

УДК

**VISUAL PERCEPTION.
BEAUTY LIES IN THE EYE OF THE BEHOLDER.
Antonyuk N.I, Zykova A.S., Troushkova T.V.
Scientific supervisor – Associate professor Troushkova T.V.
Siberian Federal University**

Visual Perception.

Vision is our most dominant sense, from which we derive most of our information about the world. From the light that enters the eye and the processing in the brain that follows we can sense where things are, how they move and what they are.

The person perceives about 80 % of the information through sight.

As the wisdom says, it is better to see once, than to hear hundred times.

Actually people are exposed to powerful influence when they look at the picture.

And frequently the plan of the artist is perceived at subconsciousness level.

It turns out, that the visual perception is a strong weapon in hands of figures of the modern art.

So, what is the visual perception actually?

Visual perception is the ability to interpret information and surroundings from visible light reaching the eye. The resulting perception is also known as eyesight, sight or vision.

Visual system

The visual system in humans allows individuals to assimilate information from the environment. The act of seeing starts when the lens of the eye focuses an image of its surroundings onto a light-sensitive membrane in the back of the eye, called the retina.

The major problem in visual perception is that what people see is not simply a translation of retinal stimuli. Thus people interested in perception have long struggled to explain what visual processing does to create what we actually see.

There were two major ancient Greek schools, providing a primitive explanation of how vision is carried out in the body.

The first was the "emission theory" which maintained that vision occurs when rays emanate from the eyes and are intercepted by visual objects. This theory was championed by scholars like Euclid and Ptolemy and their followers.

The second school advocated the so called 'intromission' approach which sees vision as coming from something entering the eyes representative of the object. Its main propagators are Aristotle, Galen and their followers.

Both schools of thought relied upon the principle that "like is only known by like," and thus upon the notion that the eye was composed of some "internal fire" which interacted with the "external fire" of visible light and made vision possible.

Ibn al-Haytham (also known as Alhacen or Alhazen), the "father of optics" argued that vision is due to light from objects entering the eye. He was the first scientist to argue that vision occurs in the brain, rather than the eyes. He pointed out that personal experience has an effect on what people see and how they see, and that vision and perception are subjective. This can be easily related to the famous saying "beauty lies in the eye of the beholder".

Leonardo DaVinci was the first to recognize the special optical qualities of the eye. His main experimental finding was that there is only a distinct and clear vision at the line of sight, the optical line that ends at the fovea.

Hermann von Helmholtz concluded that vision could only be the result of some form of unconscious inferences: a matter of making assumptions and conclusions from incomplete data, based on previous experiences.

According to Gestalt theory, there are six main factors that determine how we group things according to visual perception: Proximity, Similarity, Closure, Symmetry, Common fate and Continuity.

In the 1970s David Marr developed a multi-level theory of vision, which analysed the process of vision at different levels of abstraction. He identified three levels of analysis: the computational, algorithmic and implementational levels.

His stages of vision include:

a 2D or primal sketch of the scene, based on feature extraction of fundamental components of the scene, including edges, regions, etc. Note the similarity in concept to a pencil sketch drawn quickly by an artist as an impression.

a 2-1/2 D sketch of the scene, where textures are acknowledged, etc. Note the similarity in concept to the stage in drawing where an artist highlights or shades areas of a scene, to provide depth.

a 3 D model, where the scene is visualized in a continuous, 3-dimensional map.

Optical illusion.

Optical art - the art of optical illusion based on features of visual perception. The perception of the figure is based on an optical illusion: the image does not exist only on canvas, but in reality and in the eyes, and in the spectator head. Optical art is based on visual illusions encountered with the perception of certain configurations in the plane. For example, looking at alternating black and white concentric circles appear to cross beams that rotate like a propeller. Drawing of Cube which marked all his ribs it appears to the eye volatile, and its facets are constantly changing field, putting forward Then back into the depths. When crossing the line segment straight lines may be feeling a broken line. Interpenetration two geometric (eg ring) structure gives the effect of waves. The bright and sharply defined shape provoking the so-called consistent manner, that is, illusory form of the same configuration and Contrasting color.

The task of op art - to deceive the eye, to provoke him to a false response, cause the image of «non-existent». Visually conflicting configuration create an irresolvable conflict between the actual shape and visible form.

The Moving Image

It is thought that humans perceive movement due to processes that occur both in the eye and in the brain. Light falling on a set of receptors in the eye at one instance and on another nearby set in the next instance successively stimulates adjacent retinal points, which is how we see movement with the eye. However, cortical cells in the brain respond to these changes of light which is how we know something moves.

All too often, we discuss movement perception as though all we had to consider was the perception of a moving object by a static subject. (As shown in session 3), this is hardly ever the case. Our vision is very well developed, because as perceivers, we have a tendency to move around a lot. Yet we are still able to perceive other moving things in a seemingly static world (ibid.). These twin faculties of retinal stabilization and motion detection gives us an extraordinary ability to recognize moving objects, even if we are given next to no information about them.

The persistence of vision theory is built on a single hypothesis: when a consecutive sequence of still images is flashed before the eye, each image is merged into a seamless moving continuum, because the brain, or the retina of the eye (proponents of the theory are divided as to which) retains an momentary afterimage of the preceding image, which is then blended with the next image of the sequence.

Color

Color is characterized by attributes such as *hue*, *value*, and *saturation*. Colors have been associated with different moods, dependent on the society of the time. For example,

white has long been viewed as purity, whereas it can also take slightly different meanings such as peace, innocence Chromatic adaptation is one aspect of vision that may fool someone into observing an color-based optical illusion. Though the human visual system generally does maintain constant perceived color under different lighting, there are situations where the brightness of a stimulus will appear reversed relative to its "background" when viewed at night. For example, the bright yellow petals of flowers will appear dark compared to the green leaves in very dim light. The opposite is true during the day. This is known as the Purkinje effect, and arises because in very low light, human vision is approximately monochromatic and limited to the region near a wavelength of 550nm (green). ce and even death (in eastern cultures).

Chiaroscuro

Chiaroscuro -in art is contrast between light and dark, usually bold contrasts affecting a whole composition. It is also more technically used by artists and art historians for the use of effects representing contrasts of light, not necessarily strong, to achieve a sense of volume in modeling three-dimensional objects such as the human body.

Depth perception

Depth perception is the visual ability to perceive the world in three dimensions (3D). Depth perception is a visual illusion. Depth sensation is the ability to move accurately, or to respond consistently, based on the distances of objects in an environment.

Trained artists are keenly aware of the various methods for indicating spatial depth (color shading, distance fog, perspective and relative size), and take advantage of them to make their works appear "real". The viewer feels it would be possible to reach in and grab the nose of a Rembrandt portrait or an apple in a Cezanne still life—or step inside a landscape and walk around among its trees and rocks.

Perception and reality

This confusing ambiguity of perception is exploited in human technologies such as camouflage, and also in biological mimicry, for example by Peacock butterflies, whose wings bear eye markings that birds respond to as though they were the eyes of a dangerous predator. And nowadays there are many different schools studying concept of "visual perception".

Designers, who are graduates of these schools, actively use these concepts in their works.

Thus, people are exposed to psychological influence through the visual perception each time when they are looking simple advertising.