

C. Rules of Organization

Structuralists Versus Gestalt Psychologists

What was the great debate?

In the early 1900s, two groups of psychologists engaged in a heated debate over how perceptions are formed. One group, called the structuralists, strongly believed that we added together thousands of sensations to form a perception. Another group, called the Gestalt psychologists, just as strongly believed that sensations were not added but rather combined according to a set of innate rules to form a perception (M. A. Peterson et al., 2007). One group won the debate, and you might guess which one before you read further.

Structuralists

As you look at the scene in the middle of this page, you perceive a fountain at the bottom with shrubs and palm trees on the sides, all topped by a large dome of glass windows. Is it possible that your brain combined many thousands of individual sensations to produce this complex perception? If you answer yes, you agree with the structuralists.

The **structuralists** believed that you add together hundreds of basic elements to form complex perceptions. They also believed that you can work backward to break down perceptions into smaller and smaller units, or elements.

Structuralists spent hundreds of hours analyzing how perceptions, such as a falling ball, might be broken down into basic units or elements. They believed that once they understood the process of breaking down perceptions, they would know how basic units are recombined to form perceptions. Thus, structuralists believed that you add together basic units to form perceptions, much as you would add a column of numbers to get a total.

For example, structuralists would say that you add together hundreds of basic units, such as colors, bricks, leaves, branches, tiles, pieces of glass, and bits of steel, to form the perception of the scene above. However, the structuralists' explanation of adding bits to form a perception was hotly denied by Gestalt psychologists.



Do you add together basic elements to form perceptions or does your brain have rules for forming perceptions?

Gestalt Psychologists

The Gestalt psychologists said that perceptions were much too complex to be formed by simply adding sensations together; instead, they believed that perceptions were formed according to a set of rules.

Gestalt psychologists believed that our brains follow a set of rules that specify how individual elements are to be organized into a meaningful pattern, or perception.

Unlike structuralists, Gestalt psychologists said that perceptions do not result from adding sensations. Rather, perceptions result from our brain's ability to organize sensations according to a set of rules, much as our brain follows a set of rules for organizing words into meaningful sentences (Donderi, 2006; Quinn et al., 2008).

So how would Gestalt psychologists explain your perception of the scene on the left? They would say that your perception was not formed by simply adding bits of tile, steel, and foliage into a whole image. Rather, your brain automatically used a set of rules to combine these elements to form a unified whole.

To emphasize their point, Gestalt psychologists came up with a catchy phrase, "The whole is more than the sum of its parts," to mean that perceptions are not merely combined sensations. The Gestalt psychologists went one step further; they came up with a list of organizational rules.

Evidence for Rules

Who won the debate?

Gestalt psychologists won their debate with the structuralists for two reasons. The first reason comes from our own personal perceptual experiences. For example, as you look again at the beautiful scene above, we must reveal that it is entirely fake. The scene, which looks so realistic and three-dimensional, is actually painted on a flat wall. It seems impossible that we could have such a complex, three-dimensional perceptual experience from simply combining bits and pieces of bricks, branches, leaves, and steel. This fake but truly realistic scene makes the Gestalt motto come to life: "The whole is more than the sum of its parts."

Equally convincing evidence that the whole is greater than the sum of its parts came from a remarkably detailed series of studies in which Gestalt psychologists presented stimuli to subjects and then asked them to describe what they perceived (Rock & Palmer, 1990). On the basis of subjects' reports, researchers discovered that forming perceptions involved more than simply adding and combining individual elements. Modern research has generally supported the early Gestalt conclusion that our brains actually do follow a set of rules for organizing and forming perceptions (Quinn et al., 2008). We'll explain these rules for organizing perceptions next.

Organizational Rules

How many rules are there?

It is very hard to believe that the scene on the preceding page (repeated here on the right) was actually painted on a flat wall. One reason you perceive this scene as complex and 3-dimensional is that the painter followed many of the Gestalt rules of organization (Han & Humphreys, 1999).

Rules of organization, which were identified by Gestalt psychologists, specify how our brains combine and organize individual pieces or elements into a meaningful perception.



As you look at the scene, your brain automatically organizes many hundreds of visual stimuli, including colors, textures, shadows, bricks, steel, glass, leaves, and branches, according to one or more of the six perceptual rules of organization described below. We'll use a relatively simple figure to illustrate each rule.

Figure-Ground

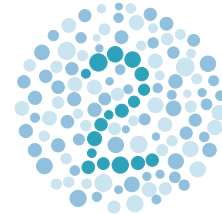


One of the most basic rules in organizing perceptions is picking out the object from its background. As you look at the figure on the left, you will automatically see a white object standing out against a red background, which illustrates the figure-ground principle.

The figure-ground rule states that, in organizing stimuli, we tend to automatically distinguish between a figure and a ground: The figure, with more detail, stands out against the background, which has less detail.

There is some evidence that our ability to separate figure from ground is an innate response. For example, individuals who were blind from an early age and had their sight restored as adults were able to distinguish between figure and ground with little or no training (Senden, 1960). The figure-ground rule is one of the first rules that our brain uses to organize stimuli into a perception (Vecera, 2002). This particular image is interesting because, as you continue to stare at it, the figure and ground will suddenly reverse and you'll see profiles of two faces. However, in the real world, the images and objects we usually perceive are not reversible because they have more distinct shapes (Humphreys & Muller, 2000).

Similarity



As you look at this figure filled with light and dark blue dots, you see a dark blue numeral 2.

The similarity rule states that, in organizing stimuli, we group together elements that appear similar.

The similarity rule causes us to group the dark blue dots together and prevents us from seeing the figure as a random arrangement of light and dark blue dots.

Closure

Although the lines are incomplete, you can easily perceive this drawing as a cat or dog.

The closure rule states that, in organizing stimuli, we tend to fill in any missing parts of a figure and see the figure as complete.

For example, the closure rule explains why you can fill in letters missing on a sign or pieces missing in a jigsaw puzzle.

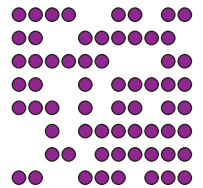


Proximity

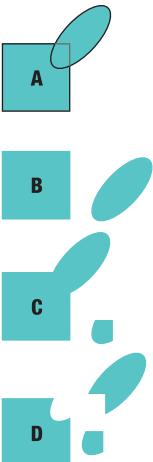
Notice that although there are exactly eight circles in each horizontal line, you perceive each line as formed by a different number of groups of circles.

The proximity rule states that, in organizing stimuli, we group together objects that are physically close to one another.

You automatically group circles that are close together and thus perceive the first line as composed of three groups (Kubovy & Wagemans, 1995).



Simplicity

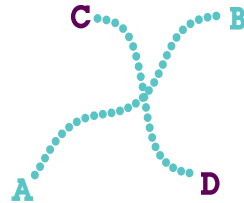


Look at figure A and then decide if it is made up of the pieces shown in figure B, C, or D. Almost everyone sees figure A as made up of the pieces in figure B—an oval with an overlapping square.

The simplicity rule states that stimuli are organized in the simplest way possible.

For example, almost no one sees figure A as having been formed from the complicated pieces shown in figure C or figure D. This rule says that we tend to perceive complex figures as divided into several simpler figures (Shimaya, 1997).

Continuity



As you scan this figure, keep track of the path that your eyes follow. Most people's eyes will move from left to right in a continuous line, following the path from A to B or from C to D.

The continuity rule states that, in organizing stimuli, we tend to favor smooth or continuous paths when interpreting a series of points or lines.

For example, the rule of continuity predicts that you do not see a line that begins at A and then turns abruptly to C or to D.

Conclusion. These figures demonstrate the Gestalt rules of organizing stimuli into perceptions. Young children slowly learn these perceptual rules and begin to use them as early as infancy (Quinn et al., 2008). As adults we use these rules to organize thousands of stimuli into perceptions, especially stimuli in print and advertisements. For doctors who read mammograms and other X rays, Gestalt rules such as figure-ground, similarity, and proximity are essential in their daily work (Koontz & Gunderman, 2008).

Next, we examine the question: How can objects change yet appear to remain the same?