Data visualisation
Readings, week 3
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Questions based on the following snapshot of the website:
http://www.theflickingfingers.com/images/blind5.gif

Figure 5: Context influences perception

Question:
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.

Answer:
The bottom-up process in this picture includes the input of the exact black forms/pixels and white pixels, this is called the *feature processing stage.* In the second stage *patterns* are constructed in the brain. In this stage, the black pixels will be seen as seperate patterns (which are of the same colour) against a white background. In the last stage of the bottom-up process these black patterns will be seen as actual *objects*, which are letters, and can be worked with in the visual working memory.

At that same time a top-down process takes place. This process starts with as *goal* as seeing/understanding/explaining the figure/objects seen on the screen. In our brains, the knowledge and forms of letters have been stored due to learning these letters at a young age, our *retinal image*. Additionally, we have a whole dictionary of English words in our brains as knowledge. What happens during top-down, is that the figures in the screenshot are scanned (as they enter our brain during the bottom-up process), and compared to the knowledge that already exists in our brains. The combined letters actually mach words in our 'English brain dictionary', and we will read the words 'THE CAT'.

Yet a distortion of reality occurs in this case. As we can see, while taking the time to closely examine the figures/forms on the paper, that the second figure in the first group of 3 figures is exactly the same as the second figure in the second group of 3 figures. So, our brain actually finishes the last two lines of the 'A' in 'CAT' atomatially, as it has the word 'cat' in our 'English brain dictionary', and the word 'CHT', does not exist there. Additionally, even though the letter 'H' actually has straight lines, our brain accepts slightly tilted lines as well, because the figure still seems closely alike to the letter 'H'.

So our top-down process influences our bottom-up process, leading to a potentially wrong interpretation of 'reality' by the viewer. The second letters are namely the same (what the bottom-up process will tell you). Yet, the top-down process influences and manipulates this information, and as a result we percieve the actual same figures as different letters.