Thought Piece on Visualization

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Visualization is presenting data information in a visualized form, such as diagram and graphics, thereby conveying the relation among data in an intuitive way. There are many reasons for why visualization is necessary. First is time efficiency. Visualizing data in an effective way can reduce the processing time for the audience, as well as enhance the memorability of the data. Secondly, visualization enables cross comparison between different types of data. Instead of analyzing data in a single dimension, visualization software can create multivariate graphics collating multi-dimensional data, thereby revealing patterns that are less observable or intuitive. What’s more, visualization enables storytelling. Even with the same dataset, different presenting forms will impact what the audience feel about the ideas behind the data. In other words, there is possibility to manipulate the subjective interpretation of objective data, by the power of visualization.

A good visualization should be truthful, functional, beautiful, insightful, and enlightening. To achieve these goals, there are usually two phases of making a visualization: explorative phase and presentation phase. In the explorative phase, iterations of experiments with different visualization forms, including the selection of functional charts, colors, etc. are necessary to reach to the one that is a true and effective reflection of the data, aesthetically pleasing to read, and convey an interesting message. While in presentation phase, it is also useful to understand which part of the visualization is most attractive and memorable for audience. The study of M. A. Borkin et al[[1]](#footnote-1). shows that there is a general pattern among individuals that the eye fixation tends to focus on the center and title of a visualization when glancing at visualizations. Therefore, forming a story is essential when presenting a visualization to the audience, with key graphics placed in the center and summary in the title.

Graph aesthetics are designed to catch human eye attention. Mapping data to graph aesthetics enables the audience to conceptualize data in multiple dimensions and comprehend the difference and relationship across dimension more easily. Take Rosling’s video “200 Countries, 200 Years, 4 Minutes” as an example[[2]](#footnote-2). Rosling constructed an animation of the evolution of healthiness and wealthiness of 200 countries in 200 years by mapping each country to a point in a 2D coordination system, of which income per person is the x-axis and average life expectancy is the y-axis. For each point, the size represents the population of that country, the color represents the continent it’s from, and the movement represents the evolution in time. This is a remarkable example of presenting multidimensional data in 2D and is easily comprehended and memorized by audience.

1. M. A. Borkin *et al*., "Beyond Memorability: Visualization Recognition and Recall," in *IEEE Transactions on Visualization and Computer Graphics*, vol. 22, no. 1, pp. 519-528, 31 Jan. 2016 [↑](#footnote-ref-1)
2. https://www.youtube.com/watch?v=jbkSRLYSojo [↑](#footnote-ref-2)