

WHAT IS PERCEPTION?

By Jay E. Gould: Created 7-30-90 and Last Revised 9/24/07

The following represents a general overview I have developed regarding the properties of perception. It incorporates concepts from a number of different sources and theories.

- 1) **SENSATION** precedes perception and is the process whereby our sensory receptors receive, transduce, and code stimulus information into electrochemical impulses in our nervous system--it is the initial, relatively simple process of detecting individual stimuli.

PERCEPTION is the subsequent selection, organization, and interpretation of sensory input--it is the process of obtaining information about both the external and internal environments, which results, via integration utilizing memory, in the conscious experience, recognition, and interpretation of objects, object relationships, and events.
- 2) Sensory systems have evolved to provide the information most useful to survival and reproduction of a species, rather than complete information about all phenomena.
- 3) Perception is most sensitive to changes in stimulation--over both space and time.
- 4) Perception utilizes constancy scaling, thereby remaining accurate in the face of changing stimulation (e.g., object size perception scales retinal image size for perceived distance).
- 5) Perception of a whole object is constructed/synthesized from information taken in from smaller parts, i.e., from the components or attributes a stimulus is first analyzed into.
- 6) Perception uses parallel, multirepresentational, hierarchical, distributed neural systems, which involve concurrent processing of the different stimulus attributes, and then somehow binding these attributes together (referred to as the *binding problem*).
- 7) Perception has multiple determinants:
 - a) Sensory neural mechanisms that are shaped by genetics and early experience;
 - b) Incomplete and ambiguous sensory data, which is the norm;
 - c) Contextual sensory information from both the present (*background or surround*) and past (*learning and memory*) that is used to interpret the primary sensory data;
 - d) Motivational states, desires, and expectations that influence attention & cognition
- 8) Perception thus involves both bottom-up and top-down processes (i.e., 7a & b vs. c & d).
- 9) Perception is therefore an active, constructive, discriminative process--not a passive process.
- 10) Perception entails the generation of hypotheses about the environment, the testing of those hypotheses, and the selection/adoption of the best (most likely) one(s)—i.e., perception involves making judgments.
- 11) Perception is not always reliable: sometimes it is incomplete (e.g., due to sensory limitations) or in error (examples being illusions, subjective contours/figures, and hallucinations). However, errors often reflect the operation of typically adaptive mechanisms of scaling, hypothesis generation, etc.
- 12) We are normally unaware (not conscious) of the above noted active, constructive, discriminative, and hypothesis generating and testing processes of perception.
- 13) We are most aware of perceptual processes under the following circumstances:
 - a) Difficult observational conditions, i.e., sensory data are restricted;
 - b) Unfamiliarity with the object or surroundings, i.e., contextual information is limited;
 - c) Confrontation with perceptual errors, i.e., illusions.
- 14) Perception, as an aspect of cognition, is a private and individualistic experience.