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## Experience of Visual Perception in the Design Education

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### Abstract

Relevance of the paper is due to theoretical and practical necessity to study the peculiarities of design education. Modern designer shall, theoretically and methodologically, master the system of design engineering based on the laws affecting the form of product, methods of styling design and design quality analysis, basics of materials science and industrial design engineering. Design of industrial products shall draw upon historical, cultural, logistical, aesthetic and artistic foundations. The paper applies methods of cultural and historical analysis, comparative methods, methods of analysis and simulation of semiotic systems. Authors, emphasizing training process integrity for design specialists, pay attention to the fact that in the modern urban world requirements to visual aesthetics are particularly important, ensuring videoecology of objects and environment, creating maximum emotional comfort. Ability to create emotional environment is due to form quality, generating peculiarities of psychological reactions as emotions. The study of form perception revealed the mechanism of creating emotional response associated with semantic capacity of design object and special features of its visual organization. Perception model of visual images in design was suggested, including recognition, comparison and dialogue processes. The findings are scientifically-based recommendations, tailored to visual perception and aimed at creating emotional comfort in design.

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## **1. Introduction**

Design in the modern world is rather widely understood as a complex interdisciplinary styling and engineering, integrating scientific, technical knowledge, humanities, engineering and creative thinking, aimed at developing the object world in its extremely extensive 'contact zone' with a human in all spheres of life.

In the XXI century design permeates almost every sphere of human activity, as one of the main elements of the culture. Therefore, increases the need for industrial designers and grow the demands for their professional training. In Russia, the training of designers started not only at the arts and crafts, and architecture universities, but also in a number of departments of the polytechnic universities. However, despite the large number of universities engaged in training, our government agencies and enterprises have a huge shortage of professional designers capable of ensuring the production of competitive goods. In these circumstances, it has become an urgent the problem of understanding the strategy of design education.

The purpose of design education is the formation of basic knowledge and skills, sufficient to design and create new object and functional forms of the material world required for the future graduates of the technical university. The basis for design activity is knowledge of regularities of art and engineering design, knowledge of modern research methods in materials and technology, understanding of the ergonomics laws, economics, sociology and psychology. A primary goal is to create cultural and anthropo-consistent object world, aesthetically estimated as harmonious and holistic. It requires the integration of engineering, natural sciences and humanities (philosophy, psychology, sociology, art history, semiotics) contributing to the development of the visually comfortable environment and objects of design.

## **2. Requirements for visual aesthetics. Emotions designing**

Modern city rejects a human from the natural environment, which often does not aesthetically please and support the emotional response. Research in videoecology (Filin, 1998) showed that aggressive and homogeneous visual fields of urbanized areas have a negative impact on the psycho-physiological state. Therefore, the problem of forming visually comfortable environment is one of the main targets of design. In this regard, there is need for creating such an environment, conducive to providing visual emotional comfort, ensured by harmonious form of objects that meet the criteria of aesthetic form making. The priority of aesthetic principle is the privilege of design aimed at organizing the artistic impressions, received from the comprehended object. Thus, a major goal of design is emotions designing, creating vibrant and symbolic images of high artistic value (Kukhta & Pelevin, 2015a).

Thus, creating harmonious and emotionally comfortable design objects is a basic need of a modern man, who lives in the technocratic world. The need for beauty is a basic component of mental health, which is often overlooked by modern researchers. Works, devoted to videoecology, proved the need to create visually comfortable environment, filled with objects evoking positive emotional response, devoid of monotony and aggression.

Design is intended primarily for harmonizing the object environment and creating conditions that elevate and ennoble our lives, raising the artistic taste of the consumer, feeding not only the body but also the spirit and soul through the contemplation of aesthetically perfect objects. It is shown by the history of design, embodying wonderful examples of artifacts in ancient epochs, admiring not only with the highest level of technology and skills, but also harmonious perfection of the form.

The form of industrial products is determined by a number of factors that can be divided into arts, subject to stylistic fields and engineering, associated with the function of the product, which, along with ergonomics, anthropometry and bionics is responsible for choosing the design, material and manufacturing technology of an industrial sample.

The form of an object is able to create good mood, inspire joy, awaken memories and conquer the hearts. Design forms can be material embodiment of dreams, turning feelings into material, visual tangible perfection of the object. Design objects can cause vivid emotional response due to the high level of aesthetic excellence, manifested in the organization form, defining features of its perception. (Kukhta & Pelevin, 2015b).

Using simple geometric shapes in design as a method and means of the form making draws attention to the elementary principles of forming in the environment, where the compliance with perceptual psychology is a criterion of the truth. The design image is created with simple lines, planes and volumes. However, despite the

simplicity, conciseness can cause certain sensations. The object does not become a pallid geometric scheme, but causes emotions, sensations, the content of which is determined by satisfying three levels of perception of geometric shapes:

- physical – allows measuring with mathematical precision, identifying and describing the geometric shape (oval, parallelepiped, sphere, etc.) (Glezer, 1985).
- physiological – refers to the first level of sensations and, according to research by Konorskiy (1970) and Gregory (1970), sets the parameters of visual perception of reality, based on the physiology of our vision;
- psychological – refers to the emotional impact of geometric lines and shapes, planes and volumes. It is a process of subjective forming of holistic image, described in detail in the studies of Gestalt psychology (Zeki, 1992; Kliks, 1965).

Our perception seeks to unite and build up certain elements into a single emotional entity. Emotional coloring affects all geometric objects, causing persistent feelings that can be described and systematized. Various elements of the form (line, plane, volume) by themselves, and in particular by its relationship, cause various emotions of pleasure and pain in the same way as a particular color and sound (Ginsburg, 1924).

Thus, emotional impact is set by properly selected geometry shapes, which the manufacturer relates to the theory of form and the need for a specific effect on a consumer. Creating harmonious forms – one of the most important targets in modern design. If the geometry sets a relevant goal, the results become more emotional, more vital, more influential on the consumer of the given environment (Vasiliev, 2000).

### 3. Experience in visual perception of the design objects

Everything that is designed for a human shall take into account the peculiarities of its visual perception. Conscious and science-based formation of a visually comfortable environment – one of the main targets of modern design, the solution of which involves the studies of psychology, physiology, videoecology, since the mechanism of visual perception is extremely complex and can be represented as an active-learning process aimed at transforming visual sensations (signals) into a visual image, carrying information about the shape, color and spatial movement of an object. Perception model of the design object is composed of three basic processes.

*Recognition* – direct physical perception of the object. Recognition refers to the research inquiry wider than just signal comprehension, which in the animal kingdom is related to the orientation in space. To recognize, in hermeneutic tradition, does not mean to ‘see again’, it is not a series of meetings. Recognition is an identification of the familiar (Gadamer, 1988). This is the process of human habitation of reality, since every recognition is already detached from the chance of the first acquaintanceship and is perfected. Gadamer (1988) points out that recognition always matches with deeper understanding of what it was on the first meeting. Recognition allows you to single constant out of temporary.

*Comparison* – the process of building up links and relationship between the new object and the previously known objects. At the stage of comparison, the object is compared with the well-known images, differences are found, the attention potential increases, changes are captured, unknown and unexpected relations and features that ‘push out’ consciousness to different coordinates of space and time, carry information, previously unknown, and complement its thesaurus.

*Dialogue* - mental interaction, co-operation in the semantic space of symbolic images, resonating on mental impulses and images via information and energy channels leading to generation of new meanings (Kukhta, 2013). Initial perception of the object constantly is ‘being completed’, formed, processed by consciousness of percipient – dynamics of the process is controlled by feedback. This stage is sense-making; at this level, semantics of ‘text-object’ is perceived. After that, it becomes possible to feedback: after obtaining a new visual experience and information, the recipient returns to the original image, which underwent a qualitative change, was rethought. Thus, the stage of recognition is followed by the perception of an object. Comparison reduces a lot of connotations, after which the recipient passes to the final stage of co-thinking and generating new, non-obvious meanings, formed at the intersection of emotional perception and rational understanding of the visual text, translated by the object.

The form capable of generating meanings that meets all aesthetic and artistic demands is the most capacious as the meaning and form are inextricably linked, being the internal and external manifestation of reality.

#### 4. Conclusion

The research of peculiarities of visual perception enables to predict the effect of the designed objects on an individual. In the field of design education, attention is drawn to the harmony of a composition and the integrity of a form. However, as it has been shown in our research, it is not always suffice, as it does not specify the psychology of the perception of the visual image which can be "correct" in terms of the laws of form design, though destructive to the psyche. In terms of recommendations which are logically derived from our research, when making a project of design objects it is necessary to regard those semantic components of the image which create the emotional coloring and a harmonious semantic space.

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