterize some
elements in the formless shape of buildings.
Some pivots and places were designed to define, explain and clarify
the connection between sings of the old city.
In times of Sixtus V, in order to make communication possible among
the main parts of the city, some parts were built in a lower level in order
to have a greater view of the monuments.

The main structure of the city consists of two major axes, that is,                Brasilia, Brazil
east-west and north-east axis intersection of which is actually
making the central part of the city.
The east-west axis is known as the main monumental axis
and it is the ceremonial (formal) path.
many outstanding buildings are formed on margins of the main axis
In one side of the main axis, there is governmental triangle
or square which has a view of a lake.
Location of  the central churches, universities, trade centers and
embassy buildings of the city are in a way which have cultural and
entertainment centers in the margins of the two main axis of the city
Building a monumental place in the entertainment spot of the beach
 between the congress building and TV tower through a pathway of shortcuts.
Presentation of a new outlook toward the city as a whole structure.

Presence of visual and symbolic values of the elements not only in regard                Paris, France
to architectural qualities or exterior structure of buildings, but also,
in regard to their positioning and combination.
Remarkable buildings and monuments of the city are at
times located on the main axis of the urban roads.
The axis owns a definite and specific beginning and ending point.
The Victory Gate is located in the center of the branching
pattern of main streets and is seen from 12 streets.
There can be seen a visual continuity, passage of time and history
over this city which bring a kind of order to the buildings that
belong to different historical periods.
Regarding the visual order of the elements, their combination with
marginal axis is performed in a way in which all significant elements
are seen from the major axis in Champs-Elysees avenue.
There is an appropriate symmetry between the qualities of
signs in the city in relation to its size.
There are agreeable distances between buildings so

that they can be beheld from the adjacent monuments.
Observing principles of aesthetics in order to add to visual
impact of urban signs
Combination of buildings and urban signs with open urban spaces
Having appropriate gradient and hills in order to a
have a better display of buildings.
Having unique visual characteristics on walls of the main
pathways which include buildings with designed exteriors.
The essential focus of the designer is on making pleasant                    Washington,
urban views and dominant perspectives.                                       the United States of
                                                                             America

Elements and main central areas are being under
spotlight from different directions through main streets.
Main streets determine the spotlights and access
to main areas of the city
Making exterior yards, axes, and pavements for
entertainment and designing signs.
Three monuments including the Capitol Building, the White House,
and the Washington Monument, are the main elements which
dominate the city regarding, legibility and visual image and
are truly influencing the total image of the city.
Making a visual connection among the streets by
through defining elements
Cyclic patterns are utilized and the elements are put in a way
that are seen easily and thus make closed perspectives and
add to the visual aspects of the city's signs.
Making strong connections among monumental buildings while
providing enclosed and formed spaces for human activities.
A porch (private spot) was designed for buildings which gives
them dominance over the surrounding environment based
on the position of the building.
There is a kind of visual attachment in the whole city,
particularly in the central core.
There are proportionate architecture and similar forms
in buildings located in main streets.
There are series of buildings with same height and continuation
and substantial shapeless spaces which have a height limit.
Rows of planted trees in both sides of certain streets have
made defined landscapes.
The city has topographical relation with street lines
determining the position of the main axis and its main elements.
Using natural geographical facilities of the place in designing
main structure of   the city.
Main axis are selected in a way that not only give pleasant
views toward the river, but also are contributing to the topographical
land issues of the city in the best way possible.
There are engineered spaces, all in order and substantial.                    Isfahan, Iran
Presence of diverse spaces
Having major views and perspectives
There is a coordination with context

Diversity of space enclosures
Focusing on main buildings in public spaces
Using natural elements such as trees and rivers to put the city in order.
Continuity and attachment of older textures to newer ones
Arrayed construction of exteriors using
special architecture and ornamentation

form of a city, he points at insufficiency of concepts such as harmony, diversity, and order present in an object or landscape and believes that one should begin with cognitive images and users' priorities and see the person and place as a whole[16]. Boyer also discusses the role of collective memories and semantic dimensions in achieving the pleasure of an environment and understanding of its beauty[17]

From the environmental aesthetics point of view, an urban space is a beautiful space in which aesthetic criteria are involved in its construction and that means urban designing is actually the very creation of a beautiful urban space. There are two schools of thought in understanding beauty. One takes perceptional elements in time of perception into account and the other discusses non-perceptional elements such as culture, scientific knowledge and patterns as the influential factor.

**Explanation of Environmental Aesthetics Factors in Urban Design**

As mentioned above, nowadays, considering environmental aesthetics, explanation of its factors and utilizing them in analyzing urban spaces is of great significance in urban design. Authors of this article believe that environmental aesthetic factors in urban design are divided into two groups that are, visual-form qualities and cognitive-semantic qualities (conceptual-cognitive qualities). Visual-form elements include visual qualities of the contextual environment such as form and subjective landscape of the city and conceptual-cognitive elements include cognitive qualities of the social and behavioral environment like image and mental landscape of the city.

Furthermore, many of urban design scholars who have explained the qualities of a good urban design through a normal approach, have focused on taking environmental aesthetic factors into consideration in urban design. In table 1, both visual-form and conceptual-cognitive qualities of

environmental aesthetics discussed by some urban design scholars are presented.

**DISCUSSION AND CONCLUSION**

It has been said that the main structure of every city is a fundamental characteristic of the city's form which has a remarkable role in that city's stability, continuity, identity, originality and meaning. It has also been noticed that environmental aesthetic factors have always played a vital role in the formation of a city's structure. (Picture 2)

Moreover, in this research, analysis of aesthetic factors presented by urban design scholars has led to the division of suggested environmental aesthetics of city's form into two groups, namely, visual-form factors and cognitive-conceptual factors. These factors include:
1.   Aesthetic-form factors including: the quality of natural landscape and its elements, the quality of urban buildings and their elements, the quality of public spaces and their elements, continuity, enclosure, diversity of forms, the quality of views and vistas and coordination with the context
2.   Cognitive-conceptual factors including: identity, legibility, concept, perceptibility, coherent mental image, customizability, social and cultural environment, richness of activities.

Besides, despite having different patterns of city structure and belonging to diverse civilizations, most ancient cities' form in different parts of the world have some things in common, and thus, through examining them, we can find certain principles about their shaping, survival and restoration of the main structure of the city. However, it seems that one common reason of the survival and restoration of these cities is use of environmental aesthetic factors, namely, visual-form factors and cognitive-conceptual factors, in urban design and in organizing

**Table 3: Explanation of environmental aesthetic factors of the city's form through a comparative approach. Source: the authors**

Explanation of visual-aesthetic evaluation factors of the main structure of the cities
( high impact; medium impact; low impact )

| The suggested factors | | How the factors impact the formation of cities | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Teotihuacan | Beijing | Athens | Rome | Brasilia | Paris | Washington | Isfahan |
| **Visual-form factors** | The quality of the earth's natural landscape and its elements | • | •• | ••• | ••• | • | ••• | ••• | ••• |
| | The quality of urban buildings and their elements | •• | ••• | ••• | ••• | ••• | ••• | ••• | ••• |
| | The quality of public spaces and their elements | •• | • | ••• | ••• | •• | ••• | ••• | ••• |
| | Continuity | ••• | ••• | ••• | ••• | •• | ••• | ••• | ••• |
| | Enclosure | ••• | ••• | ••• | ••• | ••• | ••• | ••• | •• |
| | Diversity of forms | ••• | ••• | ••• | ••• | ••• | ••• | ••• | ••• |
| | Quality of views and vistas | ••• | ••• | ••• | ••• | •• | ••• | ••• | ••• |
| | Coordination with the context | •• | ••• | ••• | ••• | • | ••• | ••• | ••• |
| **Cognitive-conceptual factor** | Identity | ••• | ••• | ••• | ••• | ••• | ••• | ••• | ••• |
| | Eligibility | •• | ••• | ••• | ••• | ••• | ••• | ••• | ••• |
| | Concept | ••• | ••• | ••• | ••• | ••• | ••• | ••• | ••• |
| | Perceptibility | ••• | •• | ••• | ••• | •• | ••• | ••• | ••• |
| | Coherent Mental image | ••• | ••• | ••• | ••• | ••• | ••• | ••• | ••• |
| | Customizability | • | • | • | ••• | • | •• | •• | ••• |
| | Social and cultural environments | • | • | ••• | ••• | • | ••• | ••• | ••• |
| | Richness of activities | • | • | ••• | ••• | •• | ••• | • | ••• |

**Table 4: environmental aesthetic factors in urban design. Source: the authors**

| Environmental Aesthetic Factors | Concept |
| --- | --- |
| **The quality of natural landscape** | |
| Shape and form of the land | What is the landform like? How are the gradients? |
| Plants and trees | What kinds of trees are used in the so-called areas? Location spots, species, conditions, size. |
| Texture of the land | How are the materials of the land surface? Do they have influential and palpable features? |
| Orientation | How is the land's gradient in the so-called site connected with the natural light and climate features? |
| **Coordination with the context** | |
| architectural context | How is the architecture of the current context and texture done? |
| Conservation the historical links | Does it have any particular organization? Are these organizations taken into account? |
| Development pattern | |
| **The quality of urban buildings** | |
| Conservation of physical identity of the context | How was the formation of the current context and texture during the course of time? |
| Color and texture | Are there any continuity and consistency seen in different periods of time? |
| Diversity of exteriors and walls | How are street patterns of the texture and development orientations performed? Are features of the context truly coordinated? Have conservation of physical, historical and their identity of the texture been taken into consideration for future developments? |
| Specific building elements | What remarkable colors and textures are seen in buildings, structures, and surface of the area? |
| Rhythm and pattern | How many remarkable views are seen in the buildings? Are they various and diverse? Are there any particular construction elements such as windows, doors, margins, fences, protections, balconies and chimneys in the so-called area? What kind of order and principle does the combination of buildings in the so-called area have? Are there any clear and identifiable pattern and rhythm? |
| Appealing details | Are details and construction materials used to add to the attraction of the buildings? |
| Construction materials | What kinds of construction materials are used in the buildings which form public places? |
| Decay and decomposing of physical appearance | |
| Division and intensity of physical texture | |
| Continuity | How old are the buildings and structures in the so-called area? |

| Category | Element | Question |
|---|---|---|
| Enclosure | Continuity of the order in buildings | Is there any physical decay or decomposition in the buildings? Does the division of buildings have balance? Are the heights of the buildings harmonious? |
| The quality of public spaces | Active partitions (walls) | Are the building lines continuous or are there any unusual detachments or construction causing a halt in the buildings? Is the activity in the ground floor walls (partitions) continuous or detached? |
| | Spaces being Enclosed and limited (narrowed) | Is the continuation of the active walls are protected along with the structure? Are the public spaces truly enclosed by the buildings or green elements? |
| | A sense of enclosure | Which side of buildings plays a role in enclosing spaces? |
| | Visual intrusion | How are the features of buildings, structures or natural elements |
| | Visual aptness | increasing or decreasing the enclosure feeling? |
| | The quality of construction and materials | Are public spaces exposed to any view? |
| | Green spaces | What are the most appealing visual characteristic of the so-called area? |
| | Urban furnishings | How is the quality of the construction and materials used on the grounds, |
| | Having structures with movement capabilities) movable) | walls, stairs and gradients of public spaces? What kinds of trees, gardens or green spaces are there in public spaces? |
| | Skyline | What kinds of signs, branches, rubbish bins, blockages and fences are there in public spaces of the so-called area? What kinds of bus stations, booths, newsstands, information desks, Street lights, traffic lights and structures are there in the area? Do the buildings which make the skyline of public places possess a harmonious quality and are they coordinated or noticeable? |
| | Ceiling line | What is the landscape of the roof like from the inside and outside of the area? |
| | Night view | Do the lightening and night view elements help enhance the quality of public places? |
| Diversity of forms | | What aspects of the area or buildings in it help the place adjust to the diversity of forms? |
| The quality of views and vistas | | Have the diversity of details in shapes and forms of the buildings resulted in diversity of forms in the so-called area? |

| Category | Questions |
|---|---|
| Identity | Are there any beautiful views seen from inside the area to the elements located there? |
| Legibility | Are there any places in the so-called area which give beholders the chance to enjoy a panoramic view toward specific borders from the site? |
| | Is there a good chance to see the view from inside the so-called area toward far-away landscapes which have a greater quality? Is there a view from far-away spots outside the area toward a beautiful landscape inside it? |
| | Are there any "view corridor" in the so-called area which gives a chance of viewing significant signs and visual qualities? |
| | Is the border of the area identifiable from specific elements? |
| Signs | Are there any particular borders and obstacles especially on the edges of the so-called area which grant a special quality to that place? |
| | Can some thresholds potentially be identified on the edges or inside the area in which sequences, functions, and characters change in the area? |
| | Are there any buildings in the so-called area which are known because of their architectural or historical values? |
| | Are there any united local community formed in the so-called area? |
| | Are there any human-made buildings or structures or natural green elements (located in the so-called area or seen from it) which are perceived remarkably and clearly facing their background landscape? |
| Gates | Are there any places in the edges of that area or inside it which could be considered as an entrance gate (or have the potentials and conditions to be a gate)? |
| Areas | Are there any clear areas regarding the physique, function or social texture in the so-called are that contribute to the legibility of that place? |
| Physical knots | Are there any focal and noticeable points with a particular and harmonious architecture in the area? |
| Complexity and controversy | Are there any complexity and paradox in the relation among the elements which could contribute to a better understanding of those relations? |
| Order and coordination | Are there any clear and discernible organization and order seen in the relation among the elements in the area? |
| Perceptibility | |
| Coherent mental image | Do people (residents or strangers) have a clear mental image of the area? If so, what is that image like? |

| | | |
|---|---|---|
| Customizability | Presence of territories | Are there any places in the area that can be transformed into a secondary territory for individuals or social groups? |
| | Comfortable and private spaces | Is there a chance for individuals or social groups to have a private and soothing place in the area? |
| | | Should there be a particular and permanent behavior in that area? |
| Social and cultural environment | Behavioral places | Are there any annual events and cultural and artistic festivals held in the so-called area? |
| | festivals and events | |
| | | Does the so-called area have any cultural heritage related to people's life style in the past and present time? |
| Richness of activities | Cultural heritage aspects | Are there any intersection of pathways and focal points in the so-called area? |
| | Activity Knots | Do the functions in the so-called area possess coordination and harmony along with diversity? |
| | Amalgamation and harmony of activities | Is combining of functions and activities appropriate for the so-called area? |
| | Combination of functions | |

these cities' form. In table 2, the main structure of some important cities and the role of environmental aesthetics in their formation are explained. To explain these characteristics, mostly visual-form factors are taken into account since they provide the context for the formation of cognitive-conceptual factors.

In addition, in table 3, through a comparative study of the main structure of the cities discussed above and based on the suggested factors, the aesthetic-visual evaluation factors of the structures have been explainedthoroughly. (Table 3)

Regarding table 3, it seems that most of the suggested environmental aesthetic factors are appropriate for evaluating the main structure of the cities. In addition, apparently, among visual-form aesthetic factors, the quality of views and vistas are of more significance. Moreover, among cognitive-conceptual factors, identity and legibility are very vital to analyze the environmental aesthetic forms of the city, while, it seems that among the cities discussed above, form of the main structure of Paris and Washington have used visual-form quality of the environmental aesthetics more than any other city.

Like-wise, in table 4, the environmental aesthetic factors, namely, visual—form and cognitive-conceptual factors, and the issues related to them have been explained thoroughly. It is hoped that the results of this research could be used in visual-aesthetic analysis of mega-cities' form based on the environmental aesthetic factors.

### ACKNOWLEDGEMENTS

**REFERENCES**

1. Gibberd, F., "Town Design", London: Architectural Press, (1955).
2. Halprin, L., "Freeways", New York, Reinhold, (1966)
3. Cullen, G.," Townscape", NY: Reinhold, (1961).
4. Newman, O., "Defensible space: people and design in the violent city", London, Architectural Press,(1972).
5. Jacobs, J., "The Death and Life of Great American Cities", New York: Random House, (1961).
6. Relph, E. ,"Place and Placelessness", London, pion, (1976).
7. Jakson, J. B., "The necessity for ruins", Amherst;University of Massachusetts Press, (1980).
8. Norberg-Schulz, C., , "Genius Loci: Paysage, Ambiance, Architecture", Brussels; Mardaga, (1981).
9. Appelton, J., "Prospects and refuges revisited" *Landscape Journal* **8**; 91–103, (1984).
10. Kaplan. S., "Aesthetics, affect, and cognition: environmental preferences from an evolutionary perspective", *Environment and Behavior* **19**, (1987).
11. Zamiran, Mohammad, "Philosophica Thinking in the Turn of the Second Millennium", Hermes Publications, Tehran, (2002) [In Persian]
12. Grutter, Jorgkurt, "Aesthetics in Architecture", Trans: Jahanshah Pakzad, Second edition, Shahid Beheshti University Press, Tehran, (2005) [In Persian]
13. Jencks, Ch., "What Is Post-Modernism?", NY, St. Martin's Press, (1986).
14. Bell, S., "Landscape: Pattern, Perception, and Process", London, E & FN Spon Press, (1999).
15. Lynch, K.,"The image of the city". Mass, MIT Press, (1960).
16. Lynch, K.,"Good city form ", Mass, MIT Press, (1984).
17. Boyer, Ch., "The city of collective memory",MIT press, USA, (1994).
18. Bacon, E., "Design of Cities", NY, Penguin Books, (1976).
19. Bentley, I; Alcock, A.; McGlynn, S; Murrain, P. Smith, G., Responsive environments: A manual for designers. Oxford, Butterworth Architecture, (1992).
20. Carmona, M. et al., Public spaces – Urban places: The dimensions of urban design. Architecture Press, (2003).
21. Encyclopedia of aesthetics, Editor in chief: Michael Kelly, vol (2), entry of formalism, pp 213-225, oxford, (1988).
22. Kaplan. R. and Kaplan. S., "The Experience ofNature: A Psychological Perspective", CambridgeUniversity. Cambridge,UK, (1991).
23. Porteous, J.D., Environmental Aesthetics: Ideas, Politics and Planning, London, Routledge, (1996).
24. Nasar, J., "Urban Design Aesthetics- The Evaluative Qualities of Building Exteriors", Environment and Behavior, 26(3): 377-401, (1994).