# Readings 3

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Reading questions week 3

*Ware describes bottom up and top down processing of visual information in the brain. Give a concrete and detailed example of how bottom up processing is influenced by top down processing, leading to a potentially wrong interpretation of "reality" by the viewer. Your example can include a screenshot, photo, or web site URL to refer to the scene that is being viewed.*

Bottom-up processing is driven by the step by step transduction of incoming photons to neuronal signaling occurring in the retina. The flow of information drives pattern building based on lower level features such as color hue and lightness, shape size, elongation and orientation, motion and spatial grouping. At the top of this hierarchy in sensory information is top down processing: the enormous amount of information of lower level features is reduced to a small number of visual objects in your working memory. This higher level of processing is characterized by the prominent role of cognition: context affects perception and having goals and targets will drive directed attention to certain features.

Consider the example below:



From a bottom up perspective, the shapes confined in the gray boxes are perceived in the exact same manner, there is no difference in any lower level feature within the content of these boxes. However, even though the shapes left and right are visually identical, we perceive the left shape as the letter "B", and the right shape as the number "13". Our brain uses the surrounding context of the shapes to complete the sequence of patterns (letters versus numbers). Thus, in this example of top down control your cognitive expectations drives the perception of shape.