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A Study of the Physiology of the Human Eye, a Careful and Meticulous Study

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ABSTRACT

The invention of photography made it possible for objects, places, landscapes and even ordinary people around us to play a symbolic role and have a clear effect on the mental path of meaning-making and content-making. Seeing these ordinary natural objects with the eye, while it may be emotional or even reminiscent of memory, can be less symbolic, meaningful, or content-creating, leading the mind to a truth beyond the subject itself unless the eye that sees is the eye of truth. Be between mystics. However, if the same objects, landscapes and subjects are present in a photo frame with their different visual forms and characteristics, they will rise above their individuality, and will have the status of a typical sample, i.e. general sample. A tree is a specific tree that has grown in a certain place before it is placed in the camera frame, but by placing it in the photo of the general sample of all similar trees, it will recreate the general meaning of the tree. Thus, when an object is present in a photograph, it gains more credibility than its individuality, and therefore can have a more specific effect, as well as a stronger symbolism or deeper meaning.

Introduction

It is not unreasonable that seeing the world and its phenomena in the photo is not only repetitive and dull, but in this new party of eyes, "seeing" the truth reveals to the viewer the photo, which is less achieved with the real and natural vision of the world with the eyes. So, photography is a type of seeing in which the role of the mind is more active than normal seeing.

This difference was more pronounced in the two types of vision in the early history of photography, when all photographs were black and white. Black and white photography, by re-translating colors into different amounts and degrees of darkness and light, created a world different from the real color world, which was radically different from all human visual experiences before the invention of photography [4-6].

The lack of color and the abstract mechanism of black-and-white images intensified the process of meaning-making of ordinary objects and subjects in the photograph. The image of a tree was not only a common example of all

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trees, but also showed a similarity to all trees: the black and white tree [7-10].This different new experience invited us to once again focus on other graphic properties of phenomena such as form, shape, texture, contrast, and so on, without the presence of color. Every new experience usually leads to astonishment in the first place and then to the realization of meaning, and black-and-white photography has led to such an attitude in the field of art for the audience, and that is why, despite years of photographic birth, many people consider black and white photography to be more effective and artistic, but what are the reasons for this?

Color adds so much energy to your image that it can disrupt the system of lines, shapes, and textures. A red shirt on a girl's body screams its presence so much that it draws the eyes to the face or any other subject [11]. In black and white, the different degrees and values of black and white have a calmer accompaniment to each other, although their presence reinforces each other's presence, although they mean each other's presence through the law of opposites, and although conflict and contrast result. They do, but in any case, this accompaniment is more solid than the accompaniment of colors [12-15].

The juxtaposition of colors is more controversial and releases tremendous visual energy into the text of the image. This energy can sometimes disrupt the process of exposure and perception of the effect. A black-and-white image of a beautiful face in the absence of color provides an opportunity to focus on the smooth fit of the lines and the beauty of the forms on the face, while eye-catching colors shout less solemn beauty and instead show beauty.

This is why many photographers were dissatisfied with the advent of color photography, seeing color as a barrier to full communication between the audience and the photograph, but it soon became clear that this immediate energy, if properly organized, could be more symbolic or semantic than any other graphic agent. [16-19].

The truth is that the characteristics of our eyes and minds make our impression of color strong, both in normal life and when we see a photo. Remember that in life, color motivates us more than our form or shape. At sunset, we are more reminded of the red or gold color of the sunset than of the shape of the sun or the shape of the horizon or the shape of the clouds, and that is why, in literary expression, sunset is often associated with color-related traits rather than for example, it is said that the golden sunset or the bloody red sunset, the lover all over my eyes, before you see the shape, texture and form of the beloved shirt, the color of his clothes becomes bright. Remember that in life, when the distance of vision increases, most of the information that our eyes and minds receive is color and the general form of the subject, and thus other physical features of the subject such as precise shape, detail and texture remain hidden. Remember that our psyche is affected more than any other feature of color, and the existence of a branch of psychology called color psychology is a sign of this special influence [20].

Finally, it can be said that color has a more pronounced presence in life and in photography (in a special way) than other features of phenomena, and therefore color photography requires special knowledge and obsession. Some of these binding considerations are as follows:

A. Keep in mind that we have to combine a single view for black and white and color photos in two different ways.

B. Accurate or modified translation of the colors of a scene gives two different images of that scene with two different effects.

C. The entry of each color into the frame means the presence of a special emotional power, the controversial birth of a special symbol or the manifestation of a unique meaning. As a result, the more numerous and contrasting they are in the frame, the more easily controlling their emotional impact and associating the meaning of their presence. It will be more difficult and more likely to make mistakes.

In short, it is necessary to know the emotional effects of colors, their symbolic interpretations, and the compositional points in their

application to photography. This dissertation is a step towards recognizing these cases [21].

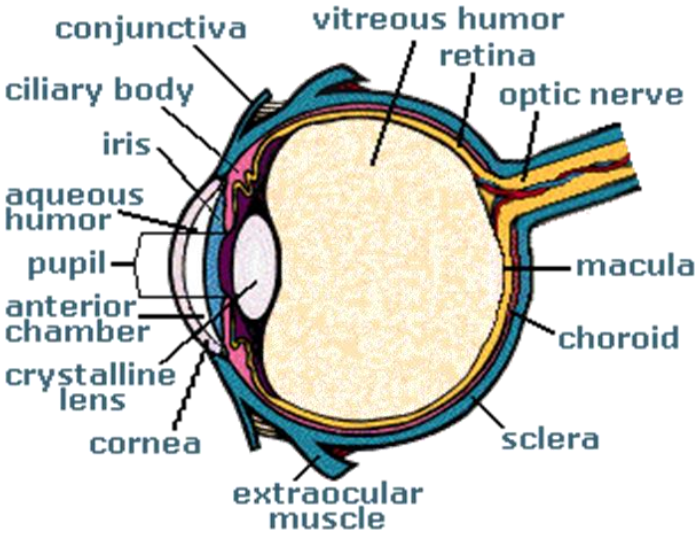

Figure 1 Alternative Healing: Basic Anatomy and Physiology of the Human Visual System

Anatomophysiology of the Human Eye

The human eye is like a camera, and the sensitive screen on which the image is formed is a screen called the retina. This screen is the light-sensitive part of the eye and consists of two types of cone-shaped cells and cylindrical shapes. Cone-shaped cells are sensitive to certain colors, and cylindrical cells are sensitive to all colors except red. When these cells are exposed to light, they are stimulated. These nerve stimuli reach the brain through the optic nerve fibers, causing color and light to be felt.

Light passes through different layers in the eye. These layers are the pigment layer, the inner nucleated layer, the outer lattice-like layer, the inner granular layer, and the inner lattice-like layer. Cone-shaped, cylindrical cells contain a light-sensitive substance that decomposes in the slightest light, and the material produced by this decomposition stimulates the membranes of these cells, which are transmitted to the nervous system. The retina is made up of 125 million cylindrical cells and 5.5 million cone-shaped cells, which are connected to the brain by 900,000 nerve fibers.

The retinal pigment layer produces a pigment called melanin, which is black and prevents light from being reflected inside the eyeball, which is very important for accurate vision and is similar to the function of black inside a camera. Without pigment, light is reflected in all directions inside the eyeball and prevents the formation of clear dark and bright spots, which is necessary for accurate vision. People with albinism also lack pigment in the eyes and their visual acuity is a maximum of 15 to 20%.

Degradable substances in cylindrical cells are called "rudepsin" and in cone cells are called "opsin". About 40% of the cylindrical cells are present in the pigment layer of the eye contain rudepsin, which forms the purple of vision. Rodepsin is broken down by light in the eye and re-formed in the dark [24].

If the light radiation is transient and lasts only for one and a half million seconds, it will give a person a sense of sight for a second. Because as long as the decomposition of rudepsin remains in the cells, the stimulation persists, which is the stability of the image for one tenth of a second is the basis of the emergence of cinema and television.

The photochemicals of cone-shaped cells are similar to those of rhodopsin in cylindrical cells, but these cells contain special pigments called iodopsin, retinin, and photopsin. There are three groups of different colored materials in these cells and their sensitivity to the main colors [22-25].

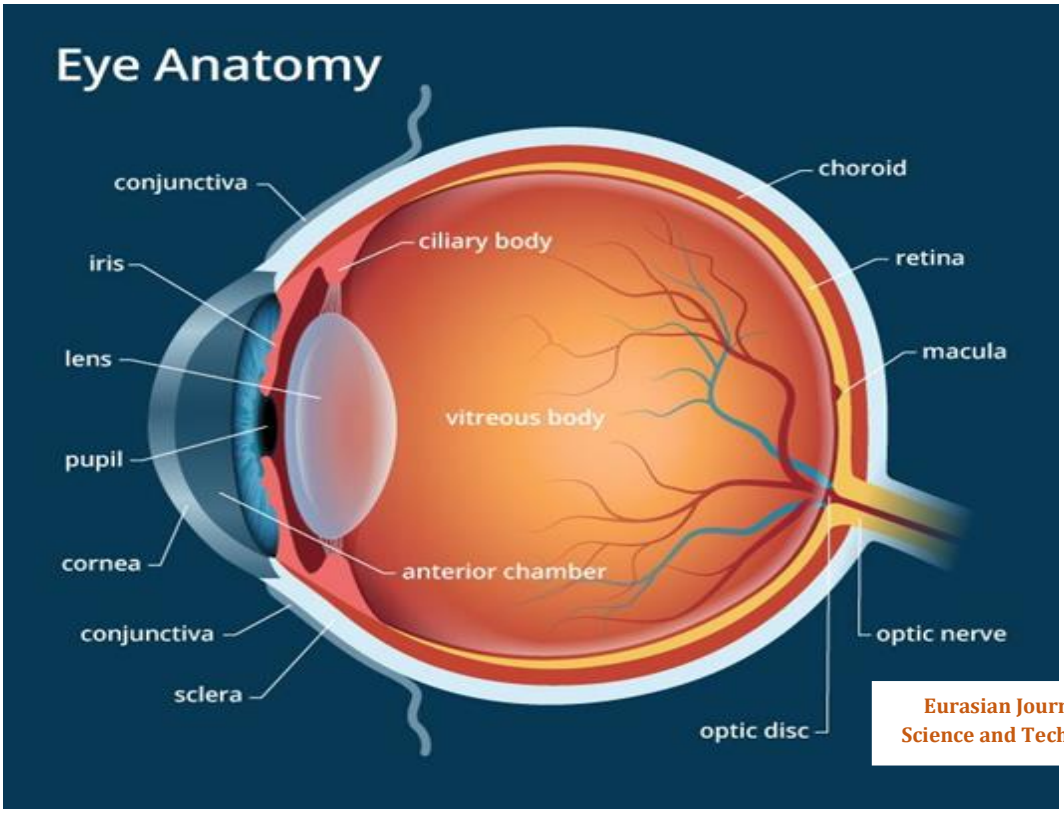

Figure 2 Human Eye Anatomy - Parts of the Eye Explained | Eye anatomy, Basic anatomy

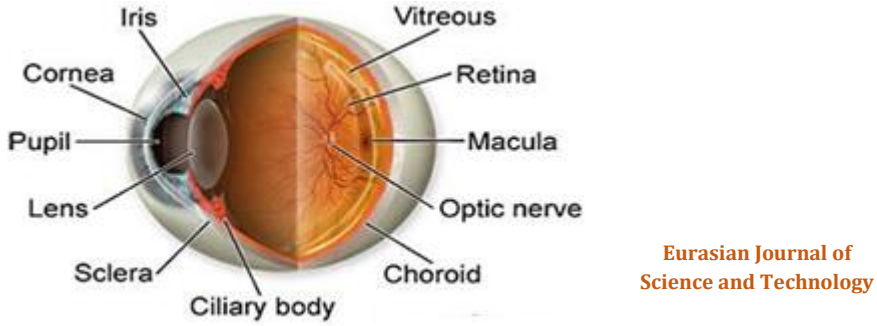

Figure 3 Eye anatomy and physiology - how the eye and vision work

Conclusion

In eye physiology, there are two types of vision: "photopic" (color vision) and "scotopic" (black and white vision). Cone-shaped cells are responsible for seeing colors, and cylindrical cells are responsible for seeing black and white light. Almost identical stimulation of blue, green, and red cone-shaped cells will give a white sensation. Therefore, there is no white color, and this color is a combination of all the colors in the spectrum, which, because it affects all three categories, will create the feeling of white [24-27].

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