Investigating the Effect of Shape Formation and Color on Space Tolerance

Ali Dehghanpisheh- Corresponding Author-
Mahrokh Rajabi
alidehghanpisheh@yahoo.com

Abstract:

In view of the fact that the architecture of the body is one of the main components for occurrence of abnormalities and behaviors, and two elements of form and color are main features of the architecture in architecture, we consider the qualitative aspects and its impact on user behavior is indispensable and indisputable.

The purpose of this research is to point out that the form and color of the two main factors in the understanding of the architecture of the architecture are an effect, and the range of variation and its differences are one of the most influential factors in the duration of an architectural space. Understand how the shapes and shapes are influenced by the time spatial tolerance in architecture.

The hypothesis of the present research is based on the fact that the ability of a person's space to withstand the same physical conditions by creating a difference in the color of that space and improving his personality perceptions has increased and the duration of the user's presence in an architectural space can be increased by choosing the forms Increase or decrease the proper hinges. Since the excessive variation of various forms and colors is one of the factors affecting the impossibility of examining all of them, the present study examines the difference between the
ability of spatial tolerance of a person in three different colors, despite the difference in grams and braces, there are three simple geometric forms and the combination of these three colors and forms in different situations. On this basis, the forms are: square, equilateral triangle and circle; colors include: orange red (warmest color), white (neutral) and green blue (coolest color).

Given the fact that the above-mentioned feminine and color combinations are distinctly distinct and their differences can be quickly detected, they are considered as representative samples. For the purpose of this, the spaces were made, the statistical community was purposefully selected and available sampling, as well as the spatial perceptions of the users were received by the questionnaire. The research in terms of time in contemporary period and samples Selected in the city of Shiraz.

The results of this research show that the color and form of an architectural space have a significant effect on the comfort of a user during the period in which that space is tolerated. This is the solution to design spaces with a specific use time Self-service, classrooms and more.

Key words: form, color, serum, tolerance, space
Introduction:

Drawing theories have never been required from the findings of other disciplines and the basics that are required to understand the characteristics of the environment and how they function. It should be used to match predictions and Theories of designers about the performance of their design and what happens in reality, theoretical foundations of design development are significant. This need is especially true for the claims of designers in the field of design effect on people's lives more. In this particularly the role of the philosophical views of design cannot be denied [1]

Since architectural and educational design of the university has been found, the relationship between human and environment, especially the scientific mechanisms of this relationship, and the ability to translate it into the language of architecture and design of the environment are questioned by designers and researchers in the fields of science related to architecture and Design of the environment [2]

In modern psychology, colors are one of the criteria for assessing personality. Because each of them has a special mental and physical effect in one person, the color indicates the mental and physical condition of individuals in the account. This is evidenced by the advancement of the two knowledge of physiology and psychology. It is clear that humans have been influenced by the colors of their surroundings from the very early days [3]

In recent years, one of the biggest challenges in architecture is how the artifact's environment influences human perceptions and practices. Since scientific architecture has a direct relation between direct and indirect effects on human perceptions and emotions, how can these feelings come about through interactions? The artistic environment will be especially important. How can human emotions and emotions emerge on the basis of the artifact environment and the resultant
result can be the role of the physical components of architecture on human perception. However, the ability to tolerate architectural space varies according to the components.

So far, many studies in the field of psychology have focused on human perception of various forms and colors and their effects on human beings. Also, the effects of the environment on man and his actions in architecture are one of the major issues of these days. But an effective link has not been made to achieve the spatial tolerance of individuals based on the components discussed. It is important from this perspective that the link between studies of these two disciplines is examined theoretically and practically. Conduct and quantitative measurements in the objective range.

Research Methodology

According to the research topic, to describe the relationship between variables, the research method has been selected as a correlation. For this purpose, the main resources used are books, related research projects, the global communication network, and the use of questionnaires.

In relation to the design of the questionnaire, it is necessary to write this questionnaire: the questionnaire was designed based on the definitions model proposed by Abraham Maslow's human needs model for the maximum adaptation to it. After building the space required in three different colors with the same conditions and area. Thirty open questionnaires were presented and categorized according to the statistical community that were targeted and available for sampling. Examples of observations after being present in space and recording their duration were sensory perceptions Are determined by the experience space.

- The Importance of Understanding Physical Spaces and Color Concepts

The design of spaces, buildings, construction sites and urban areas is a heavy task because the spectrum of human aesthetic activities and needs is so wide that it is difficult to understand how
to form an environment that is responsive to them. In most environments, the needs of both users and stakeholders should be met simultaneously. As clearly as possible, users need to be different in each application space.

Vertical angles and straight and parallel lines of the square that cut each other in equal intervals show the clarity and precision of this shape [4]. The square contains hidden spheres of field. This field is evolving from corners, around diagonals, semicolons, and center. [5]

Circles should be popular if they are supposed to pass through the fate of their memorial and become an everyday and suitable space for life [5]

The sharp angles of the triangle emphasize on its invariant, vindictive, and explicit character. At the same time, the individual is a symbol of brightness and thinking, and it is rapidly changing. An equally important subject has only one hidden center. Because it has a diameter And the half-pieces do not have a precise reference to the middle of the opposite. From this point of view, the triangle is less focused on the octagon or the square, but at the same time it is strictly enclosed because of the angles of spatial sharpening and even in the bottleneck. Slow down [5]

The significance and role of color revives various and varied concepts of it in our minds. That is why the presentation of a definite definition and a brief interpretation will not only not cover the broad concept of color, but to understand the dimensions The broad one is also misleading. Paint is in all aspects of life, and therefore the concept is as broad as the concept of life. Or, in the words of Ethan, it is the color of life itself [7]

The application of color in volumetric works, urban public spaces, and architecture can bring a special life into a collective life. Nowadays, the effects of color and its role in everyday life are considered as one of the main pillars of urban design, architecture and sculpture.
2. Behavioral sciences and environmental psychology along with physiology of colors and their mental effects

Behavioral science is a generic term, which usually involves anthropology, sociology, and psychology. All these disciplines deal with the analysis and understanding of activities of human attitudes and values. [1]

The definition of environmental psychology (psychological study of behavior in the physical environment of everyday life) (6). The analysis of the writings of this field suggests that subjects in the field of environmental psychology It includes the theory of perception, cognition, social psychology, anthropology, the study of social relations and the study of culture. Traditional psychology studies focuses on the individual or intrinsic phenomena of the environment and addresses behavior in the context of the relationship It analyzes individuals or individual states of affairs[7].

Any action that an architect, landscape designer, or urban designer is doing is a future choice rather than a future. Designers are expected to identify designators from behaviors, provided that these goals match With facts, not based on personal beliefs [8].

Experiments that have forced people to spontaneously redraw the psychological aspect of garlic and at different times have shown that it stimulates the nervous system, which increases blood
pressure and it speeds up breathing and heart rate. That is why the red color is a stimulant because of the effect on the nervous system, and especially the sympathetic branch of the autonomic nervous system. On the other hand, experiments similar to the blue-garlic, the result has been reversed. That is, blood pressure is low and the rate of breathing and heart rate decreased. Psychology has put into practice ideas that relate color choices to personality psychology, while the structure of a color is constant and is defined as the real meaning of color, and is the same for everyone. For example, it can be said that dark blue is the meaning of calm and silence, regardless of whether a person likes this color. On the other hand, function is the mental tendency towards color, and so on that of different individuals. Different interpretations of the color test are based on this. Someone may like a particular color; another may feel boring[9].

Artists, philosophers, scholars and psychologists have talked a lot about the effects of color on humans, a lot of things have been described in this regard. Nowadays, even with the type of selection and the use of certain colors it is possible to understand the psychological characteristics and personality of the people to a large extent. The colors usually have a direct effect on the senses and the human psyche. Sometimes these effects are pleasant and sometimes unpleasant and hateful. We also oppose this. We show the effects of the photo. We are satisfied with the positive effects of the color, and avoid its negative effects. The effects of the color are sometimes so intense and so perhaps it may lead to some sort of moral and physical action. As a result, the perception and emotion that is created by seeing the color is a very complex reality, which, on the one hand, depends on its reality and its color, and on the other hand, it relates to the mental and mental personality of individuals.

The work of environmental designers is largely influenced by the concepts of human nature. This influence has varied throughout history. At times, people freed themselves and at other times controlled the environment. The second line of the mindset of the new movement (Modern), And
remains in most of the architectural theories of later periods. In periods of belief, wisdom has been
greater and has declined in periods of this belief (10).

4. The mechanism of feeling and perception, the feeling of coldness and warmth of colors, its
effects on the perception of spatial dimension and its characteristics

Human beings or animals, through their sensory receptors, are informed of the existence of
realities in the inner or outer world. This feeling, after interpreting and interpreting, leads to
perception, and the development of this perception ends with the knowledge of some of the
phenomena of the universe. The subject of the study is psychology of perception of the discovery
of mechanisms and its laws. These rules, including feelings and perceptions, include
observations and experiments dating back to Weber, Fokhner, Gestalt and other schools,
Precisely in the labs of perception and analysis [11]

For behaviorists, the subject of perception is perceptual behavior or response that always follows
the effect of the internal or external stimulus of the living being. Usually, a person only responds
to selective stimuli. It should be noted that this For example, perceptual responses such as verbal,
motor, drawing and drawing, skin electrical responses, and so on, provide researchers with a
small amount of data, which today's laboratory measurements are as complete and Accurate,
because of the nature of the phenomenon, they do not look sufficient to measure them, and more
or less are related to the phenomenal response. For this reason, Adra Our collections of
environmental stimuli such as light, sound, color, shape, etc., and intrinsic and physiological
stimuli are not exactly accurate. [11]

Coldness and warmth of colors are an inner feeling that comes from seeing colors. Of course, the
feeling of coldness and warmth is related to the sensation of touch, and it may seem very strange
that we see through the sight and seeing the color. We feel them, but the fact is that the colors directly and by the perception of sight affect all of our existence. [4]

The warm colors are usually more closely related to the creation of the spatial dimension. While cold colors, even if they are at the same distance, are more rearward and more distant. sequence Hot and cold colors play an important role in the creation of distances and proximity. In the meantime, green-blue is described as the coolest, red-orange as the hottest color. [4]

Color affects us both physically and emotionally, and it has been proven that if we use colors in our own interest, we can improve the health and the life of our lives. The paulin Wels paint specialist therapist, about The color of the treatment explains and shows that the color, especially the particular healing properties, is relevant. Dr. Max Leisher, a professor of psychology, believed that by measuring the individual's tendency for certain colors, it would be possible to detect physical and psychological states. The Losher-based laws of the Russian scientist, S.V. Krakov supported [12]

The blue color indicates complete relaxation. Thinking about this color has a calming effect on the central nervous system. The blood pressure, pulse, and respiration decreases, while self-protective mechanisms are adapted for re-energization. So that during illness and fatigue this color needs more. Dark blue, like the other four main colors, is a chromatic sign of a biological need. From the point of view of psychology, it means calm and from a physiological point of view it gives meaning to pleasure. So the blue color represents the extent that a person around them creates and also reflects the integrity and sense of belonging. Blue means loyalty. Representation of Truth and Trust, Love and Sacrifice, Surrender, and Sacrifice. The Blue Rose symbolizes the unceasing eternity of tradition and values, and tends to perpetuate the past [9]
The red color, which combines it with a pale yellow orange, indicates a physical condition of energy use. It speeds up the disease, increases blood pressure and increases respiration. Exposure represents the vital force of activity Nervous and ganglia, and hence the meaning of desire and all forms of desire and passion. Extent is the necessity of obtaining the desired results and gaining success. A sign of intense wish for all of the things that cover the intensity of life and perfection of experience. Red means driving the will to win and all forms of passion of life and power from sexuality to revolutionary change. It is a motive for intense activity and sport, struggle, competition, sexual desire and fertility. Extent is the effect of will or Power of Will [9]

It ultimately manifests itself on the excitement and inner energy. It is a form of life that illustrates revolutionary excitement and rebellion. It is a colorful reverberation that illuminates the vitality and the life of the life, yet signs It is a love of fire and an unwanted desire for life. The heat and red heat when it is mixed with orange becomes climaxed and symbolizes the burning flames and the burning flames and when they are purple Becomes a symbol of spiritual power [4]

The color of white covers all colors and completely shines the light. This color is related to the innocence of purity and change and is strongly related to spirituality. [9]

1.4 -Motivation

Motivation is the driving force of behavior; behaviors are formed to meet human needs; therefore, the design of the environment design concept is a necessity based on the concepts of human needs. Models have been developed to define human needs. All of this model In order to describe the internal, biological and psychological forces, self-conscious and unconscious, and types of needs from their most basic to the most excellent form, these two models are: the scale of the main
emotions in the competition Alexander Leiton (29) and the Hierarchy of Human Needs Abraham Maslow [29]

Some writers consider the Leyton model as a good tool for understanding the nature of the environment while respecting human beings. He has identified the following needs.

1. Physical security 2. Sexual satisfaction 3. Expression of hostility 4. Expressing love 5. Maintaining personal interests 6. Recognizing 7-Self-stimulation 8-Detecting yourself and others on Friday 9. Maintaining and safeguarding the power of a certain group of people 10. Applying to a spiritual order Some of these needs are related to the tools of the environment. For example, self-esteem security and the other, at the level of the symbolic capabilities of the environment, such as identification and membership. These needs are complex and have no clear classification or classification. [1]

Maslow's model, while similar to the Leyton model, is more applied to the design of the environment. Maslow has proposed a hierarchy of needs from the strongest to the weakest, in the order in which stronger needs are prioritized to the weaker ones. The Arbitration His suggestion is as follows:

Physiological needs, safety needs, needs of belonging and loving, need for magnitude, need for self-actualization, cognitive and cognitive needs. This classification provides a suitable framework for thinking about designing the environment and desired issues [1]

2.4-Definition of feeling

The transfer of the stimulus effect from the sensory receptor to the central nervous system that is objectively observable is called. This sensation is not cognitive and is passively passive and has a 100% physiological basis [11]
The feeling takes place in two stages: one external or internal stimulation, and the effect of the sensory member that is obtained by the senses and transmitted through the nerves of the center to the spinal cord and the nerve centers. The psychology of perception, as a result of a feeling of being associated with quality and psychological practices, creates an introduction to any potential and visible reaction in the living being.

3.4-Definition of Perception

The perception of the process of obtaining information is from the human environment. This process is active and purposeful. The point is that understanding and reality come together. [10] Perception in today's psychology means the mental or psychological process that chooses and Organization of sensory information and finally meaningfulness to them actively. In other words, the phenomenon of perception is a mental process in which sensory experiences are meaningful, in this way, human relations and understands the meaning of things. [11]

Each perception is based on expectations and perceptions that may lead to error. In other words, it is a function of the stimulus. Aras also serves as a function of certain stimuli such as previous learning and expectations, The motivational states are emotional or cognitive variables, and ultimately the perceiver's decision and will. Thus, perception can not only be considered as a well-defined response, resulting from a particular stimulus. Because the perceptual person is the only mental inference and decides with particular attention and overall activity. In this decision, cognitive processes such as memory and role thinking are determined.

Designers have always faced difficult understanding of perceptual theories. There are two general perceptions about perception: one derives sensory experience, and the other responds to the senses as active and related systems. The first category explains how the sensory data and perceived units of the brain are presented in the brain. The experimentation of this combination and placement is
4.4-Theory of mutual interaction of perception

The interaction theory emphasizes the role of empiricism and analyzes the dynamic relationship between the individual and the environment. In this theory, there is an interaction of perceptions, in which the observer environment and perception of interdependence are interrelated. As a result of the information that the individual obtains from the environment, there is a probabilistic nature that becomes credible through individual actions [15].

5.4. Ecological Theory of Perception

An ecological approach to perception is a leading approach. This approach is contradictory with Gestalt's theory and the analysis of the role of experience in perception, which is posited in the theory of mutual action. Instead of taking the senses into sensory channels, this approach takes a perceptive look at [16].

According to this model, the universe has longitudinal and transverse surfaces. The horizontal crust expands with the distance from the viewer, the ability to recognize the perception of in-depth depth seems inaudible and is not taught by mutual interaction. Singularity, isolation and separation of results. The domination of the eye and the suppression of other senses, because it prevents us from understanding the various dimensions of human existentialism [17].
5. Factors Affecting Perception

The perception of the environment can vary from person to person. Some of these differences are related to individual differences in individuals. Having different experiences, gender, culture, job some of these factors are related to different environmental effects. [18] Indeed, what we should always consider in the context of perception is the Despite the fact that the machine is similar in all of our senses and perceptions, each one of us has a different perception of our surroundings, so one can say that the perception of the same stimuli can be the result of the combination and The combination of several factors and only one influential factor alone cannot determine what we perceive [18]

6. Environment communication process

The process of communication involves three main stages: feeling, perception, and cognition. At the stage of our senses, we gather information about the environment and transmit it to the brain. This phase has a completely physiological basis and is carried out by the senses and the system The body's Neurontin occurs. Once the information reaches the brain, the beginning of the mental analysis begins with the stage of perception. In fact, there is a practical perception in which we select and organize certain information, and to it Meaning. In other words, we feel conscious about the presence of something at the stage of being aware of it and register it, at the stage of perception we will understand what that thing is and what features It has or is like something in our mind. After we organize the mental data, we make mental images and evaluate them in the perception of the next subject, based on these mental images. We do such an intersection in the stage of recognition. The set of these steps takes place very short and tangible, which forms the basis of our behavior [19]
In fact, our sensory system is the main channel for communicating with the world around us. This sensory system is composed of organs for seeing, hearing, smelling, touching and touching. The fact is that each of our sensory organs are partly sensitive to stimuli in the environment, which they call sensory receptors.

7-Environment

The word "afford" is a common English word, but the "affordance" feature is not found in any dictionary. It was worded as a psychology by James J. Gibson (1979). The abilities of each and every material and immaterial is part of the thing that makes it possible for a particular being or a member of a particular species. The objects of Gibson's object are the physical configuration of an object or a place of behavior that can be used for certain activities. These also provide meanings and cognitive contributions, some of the wishes are given by an object or environment Living or cultural ground other requests are made easier. Some of the activities in the special configuration of the built environment do not meet the needs of some people and do not meet the needs of others. An important point this is what the capabilities of a physical environment, whether it's good or bad, are what the environment offers with the characteristics of its configuration and materials and materials.

1.7. The nature of behavior in the human-environment relationship

The fact is, our relationship with the outside is not direct, and we use the filter between ourselves and the outside space to connect with the environment. This filter or filtering is called psychological space. The psychic environment includes layers Different of the norms are the
values of the experiences and the state of the moment (light, temperature, humidity, etc.). This space is part of the environment that surrounds us and is related to us. We understand each We have to pass it through the filter and feel it and perceive it. Finally, for the reaction (behavior) against the environment, we pass through this filter. Therefore, the effect and the effect of the environment We indirectly and through this space for My Pzyrd [22].

8 .The concept of activity systems and behavioral structure

Two concepts have been introduced in the design theory of the environment. The concept of activity regimes [23] that relates to the organization of activities that occur in buildings in residential neighborhoods and in cities. Second The concept of behavioral contexts [24] that builds on the relationship between the environment-the physical environment-the current pattern of the behavior or behavior indicator that occurs in the place, the concept of the location or The behavioral site has been formulated by a group of behavioral scientists who have become known to ecological psychologists because of human behavior in their everyday life. Ecologists believe that the physical environment Freedom to impose human behavior, in this case they are under the influence of Kurt Lewin (1936) that the physical environment is inviting qualified My Dand [16]

9-Individual Differences in Individuals

Functional theory in sociology that should not be confused with the functional theory of environmental design is an approach that has attracted the attention of some environmental analysts and human behavior. The most form of this theory is explained by Talcott Parsens [26] He considers cultural, personality, social, organ- national, physiological and environmental systems as fundamental to the social test. The theory has attracted the attention of designers because of the more general application in designing the design theory of the environment [1]

11 .Conclusion
The person's emotions and behavior are a function of his reaction to things that are in the environment and the person knows about them. These influences are the same psychological facts that create the living space with each other. Psychological facts can trigger positive forces on one person, or lead them to negative behavior with negative energy. Adherents are the basis of human behavior and the role of these stimuli in determining and predictive behavior. Without a doubt, the stimuli can partly lead to similar behaviors, but this should not lead to the dogmatism and absolutism of environmental designers.

Feeling and perception, on the other hand, examines the physical properties of the stimulus and how it responds physiologically, and on the other hand, the psychological characteristics, learning, experiences, motives and perceptions of the individual in social situations. The design of spaces and buildings and construction complexes is difficult because the scope of human needs is so high that it is impossible to pay full attention to meeting the needs and observing them in design, but it is expected designed to suit the needs of individuals. According to the present study, it can be seen that the form and color play a significant role in creating perceptions and perceptions, and have a significant effect on the spatial tolerance of individuals.
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