Dear Mike Bostock,

I am a PhD student in Computer Science Department at the University of Maryland, College Park. This semester, I take Prof. Ben Shneiderman’s class “Information Visualization”, and I am writing this email to give you some feedback on one of your beautiful works “China Still Dominates, but Some Manufacturers Look Elsewhere”. It was published on April 8, 2013 at the New York Times.

First of all, I really appreciate that you implement the WorldMapper[1] algorithm in D3. Previously, WorldMapper only have an implementation in Java. With D3, I believe it will become more accessible to the public and make a wider impact. In addition, I found that you add new features to the WorldMapper. For example, you use hexagon to show the units of each area and you use the color of areas to encode information such as the rate of growth and the economic output. I think those features make the map more readable as well as more informative.

Second, I love the way you use color to show the GDP information. With the shape and size of each country together with its color, users can easily find out the country’s potential of growth and make some comparisons. Meanwhile, I think this design has a disadvantage that when I was exploring the map, I found it difficult to distinguish neighboring countries, especially those countries consist of islands and with similar rate of growth or economic output, e.g., Philippines, Indonesia and East Timor (figure 1). Although we can use interactions such as hover and highlight to solve this problem, it will be inconvenient if we publish the map on newspapers or posters. My suggestion is that maybe we can choose color sets that are more distinguishable (I strongly recommend this tool: Colorbrewer), or maybe we can add visual boarders to each country.

Third, I agree with you on the idea that we use hexagon to fill up the area inside the countries. It not only makes the economic output as well as the population “countable”, but also adds texture to the map. I love counting things since I was young, and I have tried to count and calculate the population of each country on the Population Map. I found that although I can count out countries with relative small size or calculate out countries with regular shape, it is rather difficult to figure out how many people there are in China and India. Moreover, as each hexagon represents 500,000 people, I think the results may not be very accurate. Therefore, it seems that hexagon is not efficient enough, and maybe we can improve the design by using the area inside a country to show its provinces and states with distorted shapes. In addition, on the Economic Output Map, you mention in text that “Guangdong, just one of 31 Chinese provinces, has an economic output greater than Indonesia”. By showing the information of each city, users can explore the map and find out that pattern as well as other interesting phenomenon on their
own. Also, there are other possibilities such as that we can use Voronoi Treemap[2] (figure 2) to show the composition of GDP.

![Voronoi Treemap](image)

**Figure 2 Voronoi Treemap**

Last but not least, I strongly recommend you to add these three features to your demo. I believe it will make your work not only more impressive but also more effective.

1. Add animations to show the change of the map during the recent years. Besides, I recommend you to watch this TED talk ([Hans Rosling: The best stats you've ever seen](http://www.ted.com/talks/hans_rosling_the_best_stats_you_ve_ever_seen.html)) which makes full use of animations to tell stories from data.

2. Add zoom in/zoom out to the map. I think this will be very useful if the users want to look inside countries to explore the details of the states and cities. If you have the economic and population data at state/city level, I strongly recommend you to add this feature.

3. Allow users to upload their data of interest. I really appreciate that you use D3 to implement WorldMapper, which makes the visual tool more accessible. As different people have different interests, your tool may make a wider impact if everyone can use it via browsers to explore their own datasets and share the results with others.

In summary, both the idea and design of your demo are really impressive. I enjoy using your demo to explore the map, and I appreciate the way you use the shape, size and color to encode different attributes of data. I think some of my advices may help you to improve your work and I am willing to see your visual tool be used by more people and make a wider impact.

Sincerely,

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