

## Notes - Design - Gestalt Laws of Perception

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A brief intro to Gestalt laws of perception relative to application and interface design.

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**Intro** What are the *Gestalt Laws of Perception*? They allow us to explain how humans perceive and comprehend visual information.

As interface designers, such laws are of particular interest as they allow us to exploit them to create visual layouts and representations that improve communication of concepts and relationships. Relationships and concepts that may exist in our underlying concept for a given application.

Gestalt, roughly translated from German, means *form* or *shape*. Generally, it refers to the notion of a whole, a body, that is more than the mere sum of its parts.

In psychology, gestalt refers to the notion that as humans, we are always seeking to make sense of the world around us by imposing concepts of structure or order. In particular, the *gestalt effect* suggests that, as we are presented with complex imagery, our mind will attempt to recognise coherent, whole forms, instead of perceiving individually smaller constituent parts that form the overall image.

- Source - [Gestalt Principles](#)

**Max Wertheimer** In 1923, Max Wertheimer's paper, *Laws of Organisation in Perceptual Forms*, suggested a number of principles or *laws* that describe how the mind tends to perceive visual information.

For example, the more useful for our purposes include:

- Law of Prägnanz
  - Law of Proximity
  - Law of Similarity
  - Law of Closure
  - Law of Common Fate
  - Law of Continuation
  - Law of Good Gestalt (or Good Continuation)

We'll briefly work our way through these laws.

**Law of Prägnanz** This is the basic law for these principles. In effect, the law from which the others are derived. *Prägnanz* can be roughly translated as *concise* in nature, or a sense of *simplicity*.

This law effectively states that when our mind tries to interpret a visual scene, it will basically try to interpret it in the simplest, most concise, and easily recognisable form. The mind will, therefore, try to perceive the scene as a whole rather than a sum of its constituent parts.



Figure 1: Gestalt Principles

For example, if we see an image of a square or rectangle, we see it as such. Not four separate lines, two horizontal and two vertical.

Wertheimer, in trying to explain this phenomenon, effectively developed the additional laws that contribute to the law of prägnanz.

To understand the whole, we will need to consider the derived, constituent laws.

**Law of proximity** Basically, items located close together will normally be perceived as a single entity or group. Furthermore, items in that group are considered distinct and different from items positioned further away.

For example, consider an electronic board. When unlit, we perceive it as a uniform, single board full of bulbs, lights &c. However, if we light certain parts, we start to perceive individual groupings that form numbers, characters, patterns &c. Our perception will also change as we modify the patterns on the board.

It's their proximity that causes this effect on our vision and our brain. Change the proximity, and our perception also changes.

If we consider interface design, imagine separating, and effectively isolating, similar elements on a screen. Even though such elements, for example labels and text fields for an online form, should be perceived together, as a whole form, they will be seen and perceived by our user as separate groupings. We would see one group, for example the labels, and then another group, the text field boxes. That's why such elements should be grouped closer together to form a coherent whole, which will be correctly perceived by our user.

Image of proximity with rabbits...



Figure 2: Proximity

- Source - [Web Designer Depot](#)

**Law of Similarity** Visual elements that are considered to share properties or attributes are perceived as belonging together. Conversely, visual elements with differing properties or attributes will be perceived as belonging to different groups.

For example, if we jumble elements together, such as squares, circles, triangles, rectangles, or even rabbits, our vision and brain will naturally try to sort and group them by similar shapes. Also, if we can perceive colour, we also try to organise and sort by colour groupings per shape.

We might have, for example, many squares or rabbits of various colours. Our minds will find the similarity, the colours, and then group accordingly.

So, we could have the law of similarity working with two *attributes*, shape and colour.

This principle is readily applied in interface design. For example, let us consider various file managers and how they display, sort, and manage disparate files. Think for a moment about documents that represent music files, movie files, text documents, images, and so on.

However, we can supplement this grouping further by adding a highlight option to clearly denote certain files, for example all matching music files.

Image of similarity with rabbits...



Figure 3: Similarity

- Source - [Web Designer Depot](#)

**Law of Closure** Visual elements such as lines, or elements that are designed to replicate lines when grouped together, are inherently more likely to be perceived as a common group if they appear to form the outline or *closure* of a given shape or surface. This is still considered true even if that outline is not complete. Effectively, our mind will fill in any gaps in these incomplete shapes, thereby achieving closure in the form of a similar shape.

For example, one of the classic examples for this is an incomplete circle. Even though we see it as incomplete, our mind will still complete the circle and recognise it as such. This is because it is simpler for our brain to perceive it as a circle missing a piece, than as an arc spanning, for example, 330 degrees.

Within an interface, this is an interesting law to apply. Visualisation, such as logos, can use this to display interesting patterns that will be perceived as a whole by our users. Think of the many logos that use parts of cogs and circles to represent a more interesting perception of the whole. It becomes a more pleasing, eye-catching whole, which is still easily recognisable.

Is it an incomplete circle, or is it an arc?



Figure 4: Closure

- Source - [APRK Topics](#)

**Law of Common Fate** Motion, and hence elements, that are moving in the same direction simultaneously, will still be perceived as a group.

For example, drag and drop within applications regularly makes use of this group perception. Select multiple items, and they will not always be dragged as a uniform group. However, the trail will impart a sense of unity and group to these interface elements that our user will perceive and understand.

A sense of motion...



Figure 5: Common Fate/Region

- Source - [Web Designer Depot](#)

**Law of Continuation** Elements within our interface that appear to be a continuation of a preceding sequence, or a line of similar items, will be perceived by our users as belonging together. Also, our focal point will continue along this line or sequence as long as it exists or until it is broken by something else. Our peripheral vision kicking in with a notification to the focal point...

More rabbits...

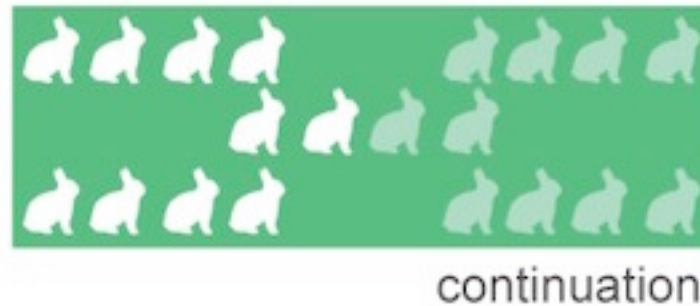


Figure 6: Continuation

- Source - [Web Designer Depot](#)

**Law of Good Gestalt (or Good Continuation)** This, put simply, concerns our perception of smooth continued lines, even if they are broken or punctured by an intersection or union of multiple lines.

For example, if we see multiple straight lines crossing, we are still able, for the most part, to differentiate and focus upon the path of each separate line. In essence, if we have two lines crossing, we see the crossing and the two separate lines. It would be particularly rare if we perceived these two lines as the meeting of two angles instead.

Again, the simple reason is that our mind has been taught to perceive the crossing of two lines as the simpler, more obvious explanation for this event.

Again, data visualisation is a good example of this application in interface design. It allows us to easily combine and cross multiple lines without worrying too much that our users will not be able to discern the multiple data results.

Image of Good Gestalt...

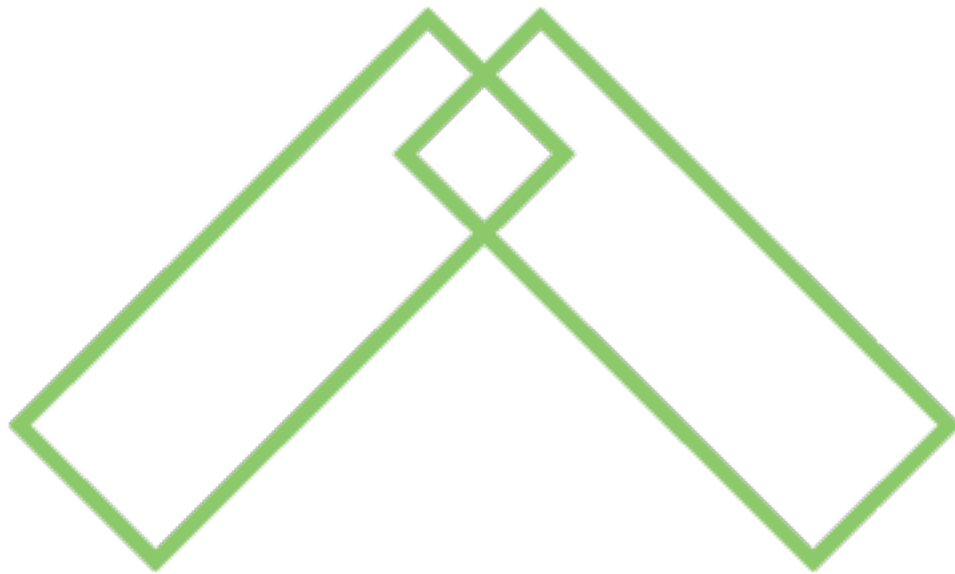


Figure 7: Good Gestalt

- Source - [APRK Topics](#)

If we look at this image, the simplest arrangement of these two objects is simply two overlapping rectangles. This is simpler to our mind than two irregular shapes.

### Resources

- Card, S.K., Moran, T.P. and Newell, A. *The psychology of human-computer interaction*. Lawrence Erlbaum Associates. 1983.