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RESEARCH ARTICLE

The Effect of Gestalt Conceptual Theory on City Planning Case study: Naghsh-Jahan square in Iran

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Abstract

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According to Gestalt theory, we experience the world in meaningful wholes and so we don't see separate stimuli. So, generally whatever we see is combined stimuli in Gestalt organizations that are meaningful to us. It is a principle defined in all studies and rules and verified by authorities on this subject. They are used to create formula with acceptable and identifiable shapes in a way that its total relation with other parts is obvious. Evaluating architectural designs is one of daily problems in structure. Also finding criteria to evaluate a design is one of those old cares.

Human, a message perceiver, is able to perceive only definite amount of information as the totality of a picture in a time. In city planning, designers have difficulty in creating a feature of a city. Designers need to develop their visual skills within the framework of Gestalt theory to create an urban environment and form groups and feelings showing belonging to structures equipped with environment and in this way provide a combination of city framework. Explaining Gestalt theories and those outputs resulting in city planning within Gestalt framework are targets that this theoretical study has chosen. To do this, Kevin Lynch theory has been compared with Gestalt rules in respect of characteristics determining city appearance. The other target of this study is to create a recent approach so as to achieve a variety of qualities of city environments using Gestalt and Lynch rules. Also, it is possible to observe the effect of these theories on past architecture. This study is a descriptive, phenomenological one. Firstly, we examine Gestalt theory and then analyze its effect on Emam square in Esfahan.

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Introduction

Gestalt is a German word meaning the whole. psychology signifies it as identifying form, represented by German psychologists in 1920. Gestalt theory proposes human brain uses this method to perceive complicated subjects comprised of different elements in a way that draws all elements together into a holistic pattern and thus firstly cause a holistic percept of that subject .

The more the elements in this set are logically relevant, the more strengthened is Gestalt of that set and thus its complication will be perceived easily .Basics of Gestalt theory determine its process using innate properties of the whole. Therefore, Gestalt theory includes two main concepts as far as it is related to the background designing. The first concept is related to trying to compile rules of visual perception through analyzing object patterns and second is related to problem solving principles.

Wertheimer believes children should expose themselves to recent ways of training to enhance their creativity and improve their vision and organizational experience ,resulting in emphasizing on perception and merging relations of

any kind of an organized set .This represents a big share in Gestation psychology and learning .The aim of educating designing is for imagination ,perception ,organization ,communication ,and relating the whole set to irrelevant and Scattered information .Gestalt rules are used to depict and arrange human's perception and awareness to evaluate environment .But you cannot always explain them. Thus, experience is considered as an efficient factor in Gestalt .Gestalt theory and designing principles are used to direct student to explore their nature and relations among elements of the whole as well as design, structure and combination of forms with various frames. Furthermore, since Gestalt theory highlights when facing with training relations this method is used to illustrate the whole universe through visual media to students.

Designing and combination principles includes: harmony (recognize-able similarity for all present parts in the whole), contrast (determining difference for all present parts in the whole), and balance (recognizable stability for all present parts in the simplified whole), unity (recognition for all present parts in the whole). Kevin Lynch assumes that efficient skeletal factors in respect of city appearance are edge, neighborhood , knot sign and route .His attitude towards visual qualities is liveliness, meaning ,suitability ,accessibility, supervision ,efficiency and justice.

Research Questions

What cases does Gestalt theory examine?

Does Gestalt theory influence on city planning?

❑ Psychological schools :

- Structuralists
- Performist
- Behaviorists
- Gestaltien

Structuralists impressed by developments in chemistry tried to explore the elements of thought that they imagined their combination creates our complicated mental experiences .In this respect they believed complicated thoughts were comprised of simpler thoughts combined in some ways. Their main goal was to explore these simple thoughts that they assumed these are building blocks of more complicated thoughts .For instance, structuralisms asked their testes not to Call objects and prevent from interpreting their experiences .Instead, they were asked to describe their raw experiences.

Performs School was famous under the influence of Darwinism. Their main goal was to determine how behavior or mental processes are relevant to survival. With this respect structuralisms were criticized due to their reckless approach towards this matter.

Behaviorists considered brain as an inactive member that perceives emotions and produces responses. Behaviorists claimed human nature was determined through whatever was experienced. Thus mind content is a combination of experiences and nothing more.

Gestalt Psychologists thought and behaviorists made a single mistake and that's using element approach. Gestaltiens didn't oppose to internalism totally, but they believed that structuralisms didn't use it correctly. In Gestalt psychologists 'viewpoint, one should utilize internalism to explore totally meaningful experiences instead of analyzing experiences .That is ,one should take advantage of this method to study how individuals perceive the world, When internalism is used to do this, it will be obvious that perceptual range of an individual is comprised of organized and meaningful events.

When Gestalts are analyzed in any way, they lose their meanings. Gestalt psychology is sometimes called phenomenology because of its emphasis on studying perceptual phenomenal directly.Phenomenologist studies integrated and meaningful mental events without breaking into simple elements. Gestaltiens considered brain as playing a more active role.

In their viewpoint brain is an active perceiver and accumulator of information received from the environment .As said above, behaviorists believed in ad inactive brain that collects sensory information and responds them. But Gestaltiens believe in an active brain that transforms sensory information.

Gestaltion expressions	structuralism expressions
Whole	element
Integrated	micro
mental	concrete
innate	experimental
perceptual	behavioral

Tab 1.Comparson of Gestations expressions Structuralism expressions

Ways of perceiving visual messages:

Visual messages are perceived in two ways:

1) Seeing parts: A discussion in mental physiology, the whole picture is perceived through separate information (picture in T.V screen)

2) Gestalt: Unlike seeing parts, the whole picture is firstly identified and then its elements are recorded (When seeing the bulk of a building).

In architecture, Gestalt theory plays a more fundamental role.

❑ Gestalt establishers

Wertheimer (1880-1943) is known as the founder of Gestalt psychology. However, he cooperated with Wolfgang Kohler (1887-1967) and Kurt Koffka (1886-1941) and thus they are considered as Wertheimer colleagues in founding Gestalt psychology.

❑ Formation of Gestalt psychology

Wertheimer came up with an idea when travelling to Rayland City by train.

He understood if two various lights are turned off and on with definite rate, this picture will be created in the eye of an observer that this is only one light moving back and forth. (Exactly like what happens in animated cartoons and through watching some painting one after another, we imagine we are observing a single entity moving.)

After this experience, he left the train and bought a stroboscope. He did several experiments using this stroboscope.

He understood if eye sees the stimulus definitely, kind of picture movement will be created in an individual.

This phenomenon is called *Phi*. This exploration profoundly influenced on the history of psychology.

This phenomenon is of importance since that differs from the elements creating it.

Sensing movement through examining each light turning on and off couldn't be explained.

Experience of movement came through combination of elements.

Marx Wertheimer:

There are some cases in which whatever happened in the whole.

Isn't the result of happenings among the elements corresponds with rules existing in the structure of totality. The whole of something is more than compulsory (total) of its elements.

The whole is more than the total of its elements or analyzing means distorting.

Gestaltien believed an organism adds something to an experience that there isn't in sensory data and that's organization. That's why supporters of Gestalt school believed even though psychological experiences result from sensory element, they differ from these sensory elements. On the other hand, Gestalt psychologists believed phenomenological experiences (e.g. apparent movement) result from sensory experience (e.g. lights turning on and off).

However, we can't realize them through analyzing phenomenological experience into their components.

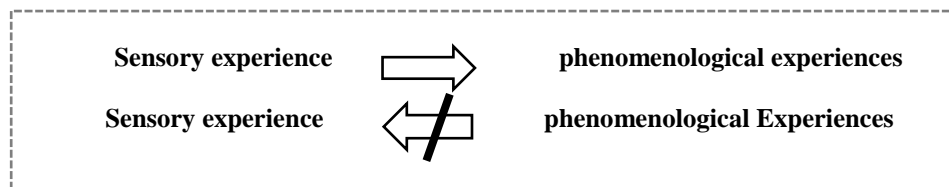


Fig.1: Analyzing phenomenological experience

That is phenomenological *experience* differs from its components.

For instance, music originating from orchestra is more than the total of various musical scores played by different musicians.

Gestalt theory in psychology:

Gestalt is a German word meaning configuration or organization.

Based on Gestalt, we experience the world as meaningful wholes. Thus we don't see separate stimuli and whatever we see is combined stimuli in organizations (Gestalt) that are meaningful to us.

Gestalt and Gestalt psychology are also called Brown school. Creating Gestalt means making a formless substance integrated based on logical principle and regular structure. This process is a Creative one in which through combination of Gestalt various elements like form, color, procedure and material new units are created.

On the other hand, Gestalt is a creative thought of renovating patterns which are defective in respect of structure. Resourceful thought usually begins with a problematic situation which is unfinished for some reasons.

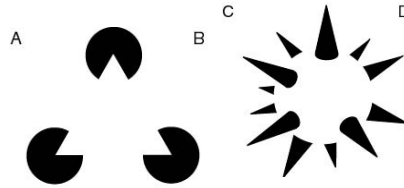


Fig. 2: creative thought, rebuilding defective forms

One considers this problem as the whole. Then, dynamism of problem, forces and challenges inside that lines create similar pressure in mind.

One may find a solution through following pressure lines that recreate total harmony.

He satisfies kind of innate enthusiasm through this process that is taking a total pattern and rearranging it.

□ Rules of analyzing form and background:

A closed surface is sometimes regarded as a form. \rightleftarrows Like stars

An open surface is rest of background like ~~the~~ sky at night

2) It originates from first base. Rather smaller surface \rightleftarrows form

In other words, part of perceptual realm that is well-organized and draws one's attention is called form and indistinct and vague part is represented as the realm of main form and background.

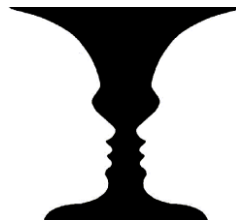


Fig.3: Robin goblet

In this picture, a perceptual vase that is black is seen as a picture in black background. Notice sometimes black and white parts in the picture are emerged as picture and sometimes as background. If the black part (vase) emerges as the picture, the white part will serve as the background and if the black part (picture of two faces located in front of each other) emerges as the picture the white part will serve as the background.

The instructional worth of original picture and background is that issue of learning should emerge more outstanding and distinct than the background in which it is located, so as to be learned better. If the issue of learning isn't highlighted in the background in which it emerges, it won't be learned well. For instance, writing topics on the white board using chalk or writing on the

Black board using a dark chalk may not be figured out and so that, it makes learning difficult.

In other words, human begins to learn through differentiating between picture and background. According to Gestalt psychologists, brain operates on perceived sensory information to make them an organization. That's not learning but it's the brain's product. Based on Gestalt, way of perceiving not only adjusts the structure of moving picture on the retina but also arranges it in a way that makes recognition of a given object possible.

Gestalt rules

These rules are based on the fact that total want is that each stimulation sample is viewed in a way that resulting structure is as simple as possible.

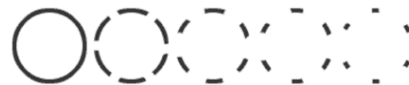


Fig. 4: The circular section is seen as a closed circle

□ Gestalt rules

A) Magnifying rule or appropriate from rule (closing principle):

Closing principle says we tend to accomplish in complete experiences. For instance, if someone takes a look at a line which is approximately like a circle but there is a small crack on it, he will perceptually fill that crack and respond the shape like a complete circle.

➤ Predictability:

➤ Information port \implies to perceive a message, it isn't necessary to perceive all components.

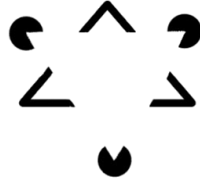


Fig.5: closing principle



Fig.6: cross (1592, Metzger)

B) Proximity:

According to proximity rule, phenomena and matters located connect lines or spots, closer lines are connected sooner.

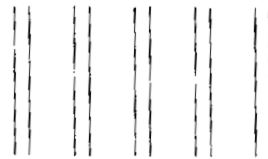


Fig.7: Two close lines are seen as a ribbon

Closeness rule:

If we connect farther lines, our eye will view broad ribbon as a picture and narrow ribbon as distance. A closed surface is much sooner viewed as a form rather than an open one. In proximity rule we observed close lines are much sooner accepted as a form in the mind rather than far lines. We connect these lines in a way that for lines comprise a rectangle and now our eye views broad ribbon as a picture and narrow ribbons as distance.

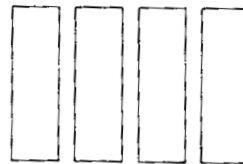


Fig.8: Closeness rule

D) Similarity rule:

We imagine similar component are related to each other and the form of their set is identified as a picture. In a picture in which a surface is covered with circular units, we can see a square placing on one open through connecting square-like units.

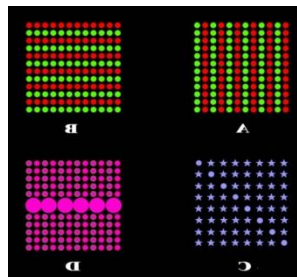


Fig.9: Small squares comprise a big square placing on one apex.

E) Experience rule:

We are able to identify familiar forms inside casual forms-e.g. finding pictures among clouds. We often imagine we are identifying familiar shapes inside casual forms. that's why we often observe faces or animals in clouds in the sky.



Fig.10: Recognizing pictures among clouds

□ Characteristics and coordinates :

Naghsh-e-Jahan square is a rectangular square with 507 meters length and 158 meters width located in the center of Esfahan. The direction of square length towards North-South axis makes 11/25 angle and towards kiblah (the point to which all Muslims turn at prayer) makes an exact 135 angle (90+45). In respect of two religious construction (Sheikh Lotfollah mosque Abbasi mosque) located in southern and Eastern side, choosing such direction for the square seems logical and exhibits a cohesive geometric relation. Two hundred chambers are located in the vicinity of the square. In addition, four construction including Alighapoo , Abbasi mosque, Sheikh Lotfollah mosque, and the portal of Gheisarieh were built in the middle of four sides of this rectangle.

Background:

Before chosen as the capital city of Iran during Safavieh dynasty, there had been a vast garden in this place called Naghsh-e-Jahan Also; this garden was a place for stationing of state buildings and the place of Teimori and Aghghunloo monarchs. At that time, the square-like part of Garden was called kooshkate. This part was placed in western side of today Naghsh-e-Jahan square and in the location of Alighapoo place.

During Saljooghian dynasty, at least one part of Naghsh-e-Jahan garden was called kooshk square. That barkiarough was arrested by his brother, mahmood, also happened in this square. Koshk square was a place of execution for those convicted to capital punishment and holding some formal rituals like New Year Eve (Nourooz) from the beginning of abbas king I manarchy, the square's surface was leveled bigger than former, Kooshk square and fireworks and illumination rituals were held there so many times. According to various sources a construction like what we see now was built during king Abbas monarchy around 1.11 A.C. It is Hassan square's plot located in Tabriz. Mr. MohammadReza and Mr. AliAkbarEsfahani are two architects who designed this square and constructed that as what we see now. Names of these architects were inscribed on portal of surrounding constructions.

Surrounding constructions:

In the vicinity of the square, the most prominent and greatest historical constructions of Esfahan like Abbasi mosque or king mosque (in Southern side). Sheikh Lotfollah mosque (in Eastern side). Alighapoo construction (in western side) and the portal of Gheisarieh (in Northen side) were built. The square in surrounded by four big markets. The revenues of these markets were endowed to the fourteen immaculate ones in 1017 A.C. The coexistence of commercial constructions with religious and governmental buildings as well as the existence of ancient gate of the game of polo locates in the center of this square are among architectural attractions of the square.

Gestalt rule have been used in Naghsh-e-Jahan square in Esfahan. Considering that Gestalt rules are not associated with one dimension, we have examined these rules façade in association to ground plan.

In ground plan of Naghsh-e-Jahan square, there is symmetry both in form and lines and land uses around the square. In a way that right in front of the portal of Gheisarieh is the portal of Emam mosque and right in front of Sheikh Lotfollah mosque used religiously id Alighapoo construction used governmentally.

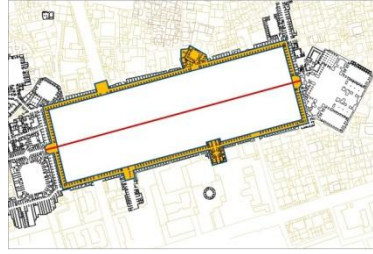


Fig.11: Symmetry

According to proximity rule, phenomena and matters locating near each other are perceived as an integrated whole. If we want to connecting closer lines at first glance. However according to closeness rule, if we connect farther lines, we'll see broad ribbon as a form and narrow ribbon as distance. In other words, these shapes form stores in Emam square

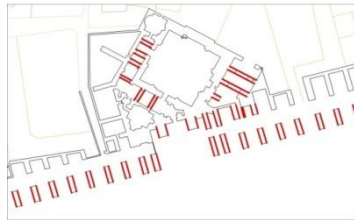


Fig.12: Proximity



Fig.13: Closeness

Based on Experience rule, our eye connects notches existing in inner form of square and depicts a rectangular form in mind. Also, though looking at present linear form in second ground plan of mosque, our eye imagines them as a complete square and rotated towards the square rectangle.

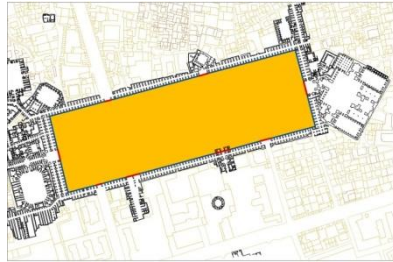


Fig.14: Experience

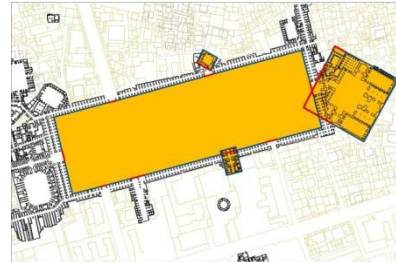


Fig.15: Experience

Gestalt rules are used not only in Emam square, but also in the usage around the square. We have examined these rules in ground plan of



Fig.16: Gestalt rules in Emam square

Proximity rule has been used in all facades of Emam square in a way that it is possible to view similar shapes as solid and hollow spaces in one façade



Fig.17: Similarity

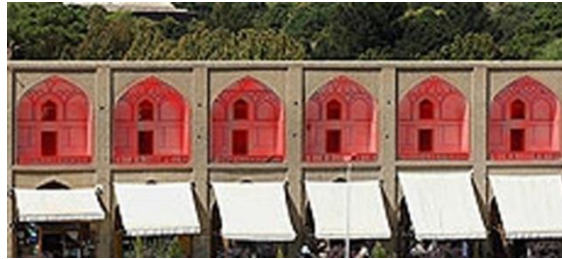


Fig.18: Similarity

Symmetry and harmony are used in all facades of the square. Overall, a harmonized and well- proportioned façade has been created.



Fig.19: Symmetry

Proximity Rule mentioned in ground plan is also turn and present for façade.



Fig.20: Symmetry



Fig.21: Closeness

Path:

Path is a factor making actual or potential movement possible. That's why it may be a street or sidewalk, a road or an underground, a tramway or rail road for many these seem to be the most important factor in city image. When moving through a city, people started to observe it here are different environmental factors along paths that are dependent and related to each other.

In Naghsh-e-jahan square in Esfahan the path around the square moves through the center of market the market is envired in four areas by Imam mosque, Sheikh lotfallah mosque, the portal of and Alighapoo.

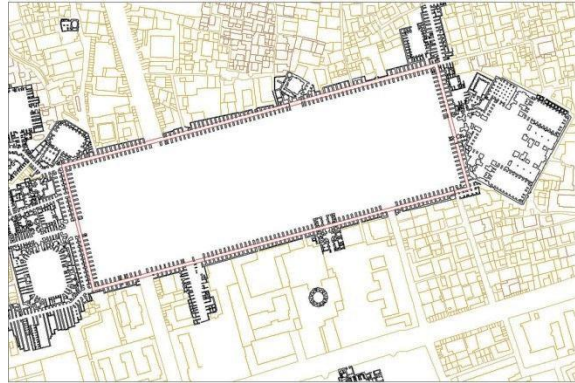


Fig.22: Path in Naghsh-e-Jahan square

Neighborhood:

Neighborhoods are parts of the city that are at least small or big. They need to quality two dimensions in order that one feels entering them. Their components are completely perceptual due to their common characteristics. So, it allows us to differentiate neighborhoods form inner part of them. If it sounds invisible from outside, perceiving different spots is also used from outside, Most people imagine on which one seem more efficient and distinct. Of course, it depends both on individuals and correlation of different cities.



Fig.23: neighborhood in Naghsh-e-Jahan square

Signs:

Signs are factors helping to identify various parts of a city. However, an observer can't reach their inside. Objects having particular appearance like buildings, signs, stores or even a mountain can be considered as a sign. A sign need to comprise such characteristics that one can recognize it among so many factors. Some signs placed on some small factors may be differentiated in far distances through different angle and thus they are used in all aspects for finding direction. Signs may be located in a city or far enough to show a particular direction frequently. Single towers, golden cupolas and huge hills are instances indicating sign in a city appearance. In Naghsh-e-Jahan square, four used are located as signs in the center of market, differentiating both in ground plan and façade. In respect of form and size.



Fig.4: sign in Nghsh-e-Jahan square

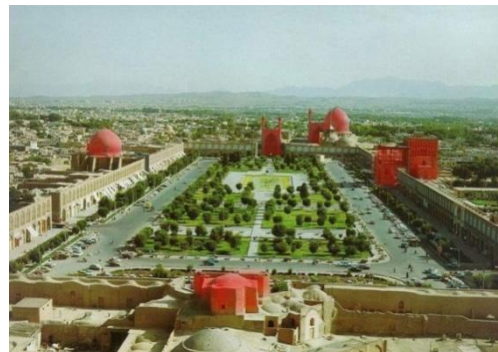


Fig.25: sign in Naghsh-e-Jahan square

Edge:

Edge is a linear factor differing from path in an observer view. The boundary between two parts is a crack, along length and between two related parts of a city is a notch creating railroad linear in the city. The boundary of a housing complex or a wall is examples of edge in city appearance. Edges are side factors and not balance and symmetry axis. They may emerge as factors blocking other factors or limiting them. They may seem as a line between two areas, a line along that two areas are connected. Edge factor, though not as influential as path factor, is thought to create organization in city appearance. Especially, it plays a significant role indicating the boundary of a city with factors like water or wall.

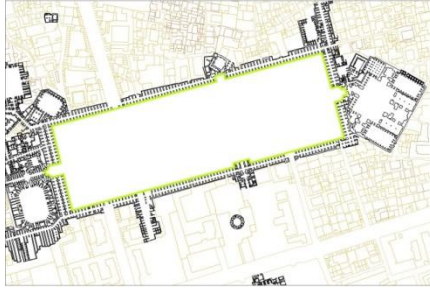


Fig.26 : Edge in Naghsh-e-Jahan square

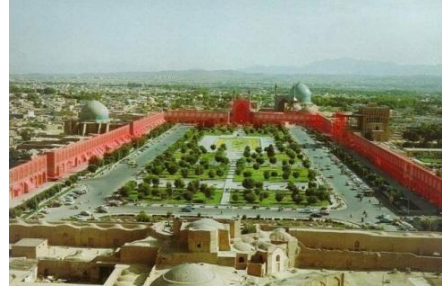


Fig.27 :Edge in Naghsh-e-Jahan square

Conclusion:

- ❑ The best application of this theory in architecture is to create city and construction with identifiable and acceptable forms and their general relation with other parts which is obviously based on forms, spaces, sizes, colors, graphics, production and quality of material.
- ❑ Generally Gestalt theory says: the whole is something more than its elements. And this principle is defined in all studies, experiments and rules and confirmed by authorities.
- ❑ After studying details of this theory. What crossed one's mind is:
 - Constructions, influential characteristics and those impressed by architects. With a knowing look, in respect of perceiving and knowing the whole, there are forms, spaces, sizes, colors and light reflection and illusion gained through information.
 - Each part of a building is part of the whole building. So, there should be a systematic and harmonized whole to function appropriately and move towards amines of the whole.
 - A small component of a complete building can be the most effective part of that building regarding combination, integrity of goals and processes that makes it look lively and dynamic.
 - In order to build a construction, one needs to plan to reach a original, purposeful and stable.
- ❑ In sum, discussion mentioned above emphasizes on the role of Gestalt theory on relations between science, art and design
- ❑ Effective factors on planning city environment have been studied in this article focusing on professional and scientific life. In final analysis, every environment owns intellectual aspects in addition to spatial and logical and creative training. Therefore, it communicates better with architects and helps to develop visual skills to design a combination of city form.
- ❑ It is expected this study provides a solution for city designers to create cities with appropriate forms.

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