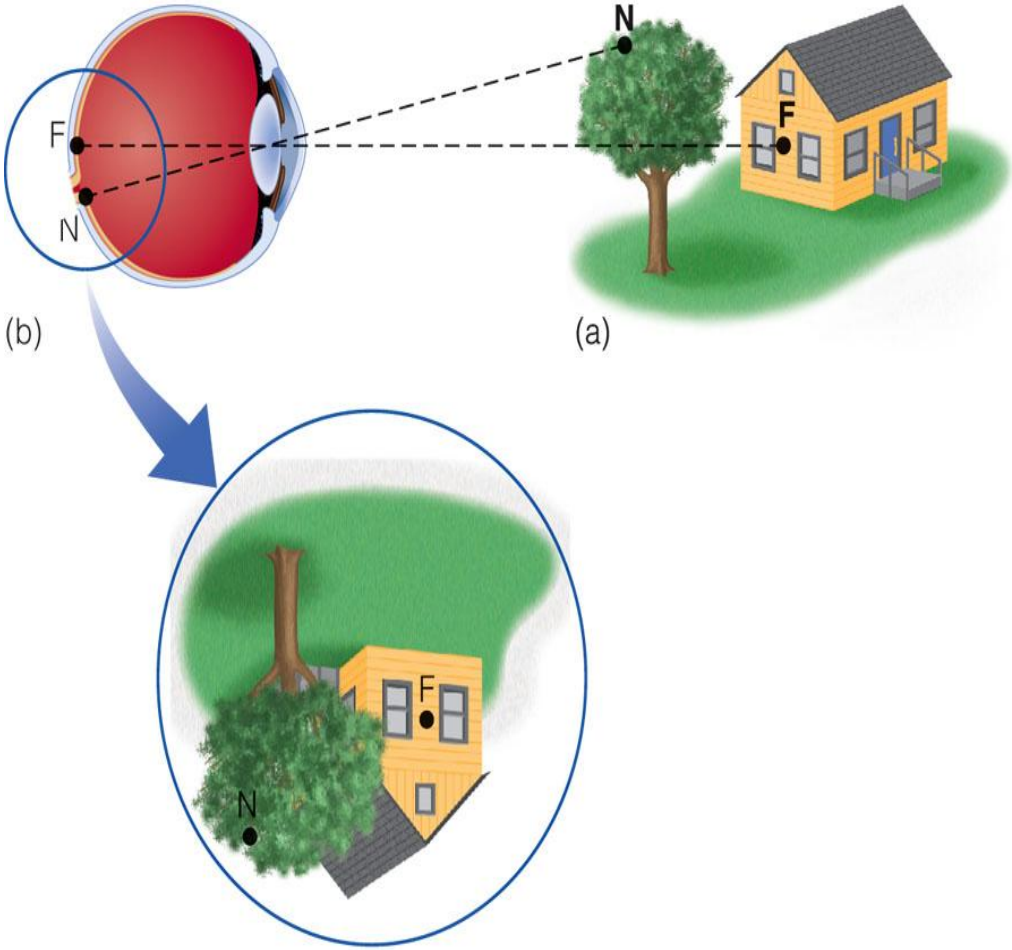
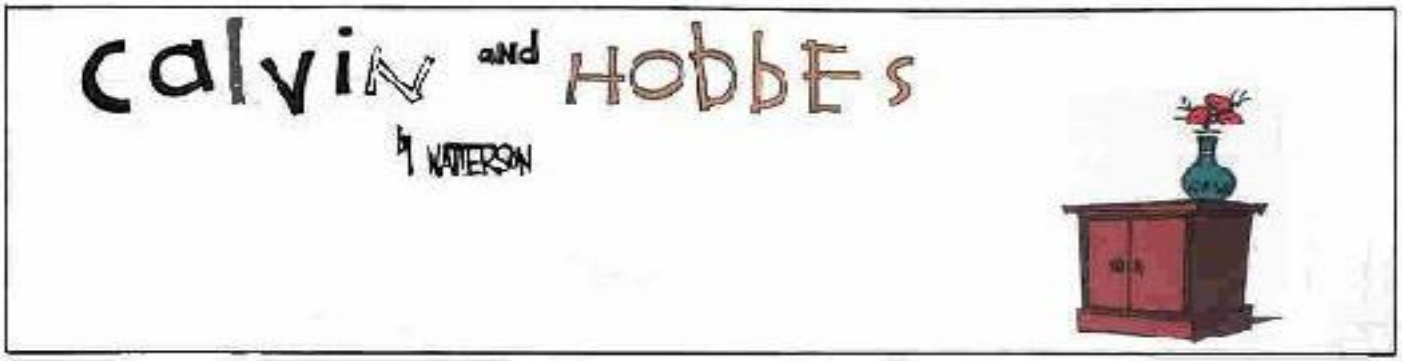
Depth Perception



Perceiving Depth



Depth Cues

Oculomotor cues are based on our ***ability to sense the position of our eyes and the tension in our eye muscles***.

convergence: eyes must "converge" to see nearby objects

accommodation: lens changes shape to focus the image

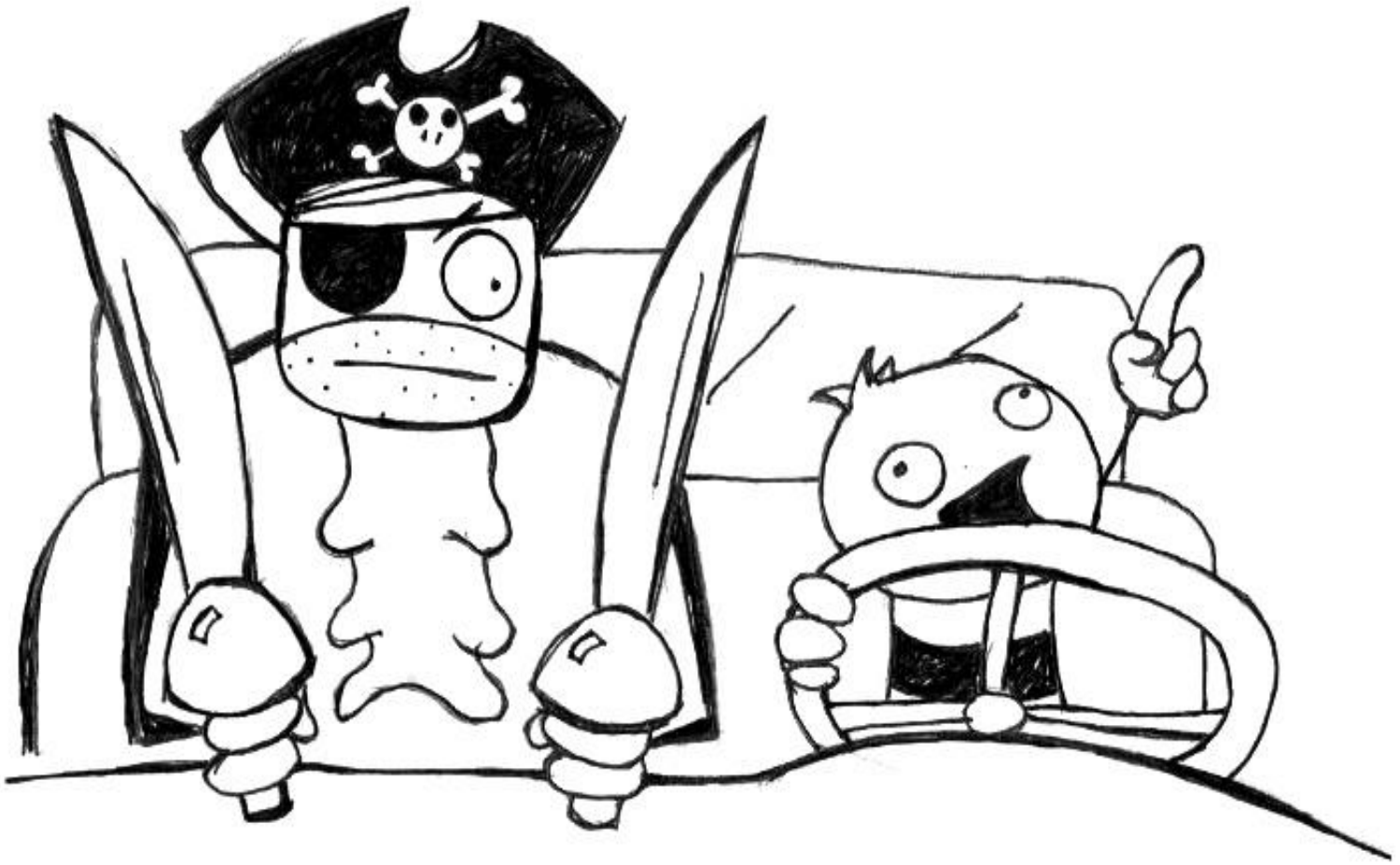
Pictorial cues are those that can be depicted in a still picture (***2D***) and can be perceived by a single eye.

Movement-produced cues are created by ***movement of the observer or by movement of the objects*** in the environment.

Binocular disparity uses the fact that our ***left and right eyes receive slightly different images*** because they are observing the scene from slightly different positions.

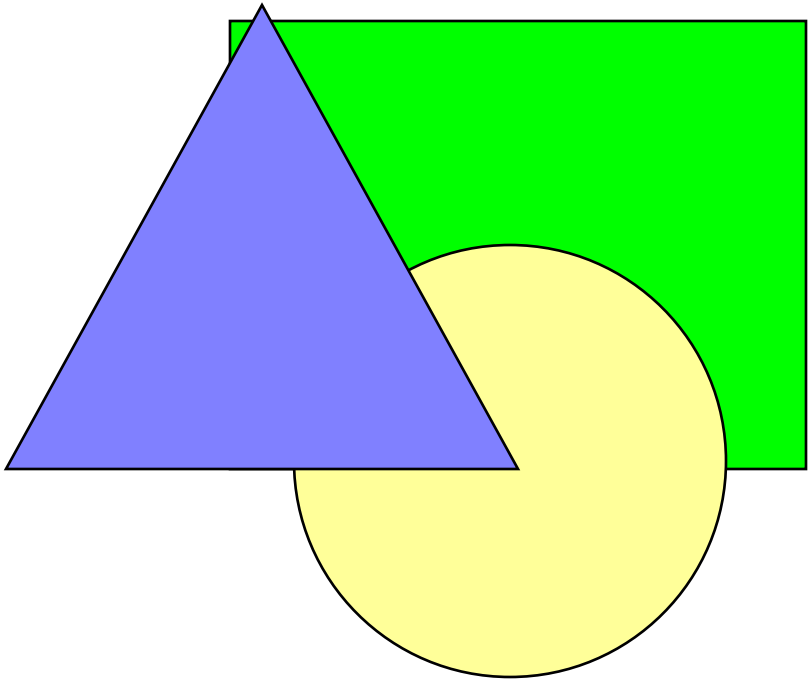
Depth Perception

Pictorial (Monocular) Depth Cues



Or How can pirates (or Cyclops's, for that matter) drive?

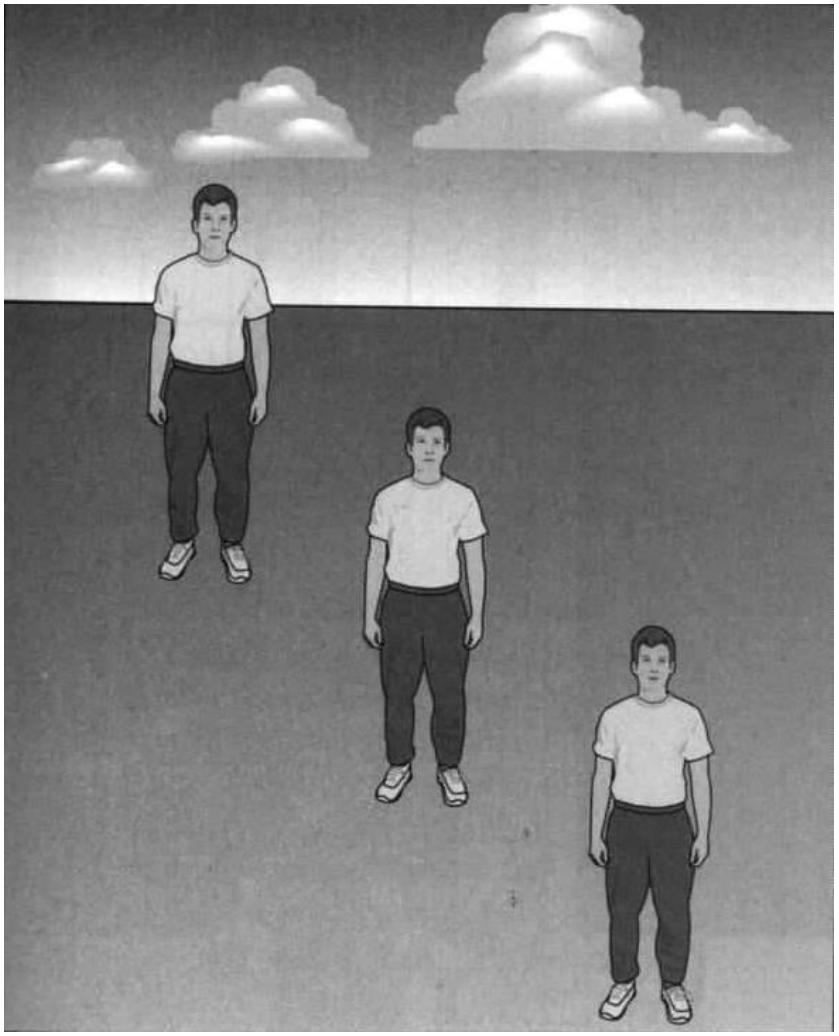
Occlusion (Interposition)



If one object partially hides another from view, the object that is hidden is seen as being further away.

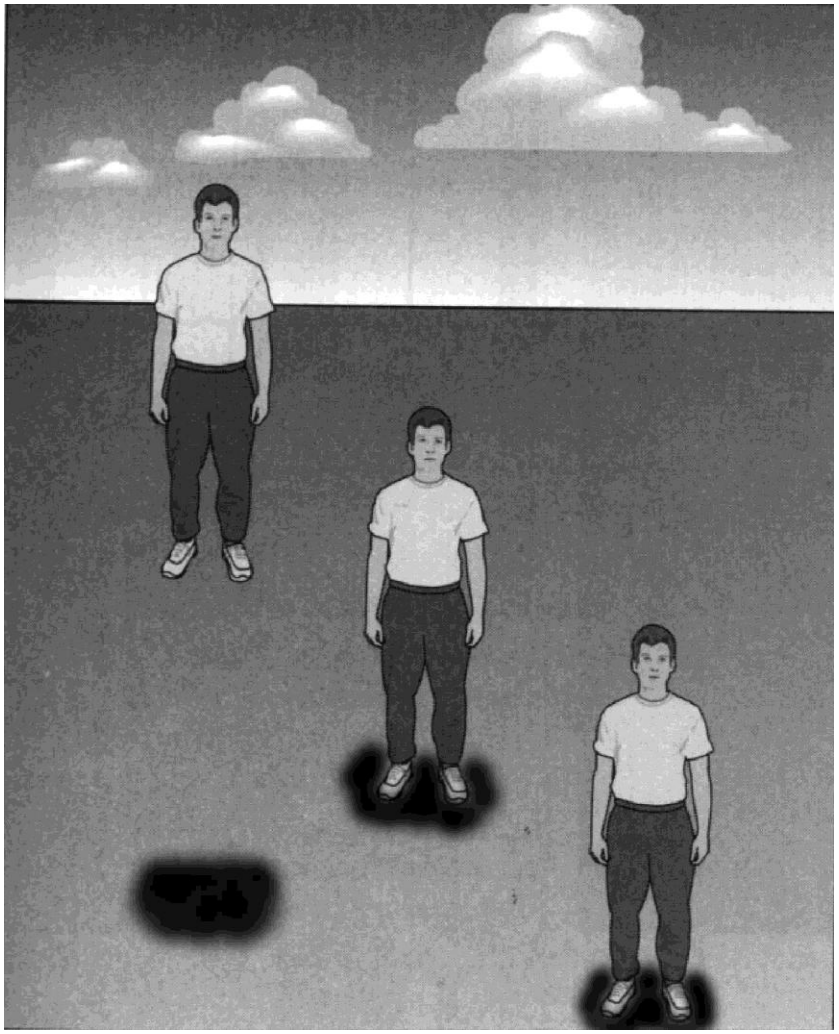
Only provides information on *relative (not absolute) depth*

Relative Height



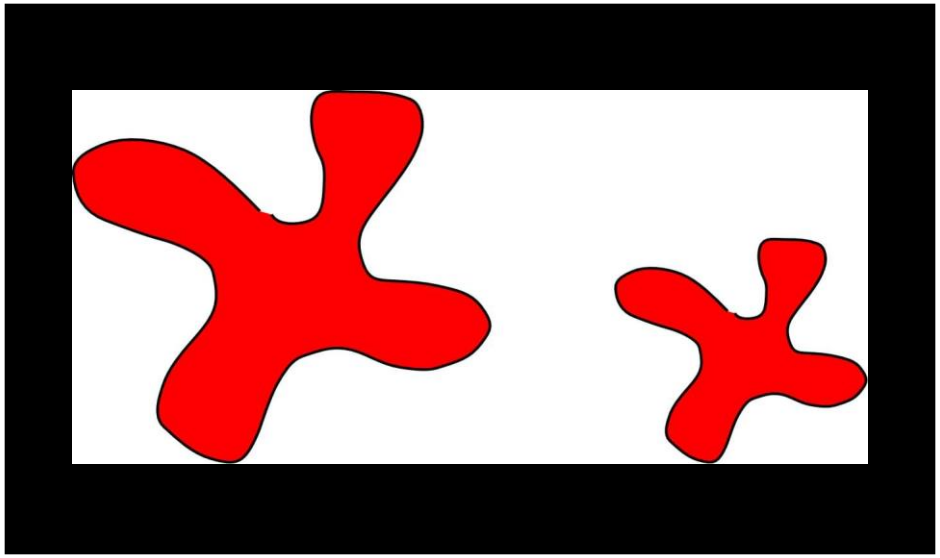
Objects that are closer to the horizon in the visual field appear further away.

Cast Shadows



If source of light is known, the location of a shadow can provide further information on an object's location in depth.

Relative Size



If two objects are the same size, the one who's image takes up less of the visual field will appear to be further away.

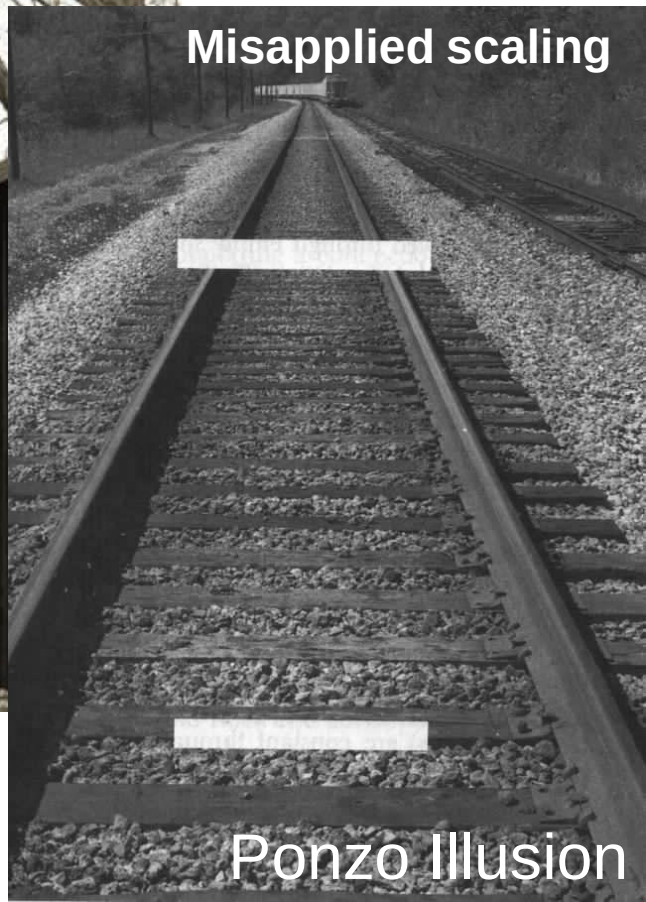
Familiar Size

If the actual size of an object is known, its distance can be judged by the size of its visual image -- a more distant object will have a smaller image.

Atmospheric (Aerial) Perspective

Distant objects look less sharp than nearby objects due to the greater amount of dust, water vapor, and pollution we have to look through to see the more distant object.

Linear Perspective

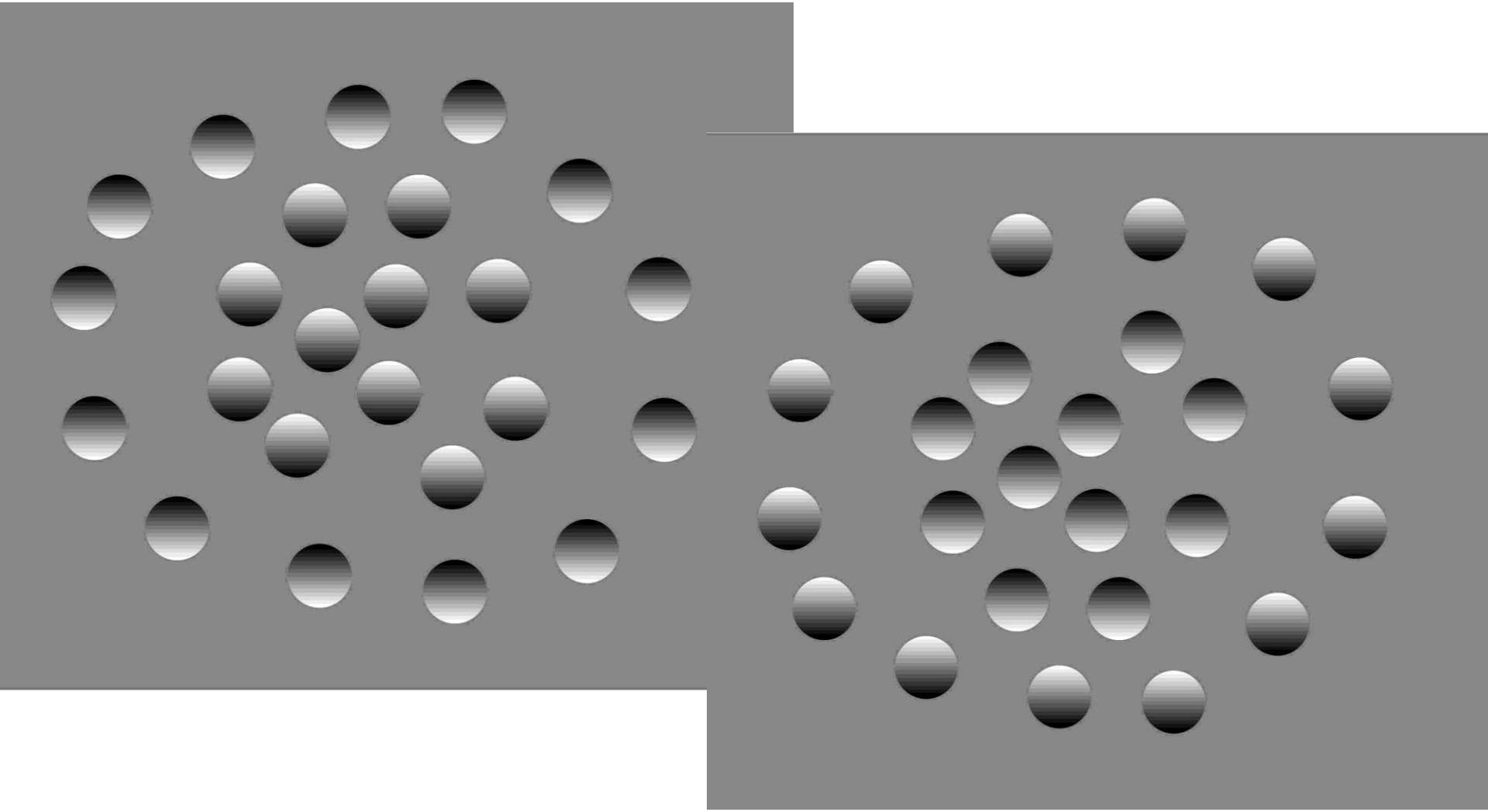


Lines that are actually parallel will converge in the image as distance increases.

Texture Gradient

Elements that are equally spaced will appear to be packed closer and closer together as distance increases.

Shape from Shading



Highlights and shadows are cast on an object in a way that is consistent with 1) the objects shape in depth and 2) the known (or assumed) sources of light.

Depth Cues

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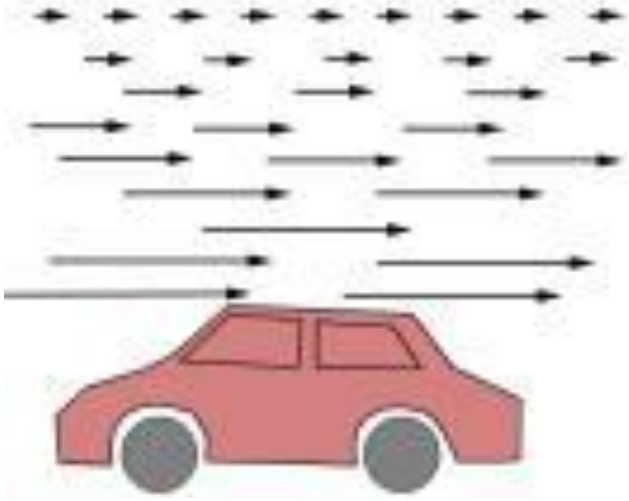
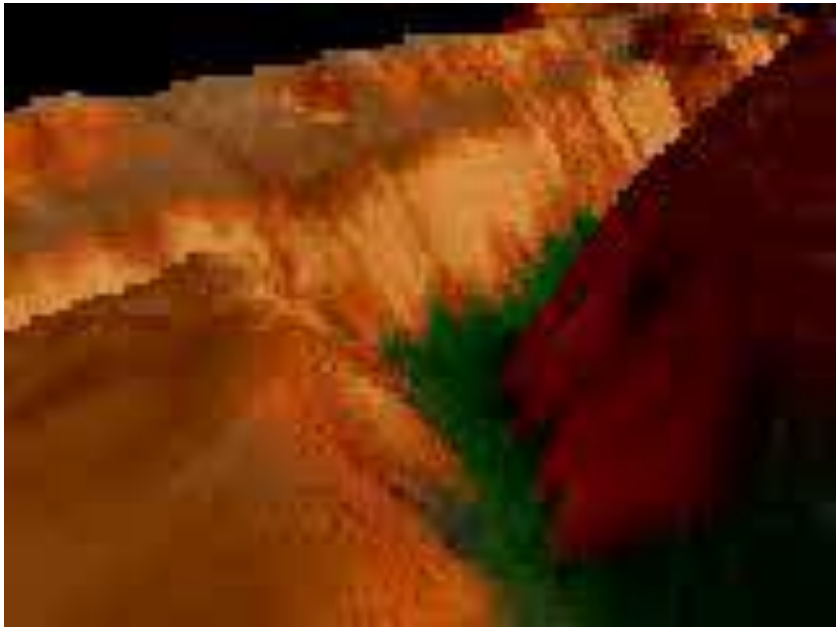
Motion Parallax, Structure from Motion



Binocular disparity uses the fact that our left and right eyes receive slightly different images because they are observing the scene from slightly different positions.

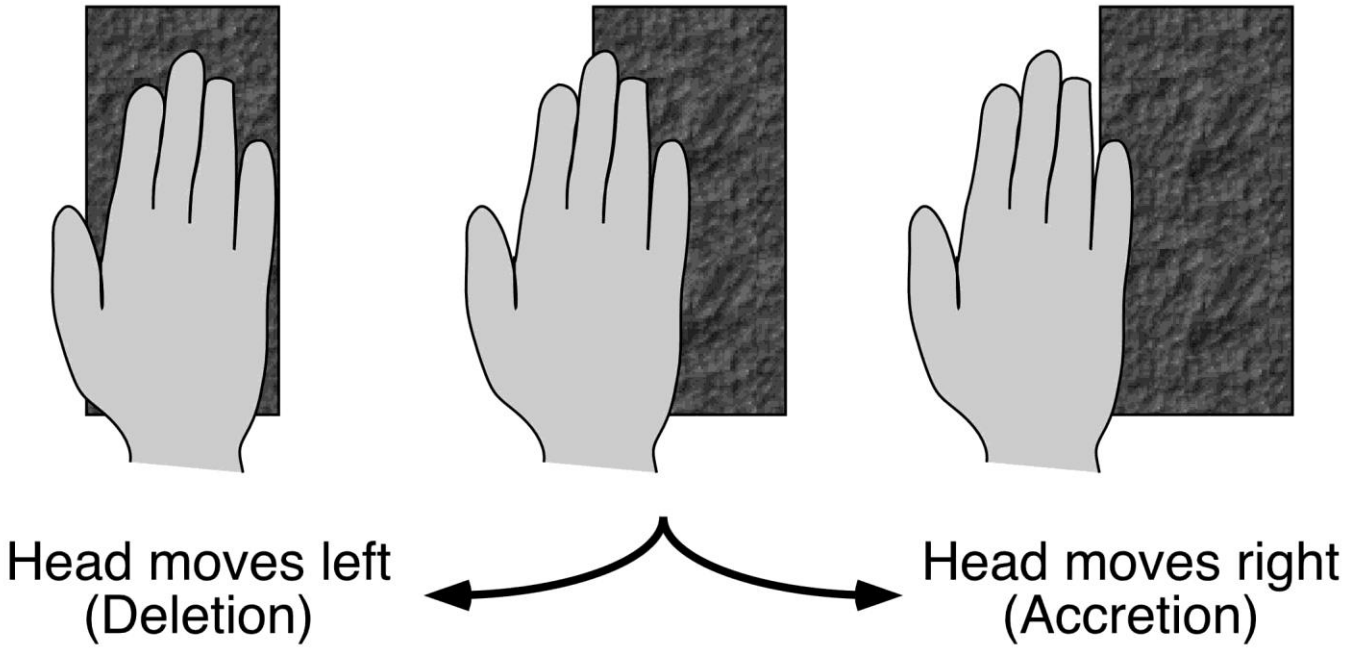
Motion Parallax



Things that are closer seem to move faster than things that are far away

Deletion/Accretion

Related to the pictorial depth cue of occlusion



Motion through an environment results in objects being deleted from view temporarily. Deletion and accretion depend on the relative distances between the observer, the occuluder and the object.

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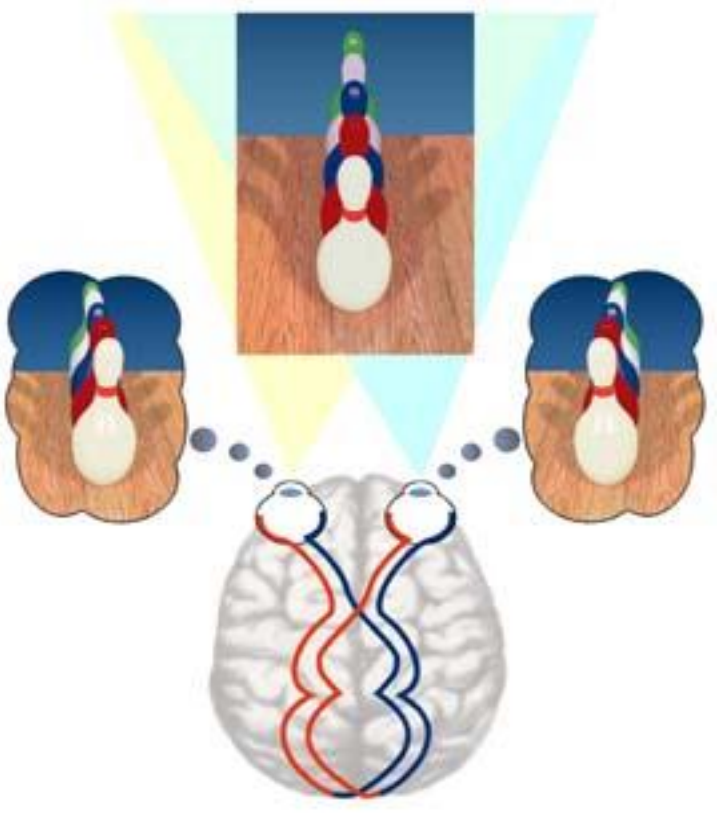
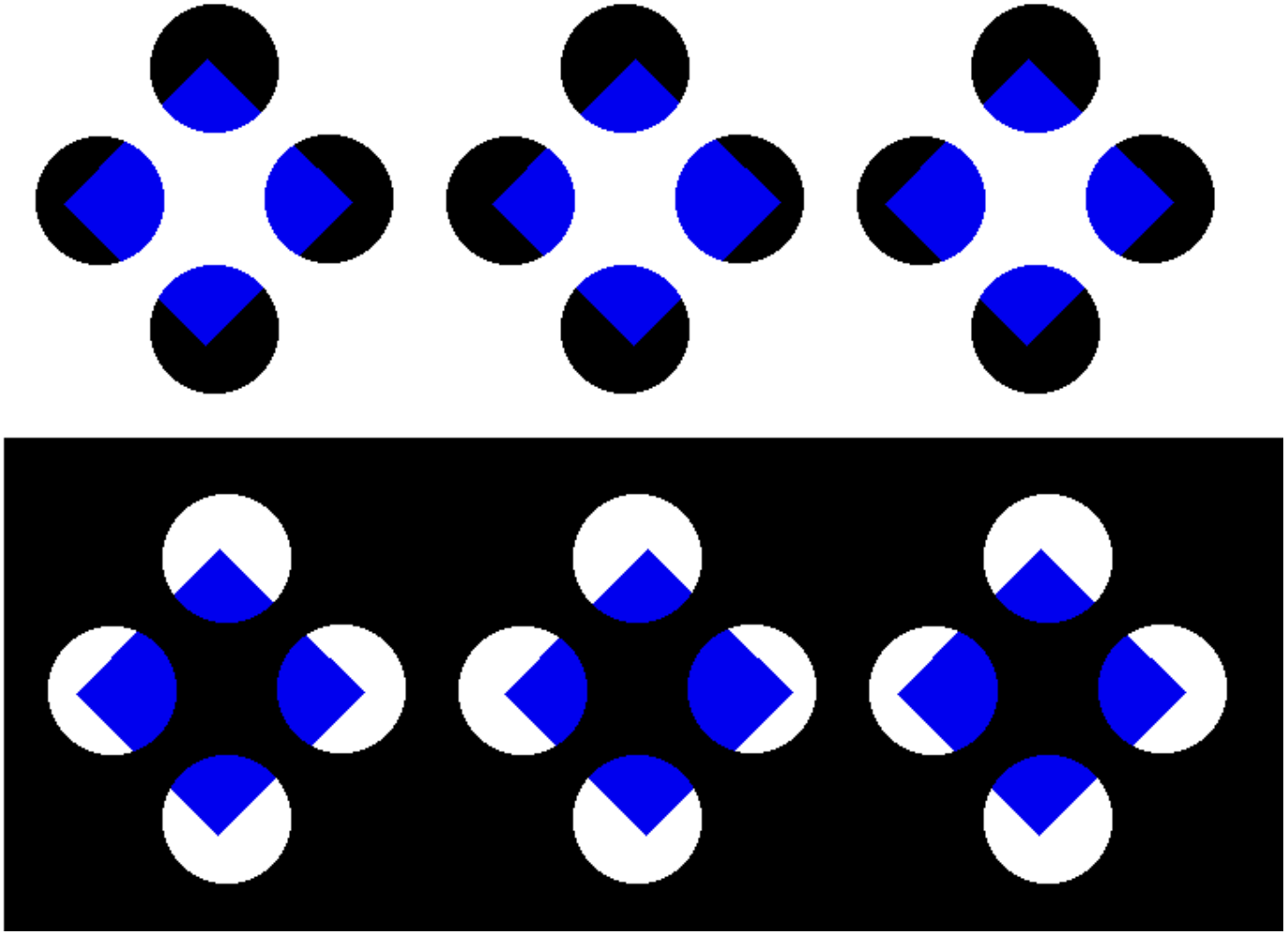
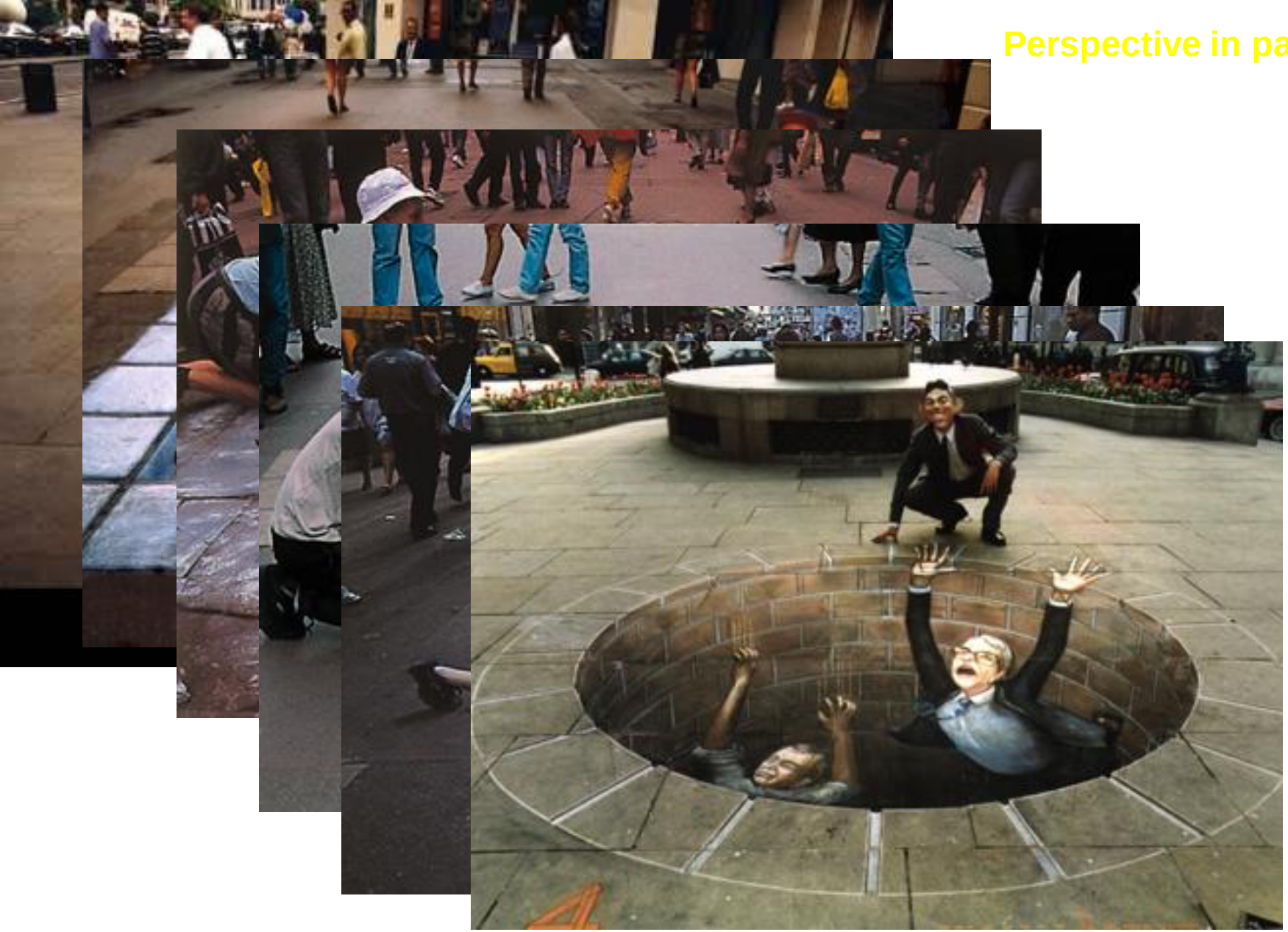


Continuity & Depth!



Perspective in painting



Sidewalk art! These are 2-D pictures… really!
http://www.ebaumsworld.com/sidewalkdrawings.html

Psychology 201
Depth Perception Lab Write-Up

Name: _____ Section Day and Time:
Date: TA:

For this week's lab, you are to go to the University of Oregon's Jordan Schnitzer Museum of Art, which is open from 11am-8pm on Wednesdays and 11am-5pm on Thursday-Sunday. There you are to find pieces of art which you feel represent good examples of various psychological phenomena outlined below. Keep in mind that there is no right answer; what is important is your *thoughtful* support of sensible choices

A. Find three *different* pieces in which two-dimensional images suggest three dimensions. Each piece should utilize a *different* technique out of the following:

- relative size
- height in the visual field
- familiar size
- interposition/overlap
- linear perspective
- aerial perspective
- light and shadow
- texture gradients

For each piece, describe, in 2 to 4 sentences, how the suggestions of three-dimensionality are accomplished.

1) Title = _____ Artist = _____ Room = _____

2) Title = _____ Artist = _____ Room = _____

3) Title = _____ Artist = _____ Room = _____

B. Find a piece in which motion is suggested. What techniques are used to help to give this impression?

Title = _____ Artist = _____ Room = _____