

The ability to see the world in three dimensions is called depth perception. Without this ability people would have a hard time judging how far away objects are. ~~How~~ Depth perception seems to be present in infants at a very young age.

There are various cues for perceiving depth in the world. ~~Some~~ - 1) Monocular cues & 2) Binocular cues.

Monocular cues - these are called pictorial cues; these cues require the use of only one eye. Some monocular cues are -

1) Linear perspective - When looking down a long Interstate highway, the two sides of the highway appear to merge together in the distance; this tendency for parallel lines to appear to converge on each other is called linear perspective. It works in pictures because people assume that in the picture, as in real life, the converging lines mean a great distance away from where they are.

2) Relative size - The principle of size constancy works in relative size, when objects that people expect to be of a certain size appear to be small and are, therefore, assumed to be much farther away. Moving models use this principle to make their small models seem gigantic and in the distance.

3. Overlap - if one object seems to be blocking another object, people assume that the blocked object is behind the first one and, therefore, farther away. This clue is also known as Interposition.
4. Aerial perspective - The farther away an object is, the hazier the object will appear to be, a process called aerial perspective. For example distant mountains often look fuzzy and buildings far in the distance are blurrier than those that are close.
5. Texture gradient - the pebbles or bricks that are close to you are very distinctly textured, but as you look farther off into the distance, their texture becomes smaller and finer. Texture gradient is another <sup>trick</sup> used by artists to give the illusion of depth in a painting.
6. Motion parallax - The next time you're in a car notice how the objects outside the car window seem to zip by very fast when they are close to the car and objects in the distance seem to move more slowly. This discrepancy in motion of near and far objects is called motion parallax.
7. Accommodation - the lens of human eye is flexible and held in place by a series of muscles. The process of accommodation is the tendency of the lens to change its shape, or thickness, in response to objects near or far away. The brain can use this information about accommodation as a cue for distance.

2 Binocular Cues - These cues are result of the slightly different visual patterns that exist when the visual fields (the entire area of space visible at a given instant without moving the eyes) of both eyes are used. These cues are -

(A) Convergence - refers to the rotation of the two eyes in their sockets to focus on a single object. If the object is close, the convergence is pretty great (almost as great as crossing the eyes). If the object is far, the convergence is much less.

(B) Binocular disparity - The two eyes are a few inches apart, they don't see exactly the same image. The brain interprets the image on the retina to determine distance from the eyes. If the two images are very different, the object must be pretty close. If they are almost identical the object is a fair enough away to make the retinal disparity very small. In other words - binocular disparity is the difference in images between the two eyes which is greater for objects that are close and smaller for distant objects.

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