

Common Fate

Elements that move in the same direction are perceived to be more related than elements that move in different directions or are stationary.

The principle of common fate is one of a number of principles referred to as *Gestalt principles of perception*. It asserts that elements that move together in a common direction are perceived as a single group or chunk, and are interpreted as being more related than elements that move at different times or in different directions. For example, a row of randomly arranged Xs and Os that is stationary is naturally grouped by similarity, Xs with Xs, and Os with Os. However, if certain elements in the row move in one direction, and other elements move in the opposite direction, elements are grouped by their common motion and direction.¹

Perceived relatedness is strongest when the motion of elements occurs at the same time and velocity, and in the same direction. As any of these factors vary, the elements are decreasingly related. One exception is when the motion exhibits an obvious pattern or rhythm (e.g., wave patterns), in which case the elements are seen as related. Although common fate relationships usually refer to moving elements, they are also observed with static objects that flicker (i.e., elements that alternate between brighter and darker states). For flickering elements, perceived relatedness is strongest when the elements flicker at the same time, frequency, and intensity, or when a recognizable pattern or rhythm is formed.²

Common fate relationships influence whether elements are perceived as figure or ground elements. When certain elements are in motion and others are stationary, the moving objects will be perceived as figure elements, and stationary ones will be perceived as ground elements. When elements within a region move together with the bounding edge of the region, the elements and the region will be perceived as the figure. When elements within a region move together, but the bounding edge of the region remains stationary or moves opposite to the elements, the elements within the region will be perceived as the ground.³

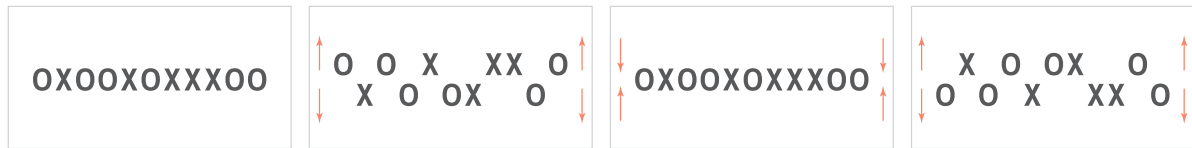
Consider common fate as a grouping strategy when displaying information with moving or flickering elements. Related elements should move at the same time, velocity, and direction, or flicker at the same time, frequency, and intensity. It is possible to group elements when these variables are dissimilar, but only if the motion or flicker forms a recognizable pattern. When moving elements within bounded regions, move the edges of the region in the same direction as the elements to achieve a figure relationship or in the opposite direction as the elements to achieve a ground relationship.

See also [Figure-Ground Relationship](#) and [Similarity](#).

¹ The seminal work on common fate is “Untersuchungen zur Lehre von der Gestalt, II” [Laws of Organization in Perceptual Forms] by Max Wertheimer, *Psychologische Forschung*, 1923, vol. 4, p. 301–350, reprinted in *A Source Book of Gestalt Psychology* by Willis D. Ellis (ed.), Routledge & Kegan Paul, 1999, p. 71v88.

² See, for example, “Generalized Common Fate: Grouping by Common Luminance Changes” by Allison B. Sekuler and Patrick J. Bennett, *Psychological Science*, 2001, Vol. 12(6), p. 437–444.

³ “Common Fate as a Determinant of Figure-Ground Organization” by Joseph Lloyd Brooks, Stanford-Berkeley Talk, 2000, Stanford University, May 16, 2000.



Radar tracking displays use common fate to group tracked aircraft with key information about their identities and headings.

The Xs and Os group by similarity when stationary, such as Xs with Xs, Os with Os. However, when a mix of the Xs and Os move up and down in a common fashion, they are grouped primarily by common fate.

