

Exploration of the Modality of Artistic and Scientific Achievements

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Abstract: Eyes are the windows to the soul. In all ages we are convinced that the most authentic and beautiful sights are in our eyes. This, however, is just like an indiscernible legal provision that confines the development of art all the time. Artistic vision may conflict with visual impression, so vision science for artistic creation is of the myriads of changes. Vision is in fact a reflection of a physical phenomenon, and “light” is the base for us to see the diverse world. Exploring vision theories and intentionally using them in artistic creation can be a good attempt. Vision advantages and characteristics will be effectively reflected when applying the vision theories to graphic design as well as to indoor and outdoor designs. This article will make an exploration of the vision science from several perspectives of artistic creation, with focusing on the relation between art and science.

Keywords: Artistic creation; Science of art; Achievement modality; Exploration and analysis

1. Science vs. Art

The reflection of “light” into eyes is the reason why human beings are visually sensible to surroundings. But, eyes will sometimes cause inauthentic feelings, and visual illusions may be generated in both dynamic and static observations, which, however, is the spring of art. Over a long period of observations, Leonardo da Vinci discovered and summarized the perspective principle. This discovery is a breakthrough to the superficial understanding of image-forming principle and has greatly raised the level of the beauty of paintings. Perspective is in essence a scientific physical phenomenon. An organic combination between perspective and art can not only be a great innovation for art but also bring new understandings about sculptures, paintings and even about beauty-appreciation. It is therefore necessary to combine science with art for creations.

1.1 Relation between Science and Art

1.1.1 Seemingly Related or Essentially Different

Some would think that science and art are two complete different fields and even that they have nothing in common for description. Science is subdivided into natural science and social science. Natural science includes mathematics, physics, chemistry, geography, astronomy and biology, while social science is mainly related to literature, history and philosophy, etc. For art, it is not logic and provable. It is an unrestrained creation that brims with fanciful things. From another angle, of course, art is related to science. For example: geometric knowledge is required in paintings; the image-forming principle in physics is applicable to photography, and; multiple sciences including mechanics, materials and

aesthetics are useful for buildings. Different scholars have different views, and no consensus has been reached by far. However, art and science are developing all the same. As pointed out by Professor Jiang Xiaoyuan, more evidences are required for the argument of “science is related to art” or “science is not related to art”. Although it is difficult to prove this argument, there are still evidences. In a word, science is seemingly related to art but they are essentially different.

1.1.2 Binary Opposition vs. Common Descent

The history of science is a system that reflects the objective laws of development and change of things including nature, society and thinking. It is the knowledge covering general laws, as obtained through logical deduction and full observation to describe and explain the objective world. Art contains different expressions of objects, images, voices and acts, in which, aesthetics is carried in creations by subjective factors such as imagination, skill and experience. In theory, therefore, people have often subjectively and aesthetically differentiated art from science, and deemed that they belong two unlinked aspects. For this reason, Caroline A. Jones and Peter Galison proposed the point view of binary opposition: intuition/analysis, induction/deduction, vision/logic, random/system, autonomy/collaboration, male/female and creation/discovery. However, this binary opposition has been soon challenged and questioned. From this point of view, the object of vision science shall be related to scientific images, with artistic paintings being excluded. But the fact is that scientists cannot plot a definite boundary to explain what is a scientific image and what is an artistic painting. Their difference is not that clear, which means that artists may collaborate closely with scientists in some fields. Seen from today, both science and art had enjoyed a rapid development during renaissance. Their common historical characteristics make up the indispensable historical background of vision science, which means the pursuit of rationality and wisdom. During renaissance, many artists improved their abilities of precisely painting objects through scientific observations and researches. Likewise, the

artistic culture of scientists is also a favorable condition for doing scientific researches. The two are closely bound up that they cannot be clearly distinguished from each other.

1.2 Concept of Vision Science

In new fields about the history of science, it seems that deeper evidences are available to prove the relevance between science and art. Since 1980s, in-depth studies on the history of science have been performed in both the science circle and the art circle, as the vision culture has drawn increasing attention from the world. In 1990s, a new research branch, say, the history of vision science, appeared

The history of vision science involves many subjects, including science and its history, art and its history, history and historiography. In its true sense, the history of vision science is interdisciplinary research achievement. With changes in methods of researching topics, it will involve many other fields such as philosophy, art psychology, cognitive psychology, iconography, semiology, anthropology, linguistics, cultural study and even the history of religion. In the history of vision science, art and science have been historically combined along the direction of vision art.

2. Relation between Art and Vision Science

2.1 Photography vs. Vision Science

Photography has experienced a tortuous development of more than 170 years since it was born in 1839, and gradually, the commercial photography branched out. Nowadays, the art of commercial photography has permeated almost every facet of our lives. It attracts people's eyes by taking a candid photograph. Its fancy visual effect is not forgettable, which achieves the goal of promoting consumption and improving popularity. By advantages of unconstrained imaginary and insightful observations, commercial photographers have created a great number of photography works, providing the audience with a grand visual feast.

2.1.1 Vision Modality of Commercial Photography

Commercial photography is a part of photography. Its most prominent feature is that it is commercial. Unlike other photography types, commercial photography aims not only to capture an instant impression but also to present the whole product information to consumers. For different consumers, commercial photography would show product features from different perspectives. Therefore, it has been favored by more and more people. When taking a photograph, the photographer should first find out the connotative information of the commodity and stick to the commodity itself to design a satisfactory work by using photographic equipment. Then, under the technical level of the photographer, the satisfactory business photo can be finished. In recent years, people have spent a lot of energy on vision modality, which is related not only to research of “vision culture” but also to the extension of the culture of “visuality” .

A uniqueness of vision modality presented by commercial photography is to compose a picture through visual elements. There is a variety of lines in nature, which dominates the composition of the picture and supports the framework of the structural image to extend from two-dimensional plane to three-dimensional space, so that deep meaning can be expressed from different vision perspectives and viewing distances. The center of a commercial picture is requisite to convey the visual sense, so as to achieve a clear and entire image expression as well as to deepen the sense of presence of the commodity, which provides the audience with a perfect visual enjoyment. In a commercial photography process, conflicts and combination of elements make the vision extending from one to another, and the visual image also becomes more smooth and natural. In addition, commodity features can be highlighted by concise words that match well with the theme. In this way, all desired elements are contained in the photography work. The purpose of a photography work is to highlight the theme with ignoring some unimportant episodes to enhance the inherent expressivity.

Visual image means the combination of all perceptible social formations in nature. It includes objective reflections of "shape" and "state". "Shape" represents the form of object presence, while “state” represents the internal development mode within a range that involves all spatial relationships and visual relationships. As the integration of “shape” and "state", modality put more highlights on existential state as well as on dynamic sense. By combining image with culture, vision modality is of multiple connotations such as thought, culture and aesthetics.

Unlike conventional photography, modern photography puts emphasis on psychology perception of the “vision” part of the visual image. It is equivalent to a psychological image perception. After being perceived by optic nerve cells, the information will generate a visual image in the brain. Vision can be either a simple perceptual mode or a cumulative feeling based on experience. Collocation of different shapes and colors gives people with different feelings. So we say, “Colors have temperature and emotion” . Optical illusion” means the perception of the senses of taste, touch, pain and smell when observing an object under different light conditions. The texture, shape and state of an object can also bring us different feelings. These wonderful and colorful feelings come from our lives as well as from cultural deposit, making our subjectivity diverse and graceful.

2.1.2 Vision Language of Commercial Photography

To understand the commercial language under the background of art, we need to study the creative thoughts of the vision language from different angles, and extend both external and internal aspects of the language. In commercial photography, the application of new concepts, such as structuralism, Bauhaus and surrealism, has broadened the space for its development. Unique features of the vision language of commercial photography can be found by making analysis from different angles as well as by comparing this language with other classes of art.

All artistic expressions have their own language systems. Because of the relative short period of

development, the language system of commercial photography still needs to be further improved. Language is a scientific system. Language develops at its own rhythms. Therefore, scientific methods are also required to study the system language of commercial language. During the evolution of the style of commercial photography's vision language system, factors including color, light, shooting skill and lens have their own attributes. For focal length lens, there are normal lens, zoom lens, telephoto lens, wide-angle lens and micro-lens for selection. Different lenses have different attributes that are applicable to different objects and themes. The visual effect of the normal lens is the most similar to that of human eyes. Therefore, the images shot by normal lens are more real and natural. However, it is exact the too real sense that cannot produce a strong visual impact with special effect. The wide-angle lens can enlarge the viewing angle, broaden the depth of field and enhance the sense of perspective, so it can achieve a strong perspective sense at close-up shots to attract people's attention. The telephoto lens that has small perspective for large formation of image is suitable for shooting, for example, natural landscapes at a long distance. The micro-lens is very useful for tiny objects such as insects and flowers. Commercial photography is just like the communication between people with different accent and personalities: some are frank and some are euphemistic. All the different languages composes unique images, which is exact the science aspect of the vision art.

2.2 Three-dimensional Paintings vs. Vision Science

In Cubist artwork, objects are analyzed, broken up and reassembled to express modality and emotion with the two-dimensional space plus the time dimension. It is a new attempt to creatively use the cubism for photography, in which, some new shooting principles and methods are proposed to create more unique artworks.

Cubism has three expressions--broken objects, planarization and blanking. Conventional image composition is based on the completeness and integrity of the object, while the cubism breaks the mode by

decomposing the object into 2D pieces and then recomposing them into a broken object. In Cubist artwork, geometrical shapes are employed to organize the object. These geometrical element themselves do not have 3D illusions. Different lateral characteristics are arranged on a plane into a 2D flat geometrical shape, which, however, contains many information of the original subject. For the purpose of changing the conventional idea that puts the subject of the focus of the image, cubism blanks the subject or depicts several subjects to eliminate the optical center, which breaks the sense of wholeness of the image. Though this seems unique and even inconceivable, a different kind of style can be presented and applied even to buildings.

Cubism is people-oriented. But for architectural photography, modern architecture shall be the subject. Buildings are not suitable for cubism because they consist of only a few elements. But, if the top, the body and the bottom of a building are decomposed and recomposed again, a soft and gentle effect without strong visual impact can therefore be achieved, which can avoid the influence on the expression of the subject. Buildings are three-dimensional. If these three dimensions are expressed on a plane, then a cubism style can be attained with using special shooting and post-processing skills. If one desires to weaken the sense of the three-dimensional space, he shall take the shot under a light with diffuse reflection. For instance, in a cloudy day the shadow of a building would become blurry, which would generated the desired effect. It thus can be conclude that a 3D object can have the 2D sense in visual effect, in which, science is indispensable to achieve the effect we want.

2.3 Buildings vs. Vision Science

2.3.1 Style Design of Building Vision

Style design of building vision is an important aspect of building design. As a branch of design, style design of building vision includes: building structure design, color design, culture design and material design, etc. In practice, the style design focuses on tiny changes of point, line to plane. Those tiny changes are then integrated into a big one on the whole level. Concrete, as one of the essential materials for architectural projects, is also a good carrier for art. Its rough and

pristine nature can be used for the “ruggedness” effect of the building. Besides, an intentional roughening during construction can better express the rhythm sense of the building. In vision art, “point” is the smallest unit. It has a centripetal force and is the most imprecise shape. A point is usually used to represent a location that has neither length nor width. Some parts are as abstract as points, so as to grasp the overall image. In the innovation of architectural style elements, inspirations consistently emerges, further to create products abiding by the characteristics of materials.

2.3.2 Super-vision Modality

The design research scope of super-vision modality mainly covers macroscopic super-vision modality, microscopic super-vision modality and other super-vision modalities. By making use of some modern technical apparatus, such as the astronomical telescope, spacecraft, optical microscope, electron microscope and others, all kinds of super-vision modalities could be observed clearly. The advanced science and super-vision modality are closely connected in terms of the application of architectural design. Nowadays, along with the rapid pace in science and technology, particularly the greater development during synthesizing and applying new material, it is no longer a problem with regard to satisfy any model in architectural design by means of applying Nanotechnology material. The development of super-vision modality becomes possible and gets mature gradually.

To sum up, the science and art are supplementing each other and inalienable to some extent. They are blended into an inter-discipline, which contains both the sensibility in art and the rigorousness in science. The artistic design and creation will open up new development direction and even the new development genre may emerge in future. At present, the artistic creation from photography, architecture and other aspects has obtained numerous achievements and innovation. The rise of various kinds of unique designs of advertising boards and buildings indicates the potential value about artistic creation in scientific research. After all the vision imaging and optical image-forming principle in physics are inseparable.

During the photographic process, pictures with peculiar fairyland have been taken by utilizing different optical skills. Various kinds of artworks with peculiar shapes have been constructed with scientific material. Thus the artistic works with vivid and depth of field effect could be produced. In case of dividing the science into reason, dividing art into sensibility blindly, it will be very hard to break through and innovate. To explore the new mode for the co-existence of both will be bound to cause a great revolution between science and art. People’s most direct cognition towards the world is visual cognition, which brings more reality and control. However, usually the visual art is illusory or reaching the mysterious effect by taking advantage of illusion. Under the scientific guidance, the artistic creation will expand more dimensions for observing the world and bring new development direction for artistic creation. Behind the aesthetics there will always be visual scientific principle. Actually there are scientific reasons when we have discovered some phenomena and rules. In most cases, new inventions and creations are unexpected during unintentional creation. The art will open our fields of vision, which will not be confined into a vicious cycle and irresistible. While we are standing at the world boundary, all problems will be readily solved.

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