University of Cape Town
Department of Computer Science

CSC5008W: Multi-Dimensional Data Visualization 2018

This is an open-book, online exam.
You must upload your final answers (including images) as a **single pdf document**.
Late submissions will not be marked.

Marks: 50

- Approximate marks per question are shown in brackets

Time: 24 hours

Examine Figures 1 to 3. These are all from www.informationisbeautiful.net and all have the original data available. Choose **one** of the graphics for this exam and perform the analysis and synthesis/redesign tasks detailed below.

Question 1. Analysis. [30 marks]

Provide a detailed analysis of the effectiveness of the visualization, covering both positive and negative aspects. In this question, you must cover:

a) the **goal** of the graphic;

b) the dimensions visualised versus those available in the data set;

c) **important visual queries** and how easy these are to answer;

d) the use of all the visual channels (colour, size, space, depth etc.) - considering channel effectiveness and expressivity;

e) how closely practical general heuristics for visualization design have been followed;

f) scene gist, perception, attention and pop-out;

g) objects and patterns

h) and meaning.

[30]

Question 2. Design (Synthesis). [20 marks]

Improve or completely re-design your chosen visualization. You may use any medium in which to do this (including paper and coloured pens). You may not make use of interaction in your design - the visualization must remain static. However, you can add additional dimensions present in the source data but not used in the original visualization. You need to focus on significant improvements - minor or trivial improvements will not count for much.
Present and explain your final design, and then provide a clear **rationalisation and justification** as to why your improvements (or redesign) make your visualization better than the original. Cover the strengths and weakness of your improvements or new design and any tradeoffs that you had to make. Your justification must take into consideration all the points you raised in your analysis. Remember that the efficacy of a visualization is relative to the goal of the visualization, the target audience and the task abstraction. [20]

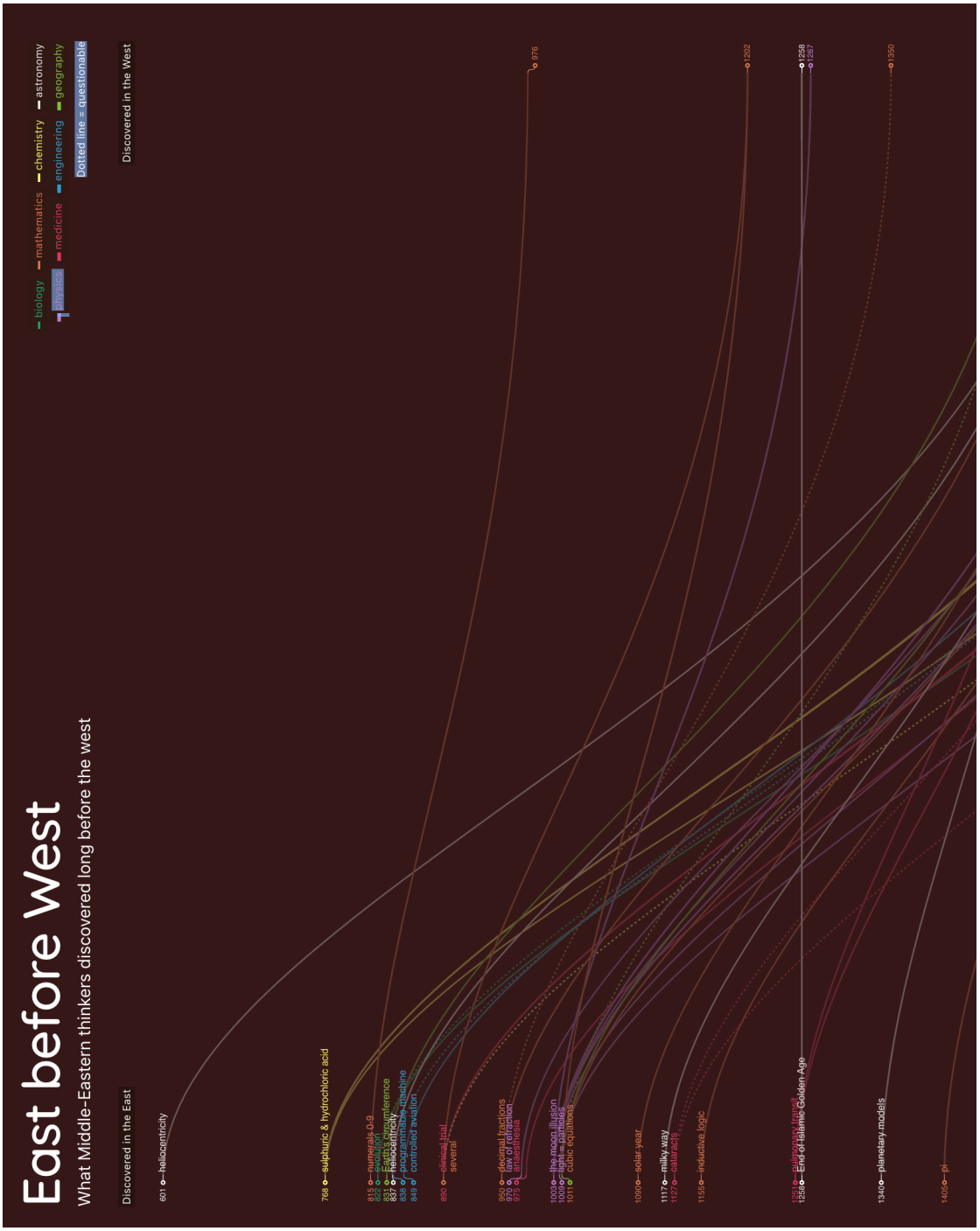

Figure 1: "East before West" by David McCandless et al. This is a fragment of the visualization, which is an adaptation of a 3 metre high interactive created for an 2018 Information is Beautiful exhibition at the Qatar National Library. You must analyse the full graphic, which is available online at *https://informationisbeautiful.net/visualizations/what-islamic-golden-age-thinkers-discovered-long-before-the-west/*, including source data.

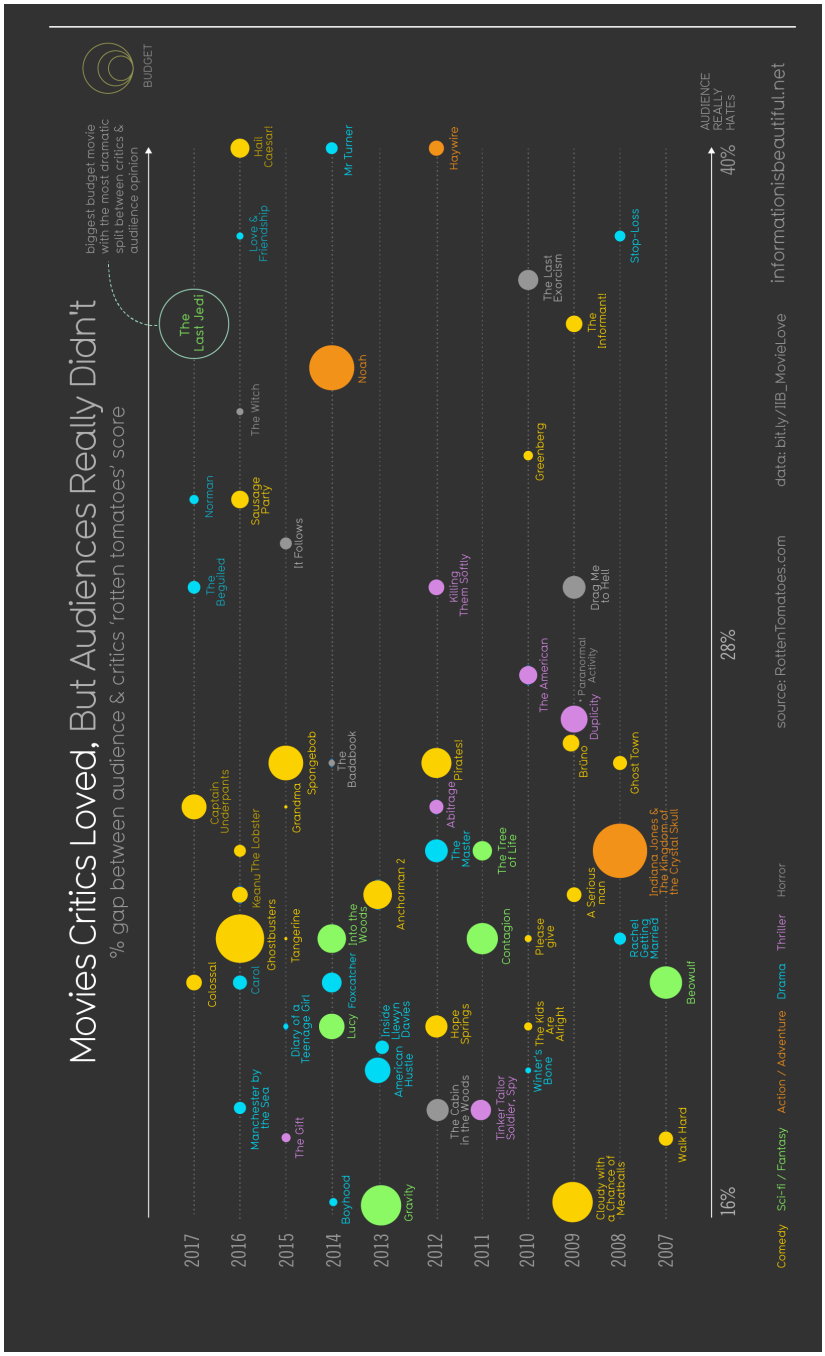

Figure 2: "Movies Critics Loved, But Audiences Really Didn't" by David McCandless et al. Available online at *https://informationisbeautiful.net/visualizations/star-wars-last-jedi-one-of-the-biggest-rotten-tomatoes-audience-vs-critics-score-splits-ever/*, including source data.

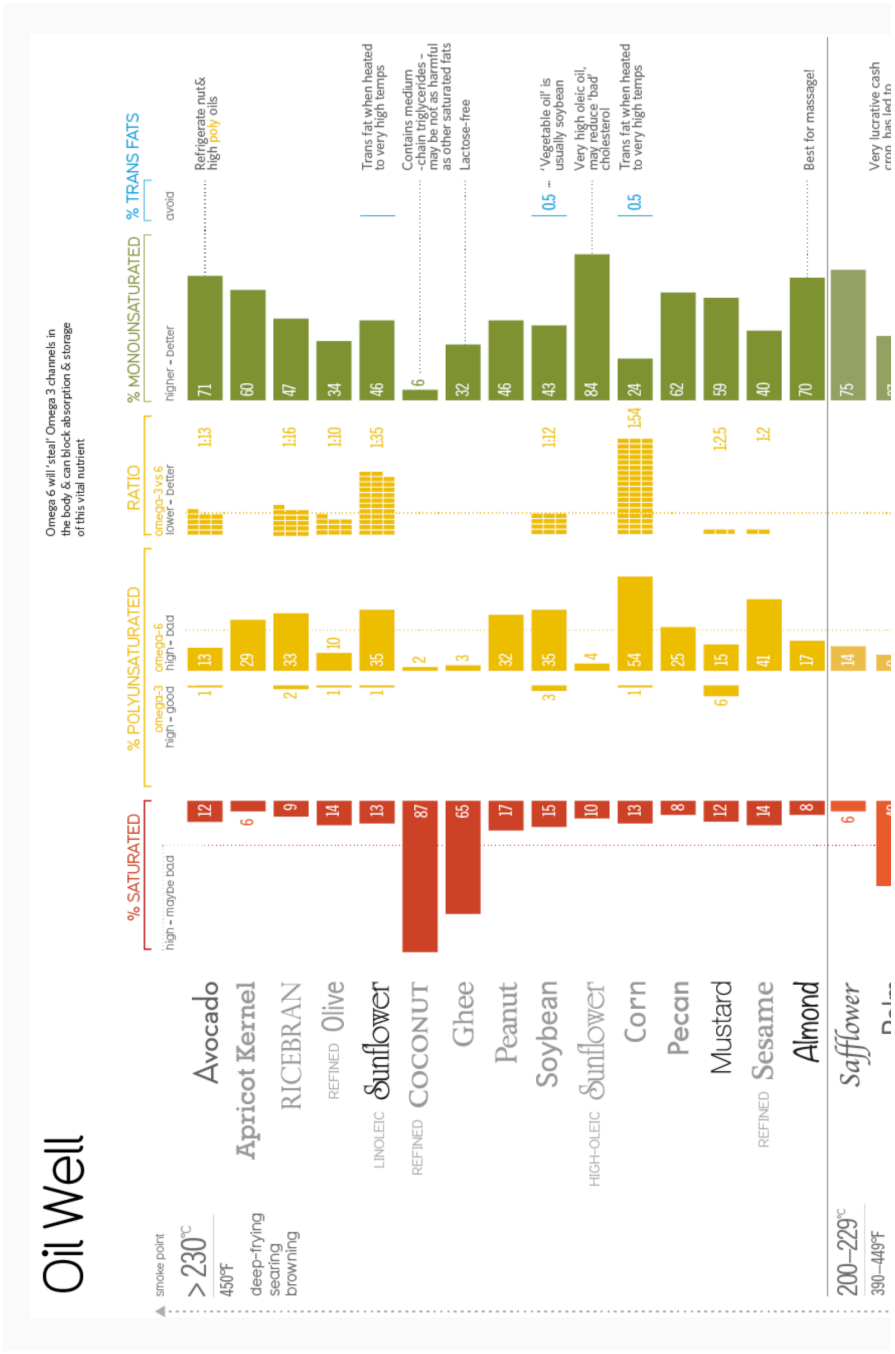

Figure 3: "Oil-well' by David McCandless. This is a fragment of the visualization, you must analyse the full graphic, which is available online at *https://informationisbeautiful.net/visualizations/oil-well-static/*. Note, analyse the static, not the dynamic, version. Source data for the visualization is available at *http://bit.ly/KIB_OilWell*.