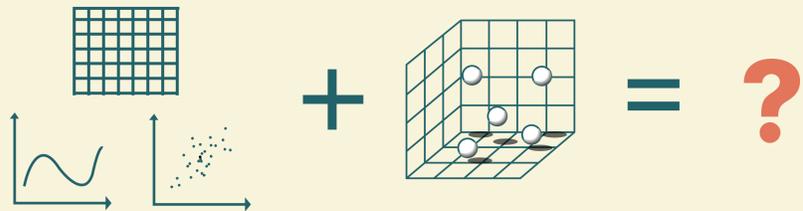


A DESIGN SPACE FOR LINKED 2D AND 3D VISUAL REPRESENTATIONS

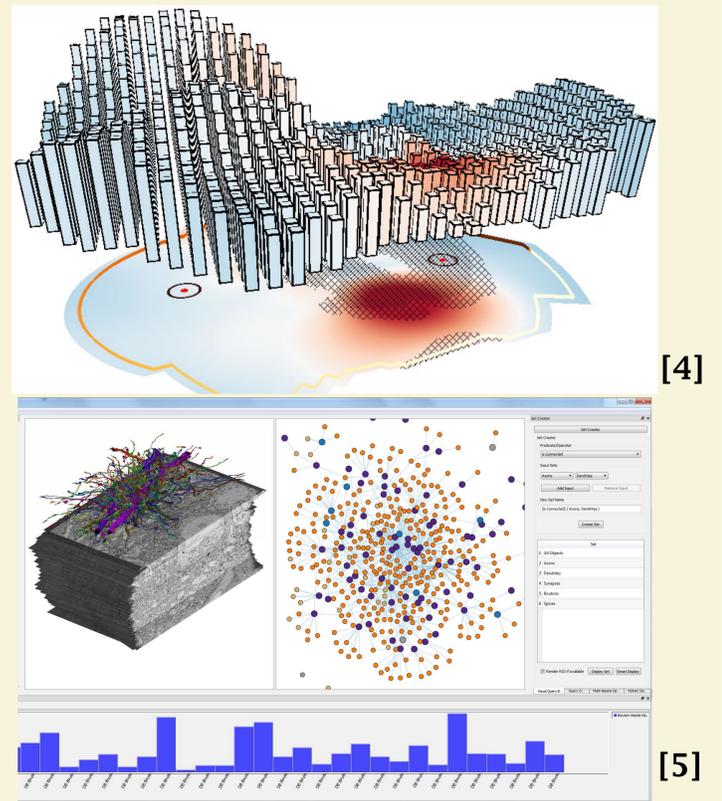
Ebrar A. D. Santos
 Jiayi Hong
 Tobias Isenberg

There are multiple guidelines and frameworks for linking 2D views [1,2]. Researchers have also investigated relations between 2D and 3D representations in VR [3]. However the literature lacks a general understanding about how to combine 2D and 3D representations in all kinds of environments. We focus on how 3D and 2D representations can be combined.



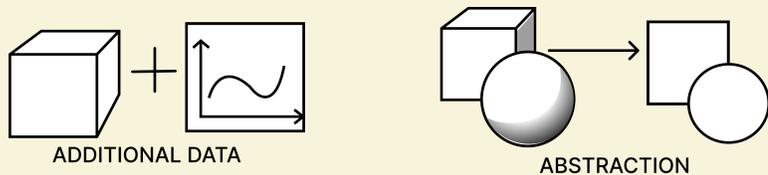
Within the timeframe of 2012-2022, we surveyed all papers from IEEE Vis, EuroVis, and TVCG and extracted 97 relevant papers. We found that many systems link 2D and 3D views in various and innovative ways. The combination of 2D and 3D helps users with information extraction, summarizing, getting an overview, and being aware of the data as a whole.

We looked at the existing patterns among the extracted papers and formed our design space with 5 dimensions:



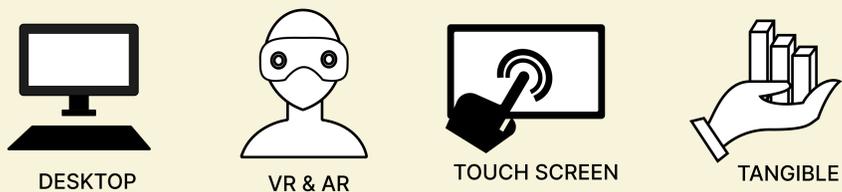
SEMANTIC RELATIONSHIP

What do 2D and 3D views they add to each other?



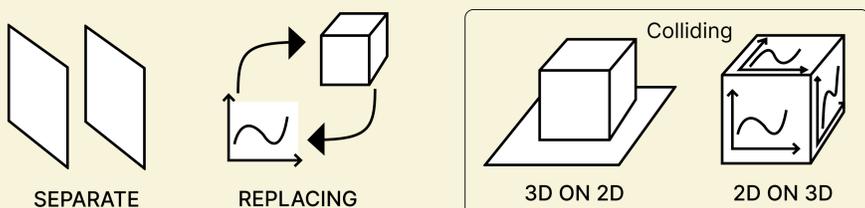
DISPLAY MEDIUM

How a visualization is shown and the type if input is used?



LAYOUT

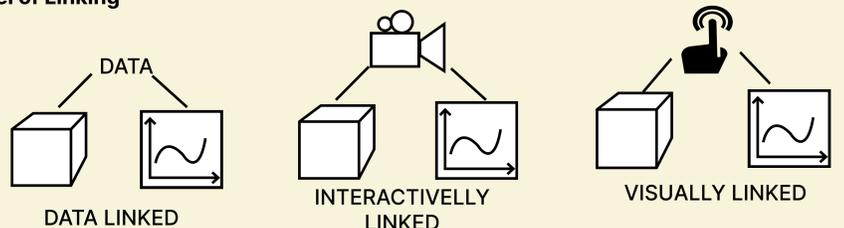
How the 2D and 3D views are placed on the display environment?



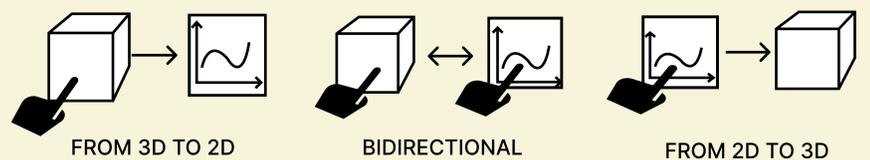
LINKING RELATIONSHIP

What kind of user interactions that the visualization system supports for data selection and navigation?

Level of Linking

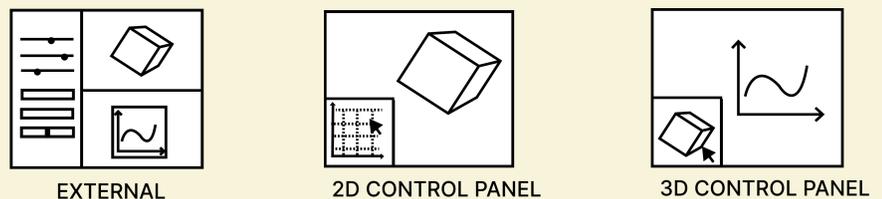


Linking Direction



CONTROL PANEL

How the the 2D and 3D views are controlled?



Reference:

- [1] J. C. Roberts. Exploratory visualization with multiple linked views. In Exploring Geovisualization, pp. 159-180. Elsevier, Amsterdam, 2005. doi: 10.1016/B978-008044531-1/50426-7
- [2] G. Wills. Linked data views. In Handbook of Data Visualization, pp. 217-241. Springer, Berlin, 2008. doi: 10.1007/978-3-540-33037-0_10
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