

Paper 2 - Metaphorical Visualization: Mapping Data to Familiar Concepts

- **Summary of the paper.**

The authors present a new approach for visualizing data that maps datasets to things the user may already be familiar with, like movies, cats, and portrait coloring choices. Because of this connection between what is already familiar to the user, new aspects about the unfamiliar data can be uncovered by the user. In this way, the authors are extending visualization metaphors beyond the visual to concepts that are tacitly understood by humans. The authors explain distance-based mapping, attribute-based mapping, and topological mapping as ways of connecting metaphors and data. Many of the models created in the paper relied on machine learning. The authors conduct a brief literature review of papers using metaphor, machine learning, and word embeddings for creating data visualizations. Then the authors get into specifics about the formulas used for machine learning to implement their metaphorical visualizations. This includes a discussion of distance-based metaphors, attribute-based mapping, and hybrid mapping.

The authors then present many examples of metaphorical mappings they created. The first is how CHI, VIS, and SIGGRAPH authors are mapped to words in a distance-based mapping visualization. The next example is a mapping of CHI authors to cat images. The authors would be clustered together through machine learning and identified in the visualization by similar looking cats, for example black and white. In the next example the authors provide a mapping of authors to visual styles. 100 authors were mapped to 16 style images, where if the authors shared common themes across their research, then their images would be represented in a similar style. Next the authors present an example of attribute-based mapping where book clusters are mapped to clusters of movies and games using relative popularity, rating, and length. The final example was a hybrid combining the distances and relative attribute values seen in previous examples. This example took an illustrated map of the night sky and assigned popular movies to bright stars. The authors then discuss the challenges of creating the examples and what they learned applying particular metaphors to the mappings.

- **State what contribution the paper makes to the field of Human Computer Interaction in your view. Your complete review will be entered below; use this field to summarize the contribution (not the flaws) of this work.**

This paper makes the novel contribution of using metaphor as an aspect of visualization. This allows for the user to make many more connections to the data, especially those users who are not well-versed in different types of charts and graphs.

- **Significance of the paper's contribution to HCI and the benefit that others can gain from the contribution: why do the contribution and benefit matter?**

It opens up the possibility for new visualizations that could benefit many areas including school, business, quantified self data analysis and display, and more. Intuitive graph reading could become a major research area.

- **Originality of the work: what new ideas or approaches are introduced?**

Visualizing data through metaphorical connections already known to the user is a novel approach.

- **Validity: how confidently can researchers and practitioners use the results?**

The specific formulas for the machine learning to create the visualizations were provided, so somebody could recreate the visualizations following the very specific details included in the paper.

- **Presentation clarity.**

Very clear and great addition of supplementary documents that provide further examples and insights. Also included in the supplementary documents is a qualitative study of 10 doctoral student participants.

- **Relevant previous work: is prior work adequately reviewed?**

They reviewed many works that provide the foundation for their argument of choosing the right metaphor for the data. The authors do a good job of reviewing papers relevant to the specifics of their paper, such as those who used machine learning for data visualization.

- **Assign a score for each paper on a scale from 1 – 5 where 5 is best**

3

- **Indicate your expertise in this topic: Scale is 1...4; 1 = “no knowledge”, 2 = “passing knowledge”, 3 = "Knowledgeable", 4 = expert**

3

Paper 4 - When Virtuality Surpasses Reality: Possible Futures of Ubiquitous XR

- **Summary of the paper.**

The authors present thought experiments as case studies on the possible future of XR technology. The authors highlight the present-future gap in HCI research that obscures how a prototype will be used in real world settings to support a design fictions approach with an applied philosophical angle. The case studies are presented in the near future, distant future, and far distant future framework. The Cities Saturated in Media section focused on making participants question whether they are comfortable using an always-on device to inform their everyday choices and navigation in the world. The authors present scenarios where the reader imagines themselves in certain futuristic scenarios involving technology. The Digital Divide section predicts circumstances where users wear contact lenses that blend VR and AR and enable screenless interactions. The Experience Machine section focuses on Brain Computer Interfaces and the question of whether in a world where you can experience anything you want, would the real world still have any appeal?

Then the paper presents open challenges for possible futures of ubiquitous XR including the topics of mediated perception, reality and virtuality anchors, value of virtual experiences, and immersive skills and digital exclusion. In mediated perception, the authors present the idea that XR will manipulate perception and change the way experiences are remembered. In the reality and virtuality anchors section, the authors present the idea that perception of reality will change when virtual content is indistinguishable for physical content. In the value of virtual experiences section, the authors present the idea that virtual experiences may become more valued than real experiences. In the immersive skills and digital exclusion section, the authors present the idea that lacking an XR device may lead to people losing access to social and public services, work, and memories. The authors close with the idea that their design fictions allow designers to acknowledge these issues and prevent them in their own work.

- **State what contribution the paper makes to the field of Human Computer Interaction in your view. Your complete review will be entered below; use this field to summarize the contribution (not the flaws) of this work.**

The paper presents some concerns about the possible future of Ubiquitous XR technologies that developers may take into account when designing devices that will grow into future devices.

- **Significance of the paper's contribution to HCI and the benefit that others can gain from the contribution: why do the contribution and benefit matter?**

Not that significant a contribution. Interesting to think about, but may be better published in another venue such as a magazine, newspapers, or online news magazine like Wired.

- **Originality of the work: what new ideas or approaches are introduced?**

The paper structure seems original, but topically may be more related to sci-fi fiction than researched work. Also, many of the ideas discussed seem familiar and intuitive to people who are culturally aware of tech developments.

- **Validity: how confidently can researchers and practitioners use the results?**

Being that it is Design Fiction, we will have to wait and see. This is why more needs to be said about Design Fictions. What are some from the 80s that came to fruition? Does sci-fi count as Design Fictions? A paper could be structured around these topics.

- **Presentation clarity.**

The addition of a literature review section may have helped the clarity of the paper, as it now jumps from the introduction to the case studies. I also am curious to know the history of Design Fictions and how they have influenced the development and reception of technologies.

- **Relevant previous work: is prior work adequately reviewed?**

Previous work in design fictions is not adequately reviewed. There is no dedicated literature review section. What is mentioned is included at the end of the introduction. Each section does mention studies linked to ideas discussed. But I feel left wanting more.

- **Assign a score for each paper on a scale from 1 – 5 where 5 is best**

2

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2

Paper 6 - Design Futuring for Love, Friendship, and Kinships: Five Perspectives on Intimacy

- **Summary of the paper.**

The paper uses design futuring and related approaches to develop five prompts for imagining alternative futures exploring intimacy. The authors note the gap that technology's role in intimacy is rarely addressed critically and propose using the five design perspectives in the paper can support critical reflection on potential long-term outcomes of the technology. The Process section discusses what inspired the approach of the paper. Then the Five Perspectives for Design Futuring are presented as Parallel Presents, Meet (with) Speculation), Epithelial Metaphors, I Am Time, and The Uncertainties Cone. Parallel Presents discusses inviting imagined preferred presents around alternative sociocultural and material arrangements. Meet (with) Speculation is about a conceptual relationship with someone who reminds the questioner to recognize their own assumptions and acknowledge multiple perspectives. Epithelial Metaphors is a metaphor that foregrounds relationality and organic growth to invite intuitive conceptual associations and surprising contrasts. I am Time considers turning the lens toward reimagining relationships in different timescales and seasons of transformation. The Uncertainties Cone calls for recognizing the limits of one's perception and agency and recognizing interdependencies. Each of these topics is then discussed including sections on the Creator's Imagined Response, Co-author's Reimagining Response, and Critique of the Approach so as to demonstrate to the reader who to practice the design futuring process.

- **State what contribution the paper makes to the field of Human Computer Interaction in your view. Your complete review will be entered below; use this field to summarize the contribution (not the flaws) of this work.**

The contributions are very rich imagined scenarios about how technology and intimacy may interplay in the future. Many fascinating ideas were mentioned which I wish were real. Very inspired imaginings. A very clear presentation of the design futuring process is another contribution.

- **Significance of the paper's contribution to HCI and the benefit that others can gain from the contribution: why do the contribution and benefit matter?**

The authors' ideas and how they structured each section with Creator's Imagined Response, Co-author's Reimagining Response, and Critique of the Approach gave it a strong foundation and made the ideas presented not seem fantastical. The paper provides a framework to practice and develop design futuring using the authors' proposed rigorous method. The paper also contributes significantly to bringing attention to technology and intimacy research involving relationships, friendships, and kinships.

- **Originality of the work: what new ideas or approaches are introduced?**

The work is original as I have heard of Design Fiction and Speculative Design but have not encountered Design Futuring. It was also original in the interactivity asked of the reader to read and participate in the prompts to help understand the paper's concepts. The level of detail and conceptual heft of the imaginings makes the process seem scientifically rigorous and not too literary.

- **Validity: how confidently can researchers and practitioners use the results?**

Seems valid as the design futuring process is explained well and very structured for others to take up the same research question and explore their own results. References provided grounded the research in the HCI field.

- **Presentation clarity.**

Yes, the paper is very clear. I like that readers are invited to explore the prompts presented at the end of the paper before reading the discussion. The prompts at the end are presented different visually to lead the reader to a different mindset than a regular academic paper.

- **Relevant previous work: is prior work adequately reviewed?**

Yes, the Expanding Approaches to Design Futuring section lays out many of the important ideas in the area and how they contributed to the paper. The authors also use over 50 references to help present their case.

- **Assign a score for each paper on a scale from 1 – 5 where 5 is best**

4

- **Indicate your expertise in this topic: Scale is 1...4; 1 = “no knowledge”, 2 = “passing knowledge”, 3 = "Knowledgeable", 4 = expert**

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