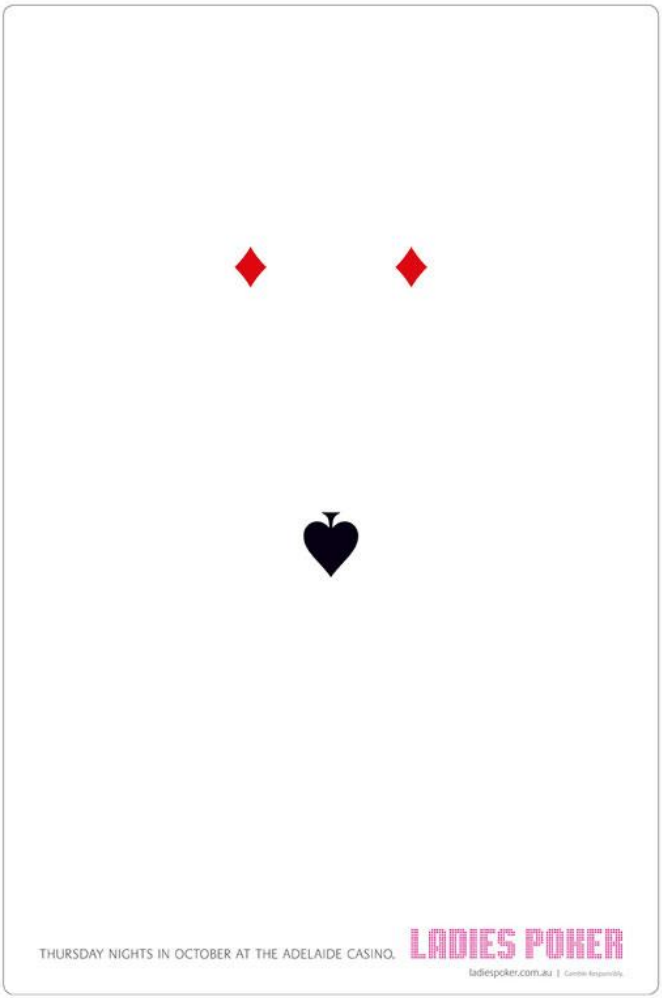
Reading week 4 – Bart Quaink - 11121424

1. Actually using a 3D-visualization while humans can really only percept visualizations in a 2.5D perception (according to C. Ware, p.90) is useful for the only reason humans are perceiving the world in 2.5D: showing differences in the *towards-away* information. The 2.5D perspective is described as 2.5D because the *towards-away* information is never really perceived as true 3D, but rather in a form of different 3D *cues* the brain is receiving. If there is information to be transmitted that has to do with one of these cues, for example *occlusion, perspective, shadowing* or even *heights* on a certain way, this is shown using a 3D visualization where the human then perceives this information in a 2.5D way.
2. Advertisement image: (source: https://www.adelaidecasino.com.au)



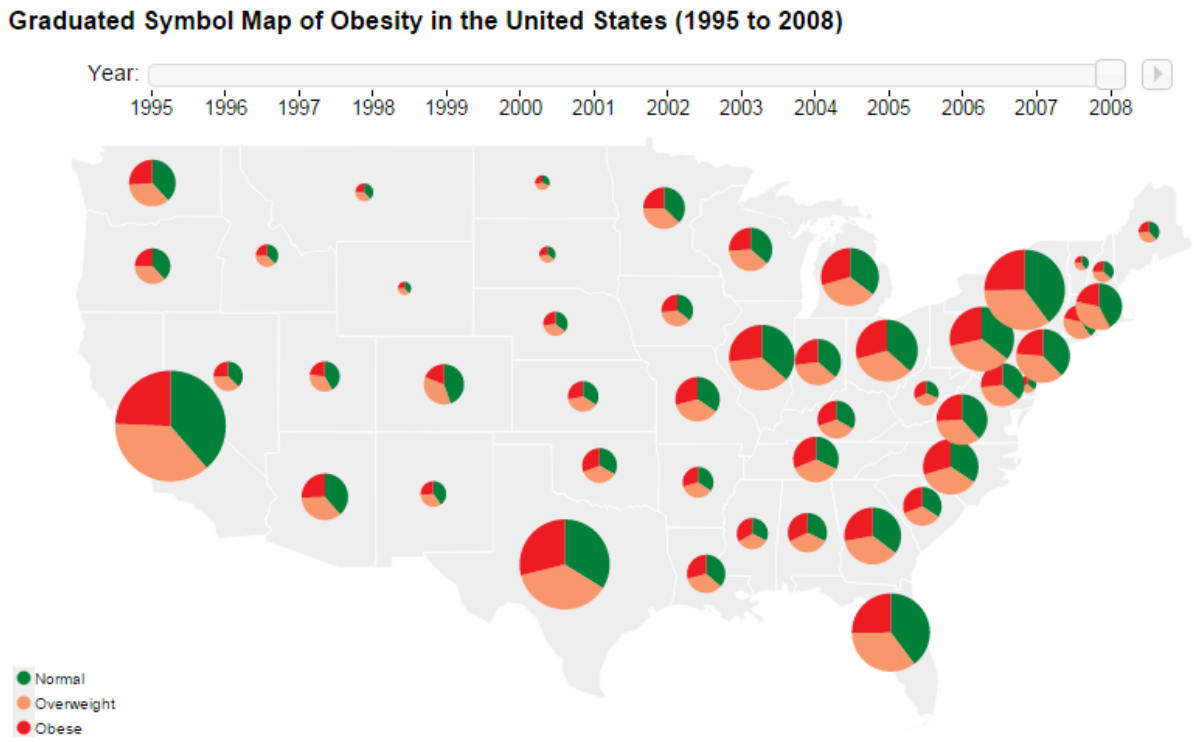

Pattern recognition is a key aspect in this advertisement. It ties together several aspects in one to create an already known image. The patterns which are visible in this advertisement are some of the suits of cards. The diamonds and spades are representing the private parts of a woman, thus pairing typical signs of a casino, the suits of the cards, with the female part of the special evening, the woman's privates. The visual working memory recognizes the patterns first of all by shape, then colour to know which suit is which and then ties the whole picture together to notice an even larger pattern, the female body.

3. According to Bostock, instead of hiding the underlying scenegraph within a toolkit-specific abstraction, data-driven documents (D3) enables direct inspection and manipulation of a native representation, like the DOM. This basically means D3 is a JavaScript library allowing easier references, updating and manipulating data in an interactive way. The 3 key aspects for the reason of introducing D3 are: *Compatibility, Debugging and Performance*. To address these three concerns, D3 was contributed. Data is now selectively bound to arbitrary document elements. By doing so, dynamic transformations are applied to both generating and modifying the content. The document now is the scenegraph. Performance wise D3 is quite quicker compared to Protovis, another library, at least twice as fast.

   *Pros and cons of D3*

   Any type of non-static visualization is better with D3. Before D3 there was Protovis, which was quite a good way for data visualization on the web, D3 is just a big improvement over Protovis. D3 has the graphic flexibility and seamless loading of data that JS, JSON and HTML cannot provide for this kind of fluent, interactive data. D3 visualizes data in such a quick and easy way that the visualization continually interactively works without use of any other extra browser script or plugin. Not only D3 itself is a big pro of why it's such a famous library, the documentation and community were a great boost to get D3 to where it is now. One could argue that D3 isn't only a library to make scripting and visualizing data easier, it's a needed tool.

   But with all the pros, there are some cons. Due to D3 using a DOM, manipulation and using of large data sets can make the script and site quite slow.




4. There are several things wrong with this visualization that makes it quite hard to comprehend and understand. First of all, using pie-charts is considered a no in most visualization instances. The goal of this visualization, what the author wanted to convey, is how the obesity levels of different states (the lower 48) compare to each other. Using a pie chart to convey this data wouldn't be the worst way to show the data, except when using a full overview of the lower 48 states this really makes no sense. We as humans can in no way come to conclusions by looking at this map. The simple fact that the author wants us to store a lot of data at once, and then come to spatial conclusions is not doable. Just look at the data from the year 2008. There are 48 states, with 3 weight classes at once. Now if you'd play the animation to compare the obesity levels over a course of 14 years, this would come down to 48*3*14 = 2016 single pieces of data, excluding the geographical location which you also unconsciously store as data. All this amount of data in just the couple of seconds the animation is running is way too much to actually create conclusions out of this visualization.

5. Interactivity and transitions didn't help me at all to understand what's going on in the visualization. I've been playing and thinking about the visualization and after a while it came upon me exactly what and how the author is conveying the data. Basically what I'm trying to say, is that although after playing it with a while, I'm pretty sure I understand the context and usability of the visualization, but there are some ways to make the intention of the visualization clearer.

   First of all, why the need to put all of the data in one graph? Comparisons don't make sense because the y-axis has to be adjusted to all the data. The data wants us to see how much of a growth each stock has since a certain date. But because the y-axis is constantly being adjusted to the stock data, there is no real quick overview to know exactly how much of a growth a certain stock had. It's easy to see Apple has the biggest growth since jan. 2000. But if you move the marker over the visualization you'll suddenly see Amazon making, what

seems to be, a huge growth as well. At first glance it looks like Amazon had about the same growth spurt as Apple had. This is not the case because the y-axis constantly keeps changing. And because Apple had such a big growth spurt the first couple of years, there isn't really a good way to see the growth of the smaller companies, even though it's quite interesting to see how they grew the first couple of years as well. Even though it's a small change compared to Apple, it can be interesting. The author shows smaller changes later on in the visualization as well, so why can't this be possible in the first couple of years as well?

D3 adds to making the visualization really well, creates the good interactivity and usability. I just don't agree with how the author decided to show the data and make the interactivity.

Possible improvements on this visualization:

1. Keep the y-scale a bit more fixed as it currently is. Use another way to show the giant growth of Apple, cutting the y-axis off for example and pick it up on a where Apple left off.
2. Make different visualizations for all the companies, to see their individual growth.
3. Use a different kind of visualization to show the size of all the different companies, instead of using adapting y-axis scales with numbers. Using the numbers makes it hard to compare all the different data of all the companies. Perhaps a stacked graph would work, then again Apple will continue to be the dominant group in such a graph.

Overall I'd say, after getting used to the visualization that it's quite a good one. If you know what's going on