

**Vision**  
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**Gestalt Perception**

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**Vision: Gestalt perception**

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So far it seemed that the eye would perceive information on an elementary level that is individual beams of light would be transformed into neuron firings and then perceived by the brain. But of course some integration of information happens. And this integration is also reflected by the perception of objects.

And there is a whole theory behind, which is theory of Gestalt perception that explains a little bit how our brain processes these types of

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Visual perception. Gestalt perception: Gestalt laws

- Proximity
- Similarity
- Common form
- Good continuation
- Common fate
- Closure
- Distinction between inside and outside
- Figure-ground segregation



information. Actually it seems to follow some number of laws in order to perceive different objects.

There is the Law of Proximity which says that things which are near to each other are grouped together. And the Rule of Similarity which means that similar things are grouped together, the Law of Common Form which groups together things of similar shape, pattern or color, the Law of Good Continuation which tries to prefer spatial and temporal simplicity, Law of Common Fate which explains that things moving into the same direction are grouped together, Law of Closure that says that contours are completed, the distinction between inside and outside, and the so-called Figure-ground segregation.

We see these are number of laws and I will surely give visual examples of some of them in the

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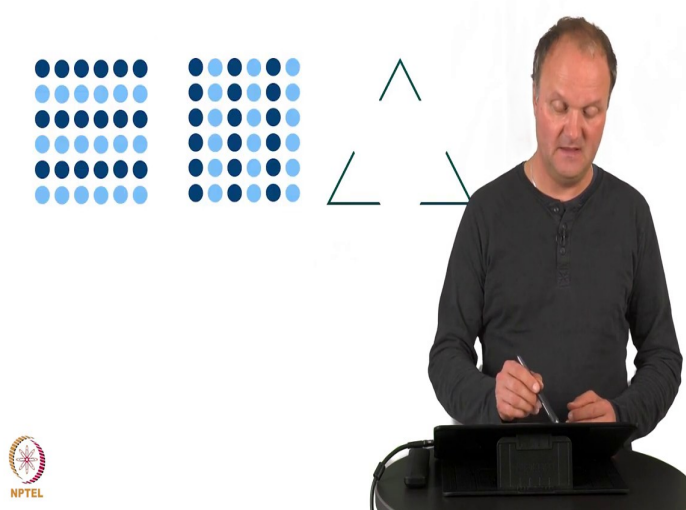
Visual perception. Gestalt perception:



following slides. Here you see an example of the Closure Principle that is it seems that there is a rectangular shape but it is just built by these 4 circles which have an opening at each side in order to continue this form, this leads to rectangular shape.

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Visual perception. Gestalt perception:



Here you see the example of the Common Form that is; we have either rows of dark and bright blue colored points which form these lines in a vertical or in a horizontal plane. And the Law of Good Continuation which forms the triangle in the right panel of this picture.

Here you see

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Visual perception. Gestalt perception:

By Jochen Reichenheim 2007 at English Wikipedia (Public domain), via Wikimedia Commons (https://commons.wikimedia.org/wiki/File:Kubus.jpg)



an example of the distinction between inside and outside. And although the shape here is very, very the same, very much the same, we see different things.

On the left hand side you might see a vase, on the right hand side you might see the same object but it seems more that these are two faces looking at each other. And this even becomes more apparent when you separate the

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Visual perception. Gestalt perception:

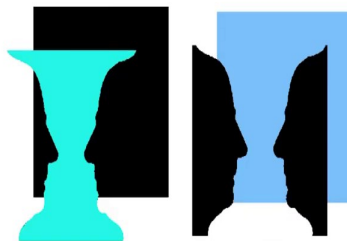


figure from the ground as it is shown in this panel here.

So it seems that there is a combination of these law, laws which governs what we actually see. And this can be

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Visual perception. Gestalt perception:

**Law of good Gestalt:**  
Elements of objects tend to be perceptually grouped together if they form a pattern that is regular, simple, and orderly.

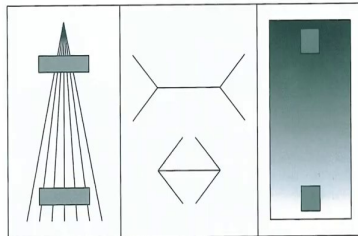


summarized in the so-called Law of good Gestalt which says that elements of object tends to be perceptually grouped together if they follow a pattern that is regular, simple and orderly to the human perceiving test participant.

Now there might be some illusions in this perception and you

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Visual perception. Optical illusion:



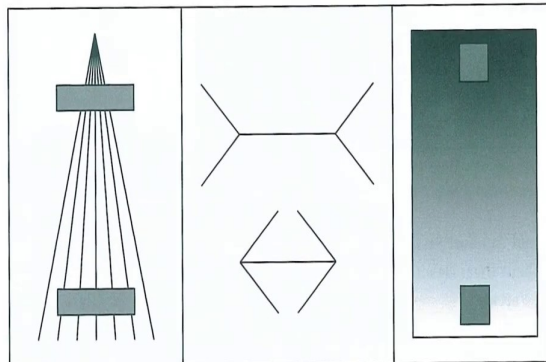
(Malaka et al., 2012)



probably know some of them. Here you see an example.

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**Visual perception. Optical illusion:**



(Malaka et al., 2009)

For example on the left panel it seems that the upper square is a little bit larger than the lower square. But this actually comes only from these touching lines in the middle.

The same applies for the middle panel which seems that the upper middle line is little bit longer than the lower one. And it also applies to the color. For example in the right panel you think that the lower square would be a little bit darker than the upper square but this actually only comes from the surrounding gray shading.

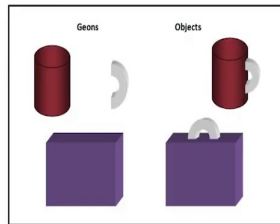
So these are optical illusions which are produced by our eye and some of them have an origin in the different sensitivities as we have explained that when we explained the ganglion cells.

Now the formation of object has been

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Visual perception. Recognition by components (Biedermann, 1987):

(Check delay via Wikimedia Commons, accessed 26 July 2017, [https://commons.wikimedia.org/wiki/File:Breakdown\\_of\\_objects\\_-\\_JBO\\_Geons.png](https://commons.wikimedia.org/wiki/File:Breakdown_of_objects_-_JBO_Geons.png))



also the object of different perceptual theories. For example there is the so-called Recognition by Components theory which can be actually used to in order to produce objects for visual presentation.

Here objects seem to be recognized by volumetric features which are called geons and the theory proposes that there are approximately 36 geons that may be combined to make more or less all 3D objects we could think of.

And you see examples of these objects which can be formed in the panel behind me. There are also relations between these geons which matter, for example, actually where you put this kind of handle either to the suitcase or to the cup is of course very, very important in order to be described what that object might mean.