Depth Perception Encyclopedia Article

Depth Perception

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Contents

Depth Perception Encyclopedia Article.....1

Contents.....2

Depth Perception.....3

Depth Perception

Ability to determine visually the distance between objects.

The ability to perceive depth seems to exist early in life. Research with infants has revealed that by two months of age, babies can perceive depth. Prior to that, they may be unable to do so in part because of weak eye muscles that do not let them use binocular depth cues.

Monocular Depth Cues. Psychologists have identified two different kinds of monocular cues. One comes into play when we use the muscles of the eye to change the shape of the eye's lens to focus on an object. We make use of the amount of muscular tension to give feedback about distance.

A second kind of monocular cue relates to external visual stimuli. Artists use these visual cues to make two dimensional paintings appear realistic. These cues may seem obvious to us now, but artistic renderings from earlier than about the sixteenth century often seem distorted because artists had not yet developed all the techniques to capture these visual cues.

Binocular Cues. Binocular cues require that we use both eyes. One cue makes use of the fact that when we look at a nearby object with both eyes, we bring our eyes together; the muscle tension associated with looking at close objects gives us information about their distance. The second binocular cue involves retinal disparity. This means that each eye (or, more specifically, the retina of each eye) has a slightly different perspective. The slight difference in appearance of an object in each eye when we gaze at it gives us further information about depth. Children's Viewmasters produce a three-dimensional image that has depth because of a slightly different picture that is delivered to each eye. In the natural world, because of the relatively small distance from one pupil to another (about 2.5 inches or 6.5 centimeters) binocular cues are effective only for objects that are within about 500 yards (455 m) of the viewer.