How to tell stories using visualization:
Narrative Strategies for Information Visualization

Several narrative strategies have been approached by different researchers in the past years, particularly approaches closer to semiotics, critical theory, and journalism. Authors such as Segel and Heer (2010) and Hullman and Diakopoulos (2011) proposed narrative strategies for visualization based on visual rhetoric.

In my research I analyze three particular approaches that were identified in a focus group study that took place at FCSH - UNL and that were previously discussed in Information Visualization research: context (closely linked to annotation), empathy, and temporality (its relation with story-flow). Other strategies such as gamification are also approached in relation with the previous strategies, specially with empathy. All of these aspects are approached in relation with interactivity.

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Interactivity and its relation with context

Annotations have the capacity to add context that otherwise would be difficult to provide, easing the interpretation, suggesting conclusions, and generally guiding the user's interaction. Moreover, they enable free exploration of the data allowing the user to follow the information he is most interested in.

The participants showed a lot of interest in exploring the visualizations freely and preferred to be moved by curiosity. Another interesting feedback was that the participants believed that the visualizations they liked the least could be fixed with an overlay of information, presented using interactivity.

The Relation Between Time and Narrative

Another characteristic that the focus group participants appreciated was when the visualizations provided some temporal structure.

A temporal structure can give visualizations a sense of story flow and this often appeals to users, because it gives them the ability to navigate their way to particular information. Structures such as timelines are very efficient in giving this temporal sequence feel. Visualizations that are able to have a story flow they will be more successful.

Empathy

Storytelling can also add another dimension to the visualization: empathy. Together with emotion, empathy is a concept that is not often associated with Information visualization. This is because emotion and empathy are usually associated with chaos and visualization with objectivity.

The focus group participants selected the visualization *How many households are like yours?* as their overall favorite and in their responses they stressed the fact that what made this visualization so interesting was the fact that they could chose to explore families similar to theirs.

Gamification

Even though there are successful examples such as *SPENT*, *HeartSaver*, and *Could you be a medallist?* there is not much research on gamification in visualization nor on how it can help to introduce storytelling and empathy .

It would be interesting to see how the participants of the focus group study would react to game like visualizations. However it would be very difficult to analyze this kind of visualization in a focus group environment, because the participants would need more time to explore it to get strong insights.

Impact of research

The narrative strategies explored in this research have inspired Gratzl et al. in the development CLUE, a model for capturing, labeling, understanding, and explaining provenance information of data-driven visual explorations.
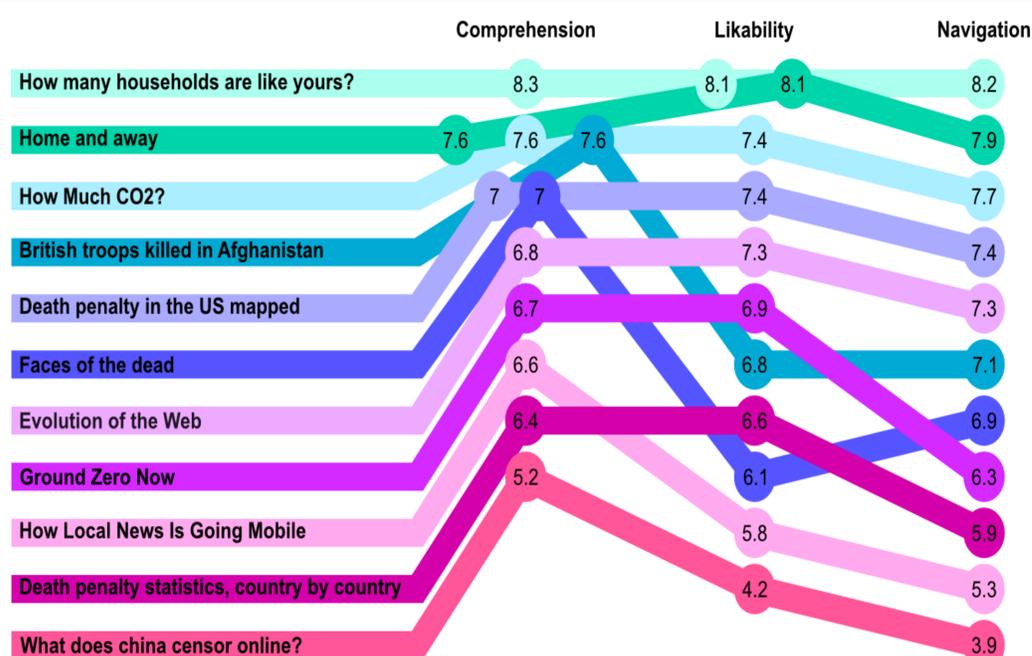• Gratzl, S., et al. "From Visual Exploration to Storytelling and Back Again." In Eurovis 2016.

Figure 1 – Focus group results: ranking of the average ratings for each visualization in terms of comprehension, likability, and navigation
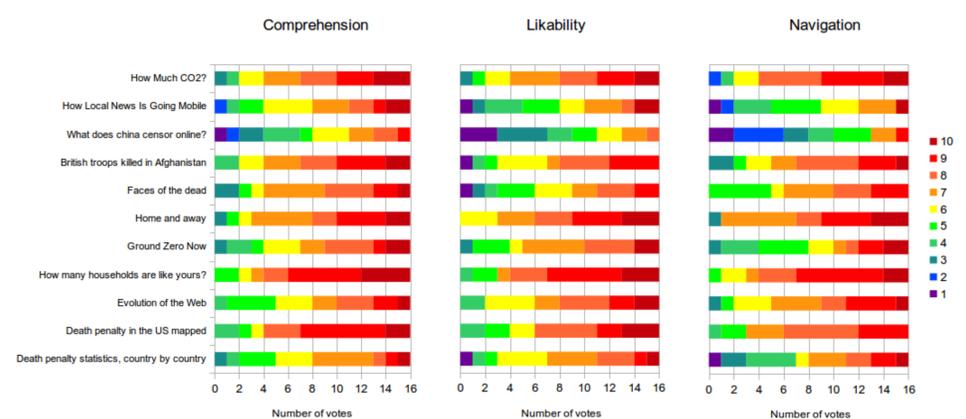

Figure 2 – Scores given by the participants to each visualization in terms of comprehension, likability, and navigation

Related research publications:
• Figueiras, A. "How to tell stories using visualization." In Information Visualisation, 2014 18th International Conference on, pp. 18-18. IEEE, 2014.
• Figueiras, Ana. "Narrative visualization: A case study of how to incorporate narrative elements in existing visualizations." In Information Visualisation, 2014 18th International Conference on, pp. 46-52. IEEE, 2014.