Visualization - exam, January 2021

Questions:

1. List the eight visual variables that are commonly used in visualizations. For each of them, add your own example, where do you think the variable is used in a meaningful way (where it brings some valuable insight).
2. For the multivariate data, there are several techniques that are able to display the data items and its all dimensions. Among those belong the scatterplot matrices, parallel coordinates, or star glyphs plots. Briefly describe the main principle of each of these (you can sketch them on paper) and add your own example where you find these representations meaningful. On the other hand, what are the limitations of these techniques and which approaches would you use instead?
3. When generating input data and their subsequent visualization, there are three basic approaches that are handling the exchange between the data acquisition, its visualization, and interaction. Name these approaches and give examples, in which situations (for which data and tasks) they are the most beneficial.
4. What is the difference between interacting within the space of data values and space of data structures? Are both of them available for any input dataset? If not, what is the requirement for that? For each of these interaction spaces, list two examples of such interaction.
5. Describe the rainbow colour scheme and what are the main issues with using that in visualizations. Why it is still so popular? And what would be your suggestion to avoid these issues?