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Readings week 5

1. Ware argues that human perception involves 2.5 dimensions. Given this assertion, when might a 3D visualization be useful and why?

   Visualizing many different aspects of a problem, so just a 2D image does not have enough space. An other reason might be, when the visualization actually needs to convey a 'real life' situation and/or image.

2. In Chapter 6, Ware presents some implications of pattern recognition and visual working memory on design. Provide an example that harnesses some of these principles (perhaps an advertisement, visualization, or interface) and discuss how the design takes these principles into account. Please include a screenshot, photo, or website URL.

https://www.google.nl/search?q=advertisement&rlz=1C1CAFA_enNL656NL656&espv=2&biw=1280&bih=657&source=lnms&tbm=isch&sa=X&ved=0ahUKEwj1tN-hvbHJAhUCXA8KHagSBskQ_AUIBigB#imgrc=GtyS33WVaxOXhM%3A

   In this picture we see a woman with her hair in a knot, and a painting brush. These two overlap in each other. The aspects of both a face/head and a brush are used. As discussed in Ware, chapter 6, we humans will see patterns and recognize them. In this case it is a pattern of a head/shoulders, together with the pattern of a brush. By connecting these two patterns, the strong message is conveyed that the colour of the haircolouring product will endure for a long time as the hair is coloured. Additionally, that it will remain the same colour.

3. According to Bostock et. al., what are the primary advantages of D3? Based on your reading of the article, please provide an example of a type of visualization that would be easier and better implemented in D3 as opposed to HTML5, JSON, and Javascript. Please list the pros and cons of choosing D3 over pure HTML5, JSON and Javascript.

   The primary advantages of D3, according to Bostock et al., are that D3 is a “data driven”, “flexible to use”, “visual encodings are simplified”, “reusable, flexible visualization techniques for layouts”, “compatibility and debugging are improved in D3” (2011).

   An example where D3 could be used, is a data driven problem. For instance the effect of multiple different chemicals on the growth of various different plants all positioned in different type of areas. A lot of data is presented in this siutation. Additionally, the type of layout for every type of plant at every location can be reused as visualization. The con of D3 is that with very high data points, D3 might be slower than pure HTML5, JSON and

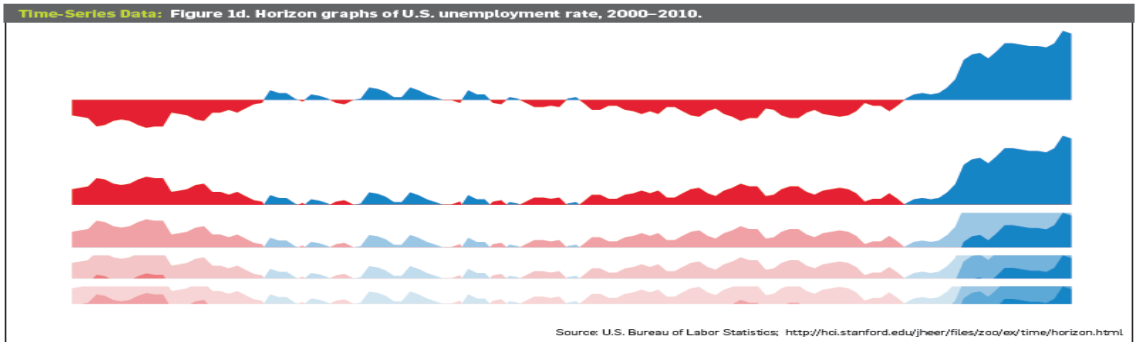
Javascript. But D3 will be more user friendly.

4. Of the visualization figures presented in Heer et. al., which do you find the most difficult to comprehend? Does the complexity of the figure interfere with the goal of visualization as described in the article? Include a screenshot of the figure you have chosen in your response and use principles that you have learned so far (i.e., from design, perception, and cognition) to justify your choice.
5. One of the visualization figures presented in Heer et al. which I find difficult to comprehend is visualization number 3c (2010). The goal of this figure is to represent the changes in normal, overweight, and obese people in the states of the US from 1995 until 2008. Various concepts play part in the result that this information is not properly conveyed. First of all, the pie charts of one state are difficult to compare throughout the years. You would have to focus on only one pie chart, yet the viewer will be distracted by the other pie charts of the other states. Additionally, the pie charts of one state throughout the years cannot be seen on one page, making it difficult to compare the charts throughout the years. Additionally, the information about the actual size of the population in a state is missing. Furthermore, the smallest pie charts are hardly visible, and some pie charts even overlap. No actual state names are given or pop up in the visualization. And the question is if the colours are actually clear for colour blind people.

6. Play around with the interactive graphs included in the Heer article. You need to open this page in a browser that runs Java. Focus on Figure 1A. To what extent do interactivity and transitions, elements that D3 optimizes, add to the clarity and message of the visualization? With the element of interactivity in mind, redesign and sketch the contents of figure 1A with one of the other visualization types described in the Heer article. Include a picture of a sketch of your idea, and describe how it supports comprehension and data exploration

Once you understand this visualization, the interactivity and transitions, definitely add to the message of the visualization. You can clearly see how good the stocks where relative to the month that the user is looking at. Yet, the user does need to pay good attention to the c hanging values on the y-axis. So, perceptual-wise, this visualization might not be the best. So, the message is better due to the interacitity, but the clarity could use improvement.

The horizon-graph technique, as visualized below (from Heer et al. 2010)., could be used for this data. The various different kind of stocks could be below each other (each having their own horizon-graph), but then combined in one big graph. A vertical line would show the month (which would be situated on te x-asix), and with the interactivity, the red and the blue parts (so the negative values and the positive values) of the stocks, in relation to the month the user is looking at, will change according to the stock-data.



Heer et al. 2010

Colin Ware, Chapter 5, Chapter 6

M. Bostock, V. Ogievetsky, and J. Heer, "D3: Data-Driven Documents", IEEE Transactions on Visualization and Computer Graphics, vol. 17, no. 12, pp. 2301 –2309, Dec. 2011.J.

Heer, M. Bostock, and V. Ogievetsky, "A tour through the visualization zoo", Commun. ACM, vol. 53, no. 6, pp. 59–67, Jun. 2010.