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Visualisation Critique & Sketching Visualisations

This assignment is to critically discuss a given visualisation from the “Dear Data” project and redesign the visualisation based on the same dataset through the sketching process. My visualisation task is the visualisation in week 14 (A week of productivity/schedules) from Giorgia Lupi. (http://www.dear-data.com/by-week#/week-14/)

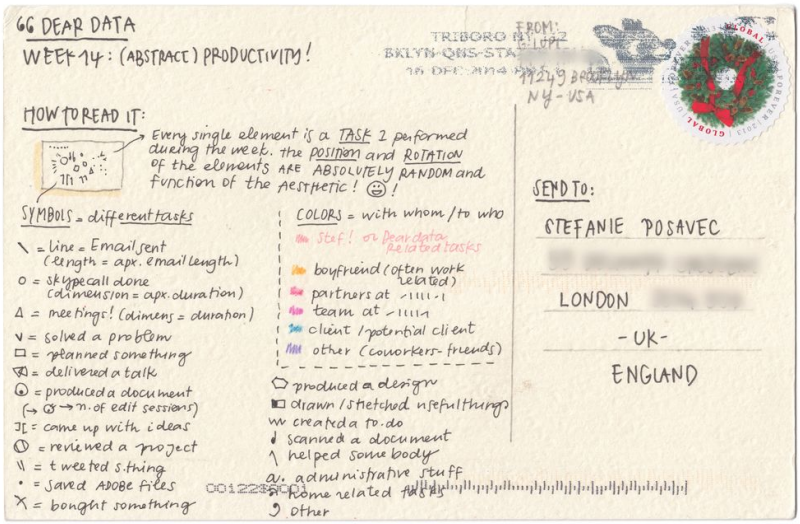

Figure 1 the visualisation from the “Dear Data” project in week 14

Part 1 – Visualisation Critique

Attribute	Attribute Type	Visual Variable	Expressive (Yes/No)	Effective (Yes/No)
Task name	Categorical	Shape	Yes	Maybe
The frequency of doing a certain task	Quantitative	Repetition of items	Yes	No
Group of people that she did a certain task with	Categorical	Color Hue	Yes	Yes
Approximation of email length (only for task `Send Email`)	Quantitative	Length	Yes	Yes
Approximation of duration (only for task `Skype call` and `Meeting`)	Quantitative	Size	Yes	Yes
Number of edit session (only for task `Produced a document`)	Quantitative	Repetition of items	Yes	Yes
		Position/Rotation	No	No

As mentioned by Giorgia, because she could not find interesting patterns in her data and she wanted to experiment with the aesthetic aspect rather than just communicate with the data so these make her visualisation violates the principles of expressiveness and effectiveness in many ways. In general, the visualisation was drawn as a cocktail-mix of symbols represented daily activities without organisation (using position) so it is quite hard to recognise trends or relationship between variables. Munzner T. explained that “attributes encoded with position will dominate the user’s mental model” (P. 102) so it is not both expressive and effective to have the meaningless position in the visualization.

Importantly, two of the key features are also not effectively represented. Task, which is a categorical attribute, was represented by a different symbol but there are up to 19 symbols. Her symbols also come with unequal space, for example, a big circle used for `Skype call` task but only a small cross for `Bought something` task. The bigger tends to dominate the smaller so it does not equally represent the data. These are the reasons why I consider that it is not effective. Task categories could be grouped or represented in a hierarchy and their representation should be more related to the data. Another key feature is the frequency attribute. It is not emphasized properly because the items were not organised in visualisation space. It might be more effective to have a spatial arrangement as a histogram.

However, the visualisation is good in term of expressiveness and aesthetic. There is no unintentional implication about ordering in categorical data. Detail information such as email length, meeting duration and a number of edit session was shown suitably in the figure. Colour, which is represented `with

whom/to who` attribute, is harmonized. Only slightly mistake is the meaningless black symbol that is not well explained in the colour legend. In term of discriminability, seven colours(including black) is in the best practice. In overall, the visualisation violated some of the ground rules but it can still convey Giorgia's answers about her daily activities.

Part 2 – Visualisation Sketch

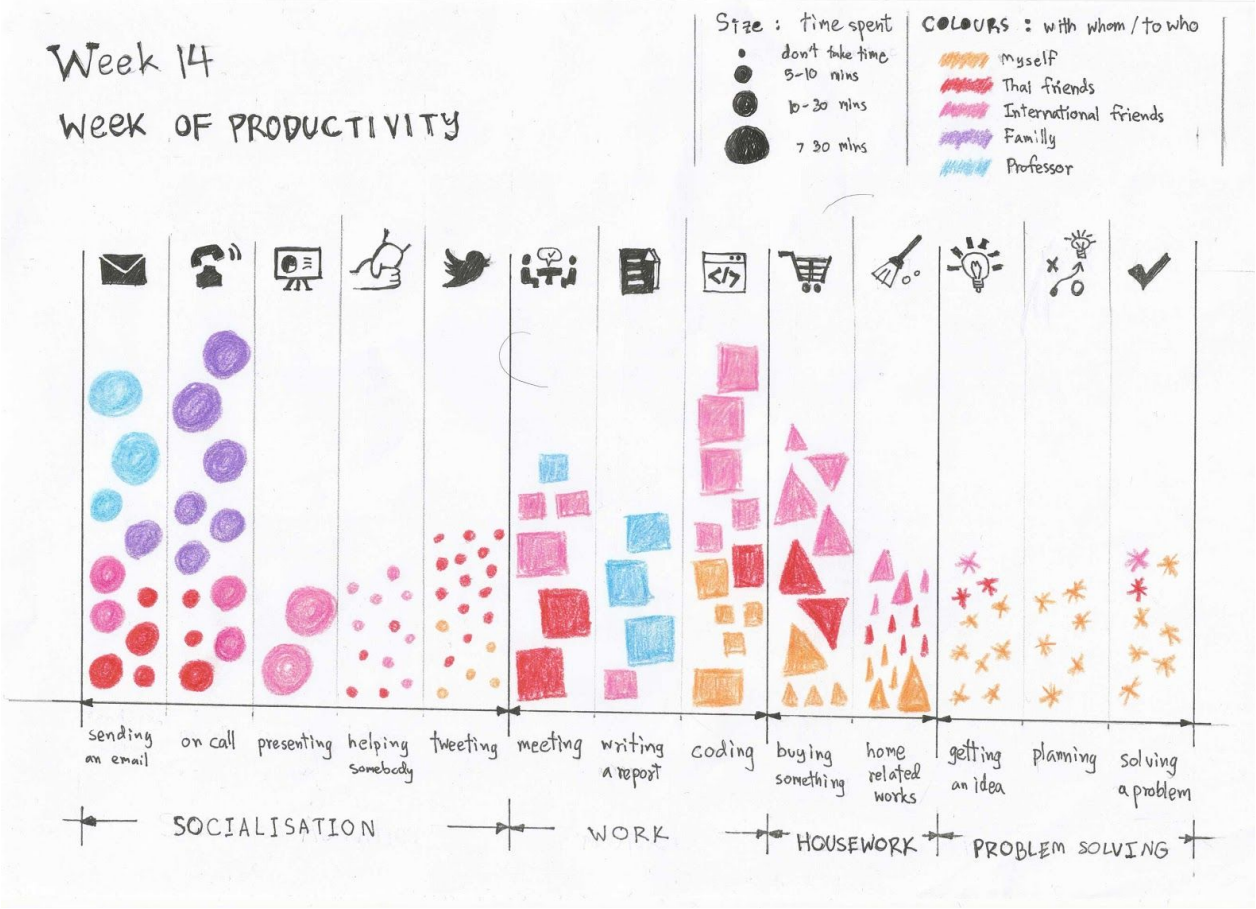

Figure 2 the re-design visualisation

The process of my re-designing process is to utilise position, and emphasize the frequency of activity but still balance between aesthetic and informatics. An essential part of the new visualisation is a spatial arrangement which is represented as a histogram.

Tasks are grouped into 4 categories; socialisation, work, housework and problem-solving tasks. These categories are double-encoded into both in the axis of the histogram and shape of items in the figure. Introducing the categories is good in term of efficiency because it highlights the characteristics of the task and the relationship with other tasks. The task name attribute is also encoded into the axis and the icon in the top. Initially, the icons are introduced only because I wanted to add some aesthetic elements,

but, overall, it increases discriminability because it gives another understandable clue to explain the task.

The frequency attribute is represented by a number of items. I decided to use a discrete item instead of a solid vertical bar because it suitably emphasizes the discreteness of the data. But the hight of the bar does not seriously take into account.

To-who and with-whom attribute are encoded with colour as the original. In addition, detail data such as email length, meeting duration and a number of the edit session are shown in the new visualisation in a different interpretation. Because these detail data usually have a strong relation with time spent -- longer email length, or meeting duration infer to longer time to spend. So I considered representing these data as time spent instead. This will allow having a comparison across these variables and make trends become easily visible. However, because it is continuous data, so in order to encode into a discrete item, it is divided into 4 smaller ranges.

My design process

The high-resolution images are available here.

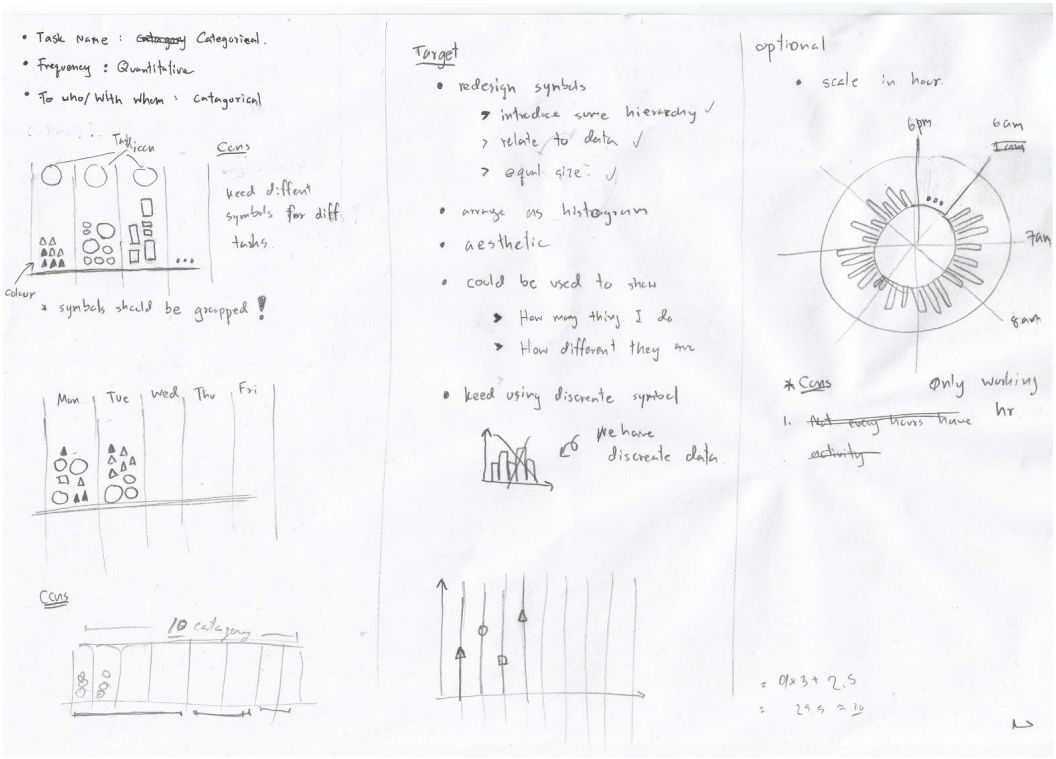

Figure 3 Brainstorming; exploring ideas with different sketches

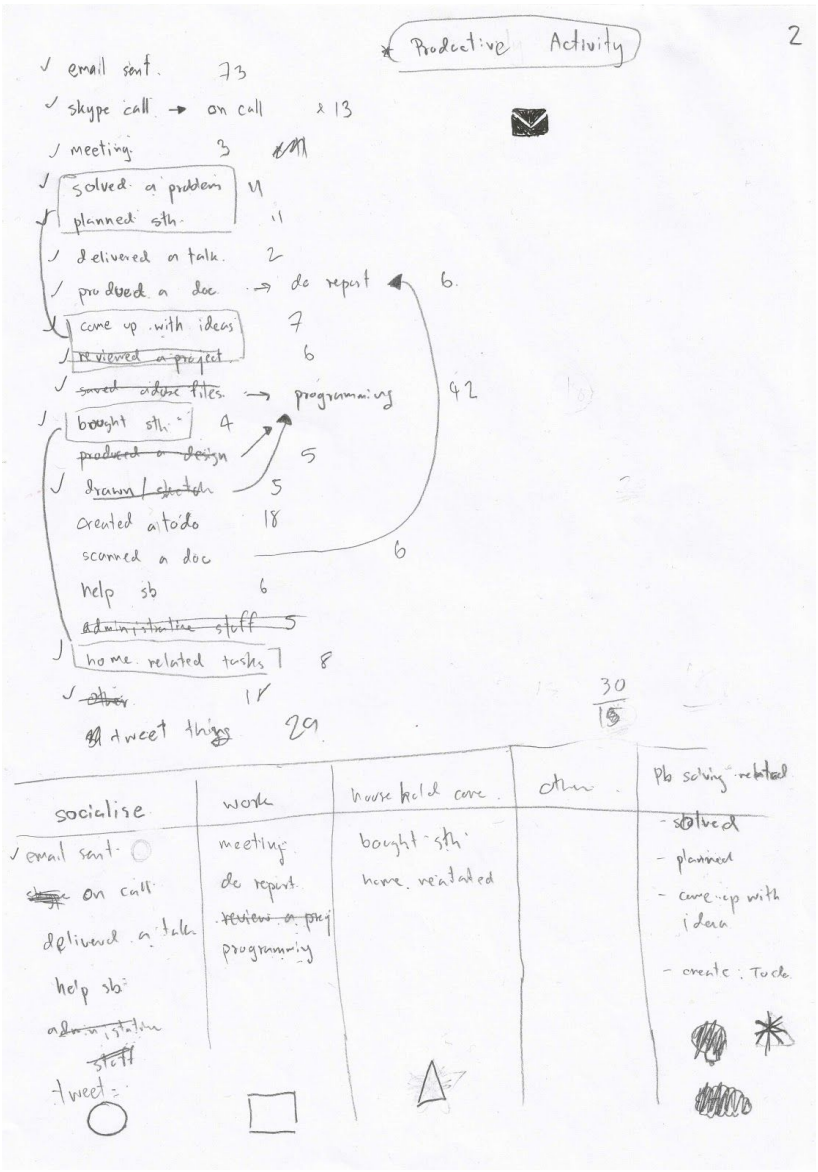

Figure 4 grouping task names into 5 categories

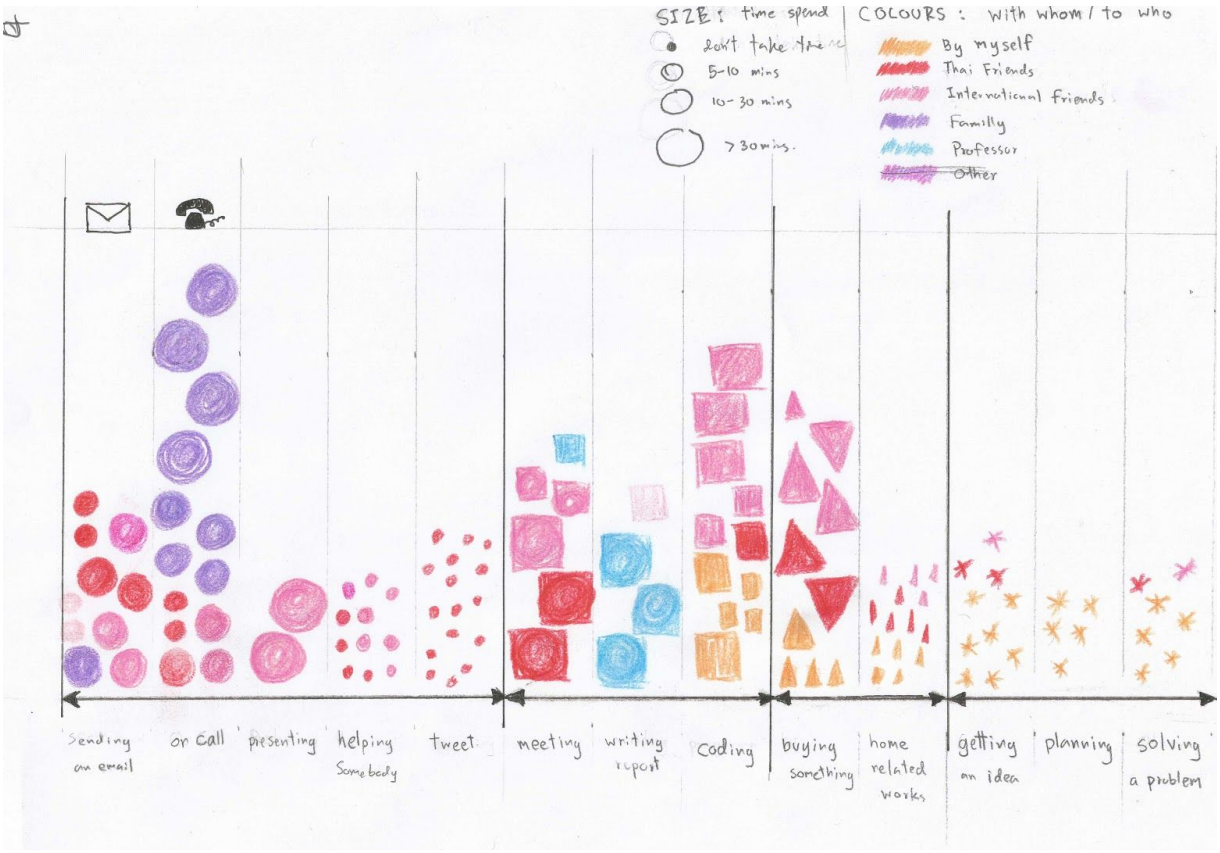

Figure 5 the first draft

Part 3 – Extension

I drew another visualisation using the same approach with the given visualisation but using my own data as shown in figure 6. It is clear that it is quite hard to explain the trend in the visualisation as I discussed earlier. It is also hard to explain the different behaviours between the two people.

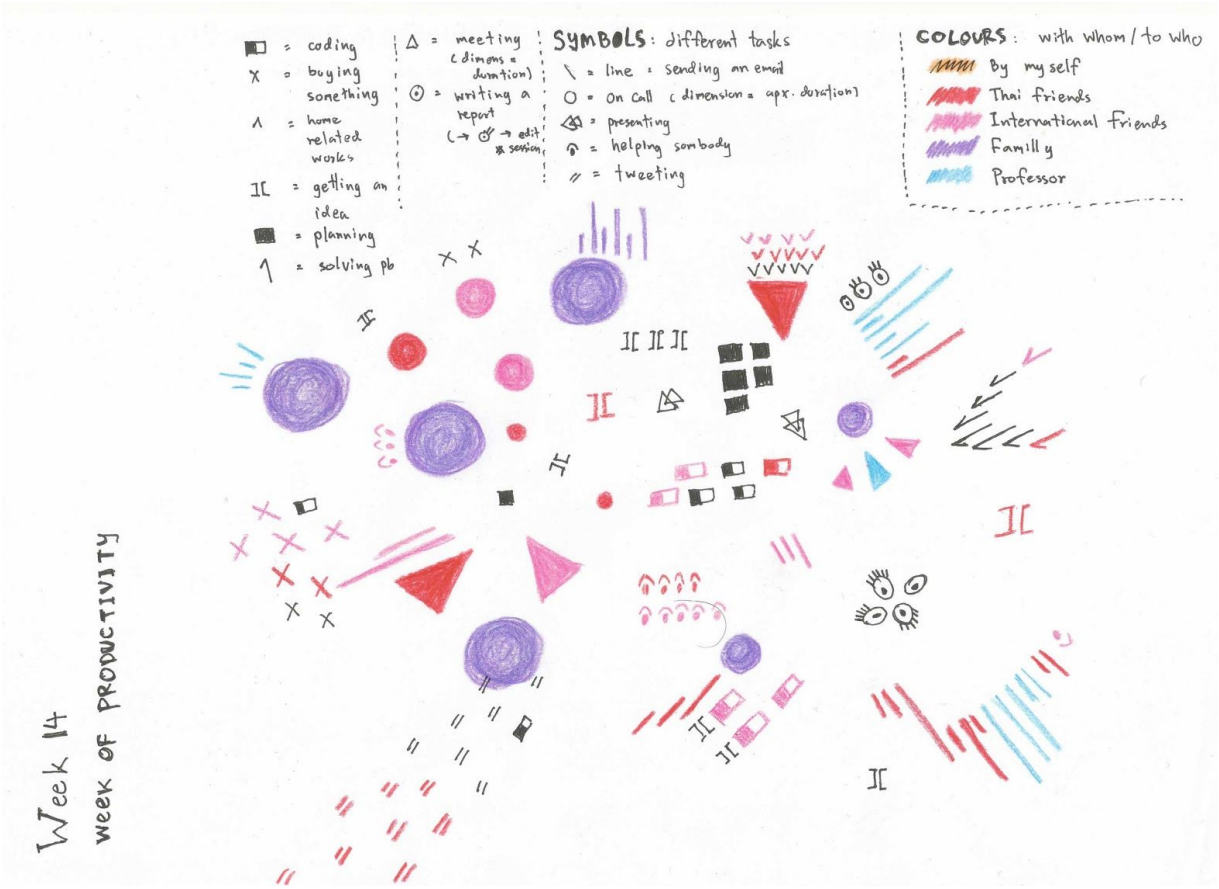

Figure 6 the visualisation using Giorgia's approach but using my own data

Another extension I tried is to implement it using Tableau. I generated a dataset in CSV format. The dashboard is shown in figure 6. The .twbx file and dataset are attached in the zip file.

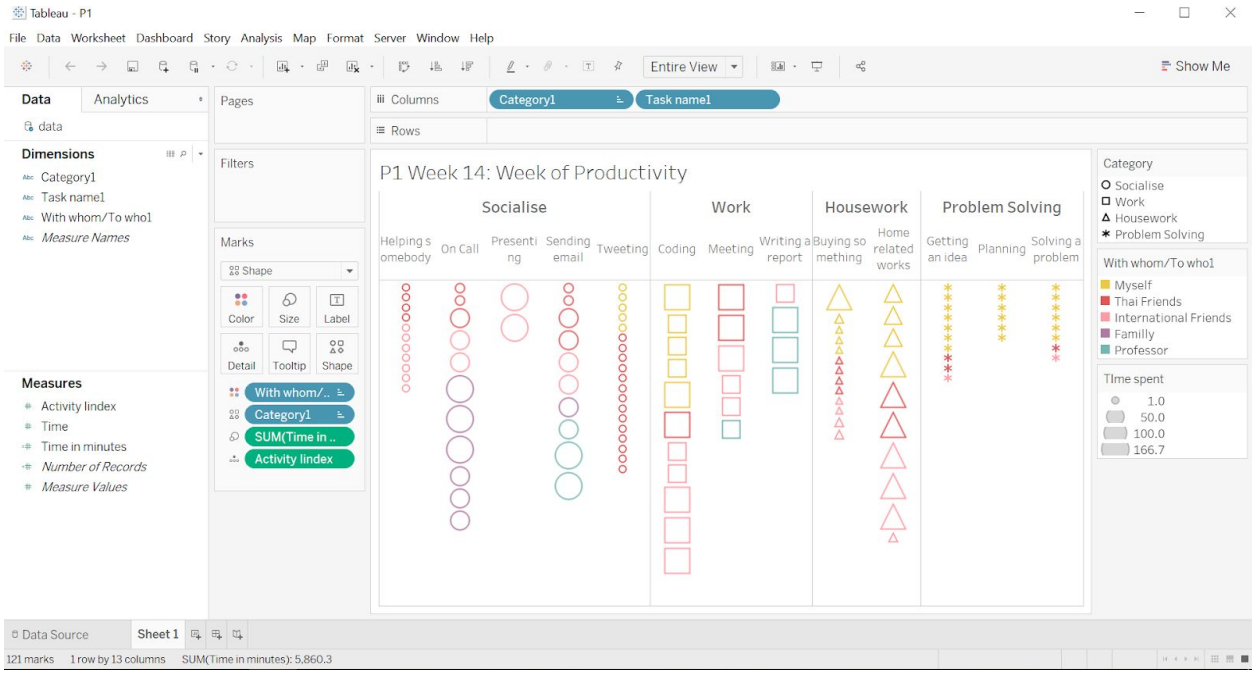

Figure 7 the implementation of my approach in Tableau.