Theory of Human Perception

Perception and Gestalt Theory

Gestalt psychology began in Europe in the early 1900s, led by Swiss psychologist Max Wertheimer. This branch of psychology is important for understanding how we perceive visual form by organizing its components into a meaningful whole. Translated from German, *gestalt* means entire figure or configuration.

Gestalt’s basic premise is that organization is central to all mental activity and is a reflection of how the brain functions. Using Gestalt, the whole is understood to be different from the sum of its parts.

A form that exhibits high organization has good gestalt, while a form with weak organization has weak gestalt. *(Good* in this sense means simple or regular and is not a value judgment.)*

While becoming familiar with Gestalt may aid your ability to design more meaningfully, there is considerable debate among philosophers and psychologists about the validity or meaning of what we perceive. Is perception an objective act, or subjective? Is it innate or is it a product of our experiences and environment?

The principles of Gestalt are easily isolated, as shown in figures 2-5 through 2-8, but when combined and placed in context are influenced by factors such as the makeup of the audience and the environment in which the form is viewed. These factors can significantly affect the interaction and usefulness of each principle.

"Visual form must also be considered as a basic means of understanding the environment. Man's notions of what things are, how they act, and how they are related to each other, rely greatly on appearance."³

Rudolf Arnheim
The Four Aspects of Gestalt

Gestalt's four aspects are closure, proximity, continuance, and similarity. Individually or collectively, these aspects help us understand form as a meaningful whole and not as isolated, unrelated parts.

CLOSURE

A form exhibits closure when its separate elements are placed so that you perceive the design as a whole rather than as disparate sections (figure 2-5).

CONTINUANCE

Continuance occurs when part of a form overlaps itself or an adjacent form. Your eye is led to follow the dominant form across the secondary without interruption (figure 2-6).

PROXIMITY

Proximity refers to distance between the parts comprising a form. In figure 2-7, the elements that are closer together appear to be related.

SIMILARITY

Similarity among parts in a form helps hold the form together and can be an effective way to create meaning. In figure 2-8, elements similar in size appear related.
Defining Basic Visual Interactions

Interactions of Form

Visual elements interact through position, direction, and space. Taken together or separately, these principles of interaction govern the placement of elements and influence our understanding of meaning.

Visual elements and their characteristics are arranged in relation to the area or frame in which they appear (figure 3-25). A frame marks the limits of a form. It can take any shape and greatly influences a composition. For example, a square frame, equal on all sides, does not dictate an emphasis to a grouping of elements it contains.

POSITION

*Position* refers to the placement of an element relative to other elements and/or the frame. Overlapping, touching, or not touching are basic ways that elements can be positioned.

The distance between elements and between elements and the frame can create points of focus and tension. By positioning an element close to the frame edge or another element, you can heighten a relationship between the two (figure 3-26).

The perception and meaning of an element can be altered depending on its relationship to the frame. It can appear in its entirety (figure 3-26) or be cropped (figure 3-27). Cropping can create a sense of movement and suggest that the compositional area extends beyond the frame.

DIRECTION

*Direction* refers to a course of movement. Horizontal, vertical, and diagonal lines of any angle move our eye in a given direction (figure 3-28). While elements placed in parallel directions further similarity, contrasting can create focal points and movement in a composition.
Identity Image, 1997
Johnson and Wolverton

Overlapping planes create a sense of movement and suggest a thematic relationship among the objects and typography of the vernacular landscape. The low resolution heightens the objects grittiness and furthers a merging of similar lines and color.

Poster for the Rural Electrification Administration, 1937
Lester Beall

Direction can reinforce elements in a form and heighten an intended meaning. The background stripes imply a flag and echo the lines of the fence to create a direct and cohesive statement of stability, strength, and national pride.
SPACE

Space is perhaps the most important aspect of interaction in a composition. The areas between and around elements are active participants in the composition, and can be as dominant and important as the elements themselves. Space can group, separate, and emphasize elements and allow the viewer to better distinguish elements and their roles in a composition.

The terms figure and ground are used to describe a perception of spatial interaction. Figure refers to an element on the picture plane, while ground is the larger area surrounding it (figure 3-31).

Psychologists have studied the figure-ground relationship and have found that we understand form if it is distinguishable from the background. This is generally done through a difference in value between the figure and the ground. The term negative space refers to a seemingly empty but active area of a composition. By virtue of being surrounded by elements in the composition, a negative area can appear to come forward and be slightly brighter than the surrounding background, as in figure 3-31.

3-32
Publication Cover, 1996
Matt Eller, Walker Art Center

Space around elements can help to define and emphasize objects and give meaning to the entire form. The positioning of the letters (from a font designed by the central figure) seek to echo their visual qualities and variations.
Venus, 1952
Henri Matisse

Space can become active through its shape and position in the composition, and evoke association and movement.

Page from The Composing Room, 1960
Chermayeff and Geismar

The simple integration of shapes through negative and positive areas can create a cohesive and engaging form.
Elements of Compositional Interaction

Depth and Perspective

Depth in a composition can create contrast and help a form communicate its purpose and meaning. In three-dimensional design, depth is physically present; in two-dimensional design, however, an illusion of depth must be created through pictorial cues (visual representations that signal differences or direct understanding), including color and value changes, size, overlapping, and perspective (figure 3-35).

Perspective is created through the use of lines to depict three-dimensional form on a flat, two-dimensional surface. In linear perspective, which is the most common method, objects are foreshortened (tapered) to give the illusion that they recede in space toward a common point (figure 3-37).

Perspective is a distinctly Western invention, refined during the Renaissance as an aid in organizing compositional space and in lending order to our relationship to the environment. Eastern cultures have not traditionally relied on perspective to depict depth; when lines are present, they are often parallel. This tends to create an impression rather than an optical description (figure 3-38).
3-37

_The Ideal City, Named the City of God, fifteenth century_

Piero della Francesca

Lines converging on a single point create a strong sense of depth and order, positioning the viewer in front of the scene.

3-38

_The Road to Shu, 1858_

Hine Taizan

Vast open space, depth, and strong sense of scale reflects a reverence for the land.

3-39

_Mutual Fund Report, 1994_

Lisa Strausfeld
Massachusetts Institute of Technology Media Lab

Perspective can create a sense of movement among forms and can be used to prioritize ideas and information.
Visual Weight and Balance

Visual weight is the sum of a form's components and is akin to mass and energy. However, visual weight is not easily identified because it cannot be touched or physically measured. In addition, our perception of visual weight is influenced by a range of variables including size and color (figure 3-40).

*Visual balance* refers to the degree of equilibrium in a composition. This is determined by the choice and arrangement of elements in relation to each other and the frame. Position is the dominant means of creating balance, resulting in symmetry, asymmetry, or combinations of both.

SYMMETRY

A form has symmetry when it can be divided diagonally, vertically, or horizontally and the resulting sides are essentially the same. While there are numerous types of symmetry, each varies in the number and location of divisions. Bilateral symmetry (two equal halves) is the most common type of symmetry (figure 3-41). Symmetric balance tends to create a stable form, keeping your eye in a general location.

Symmetry is abundant in nature and is the oldest method of seeking visual balance. The ancient Egyptians, Greeks, Mayans and Romans sought balance through symmetry in order to find and reveal order not only in the visual realm but also in religion and philosophy.

ASYMMETRY

A form has asymmetry when it is divided and the resulting sides are not the same size and shape (figure 3-43). This is also called *dynamic tension* or *dynamic equilibrium*, and refers to organization based on juxtaposition (the placement of visually or conceptually contrasting forms in close proximity to each other). Asymmetric balance can create a active form, forcing your eye around and through a composition.

Many Eastern cultures have used asymmetry for centuries, particularly in architecture and interior design. For much of the twentieth century asymmetry has been used in the West, and most recently, combinations of asymmetry and symmetry have been used extensively by many disciplines in both the East and the West as a new way of representing new ideas, including those political and social in nature.
3.41
Pages from a Book of Hours, 1543
Simon de Colines
Symmetry in form can support symmetry in life. Books of this type were used to direct prayer at given hours throughout the day. Supporting ritual is a common design function.

3.42
Stanzas from "The Crab Canon" from The Musical Offering, 1747
JS Bach
When graphically depicted, nonvisual expressions often readily reveal asymmetry and symmetry as evident in this piece that exhibits aspects of the latter.

3.43
Composition with Red, Yellow, and Blue, 1930
Piet Mondrian
Asymmetry can create a sense of movement among elements in a form. This work is an example from the Dutch de Stijl movement (at its peak during World War I) a leading force in the experimentation with and advocacy of asymmetry.