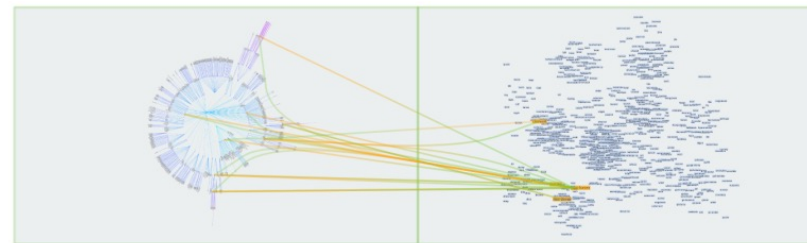
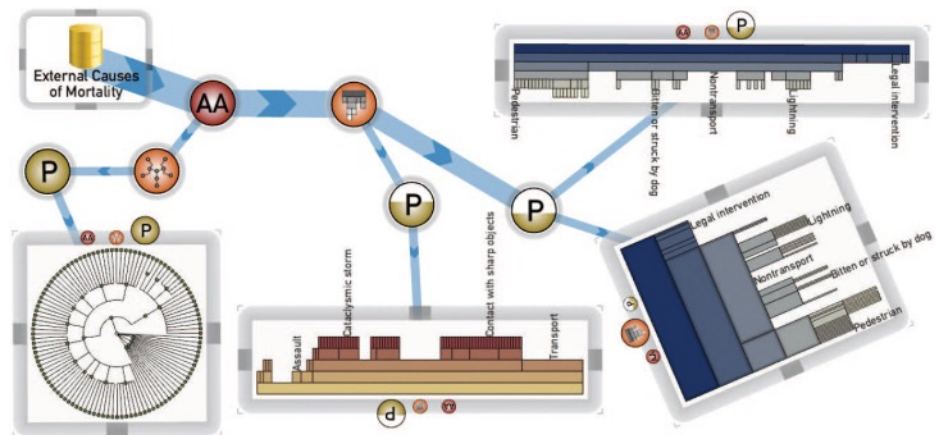


Søren Knudsen and Sheelagh Carpendale

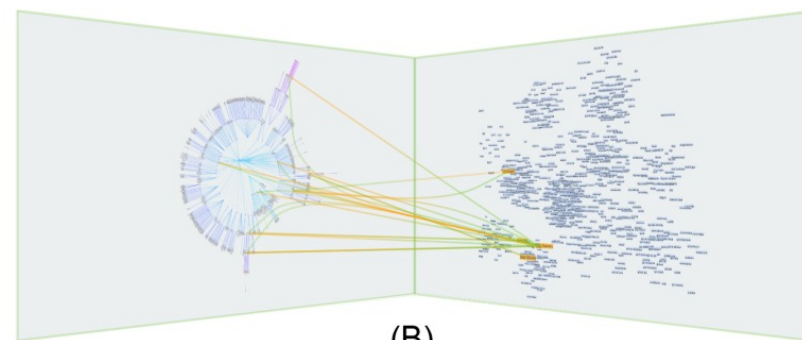
University of Calgary

THE VISUALIZATION VIEW AS A TOOLBOX





(A)



(B)



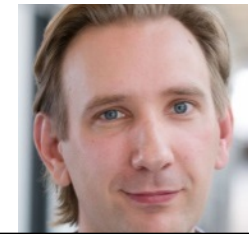
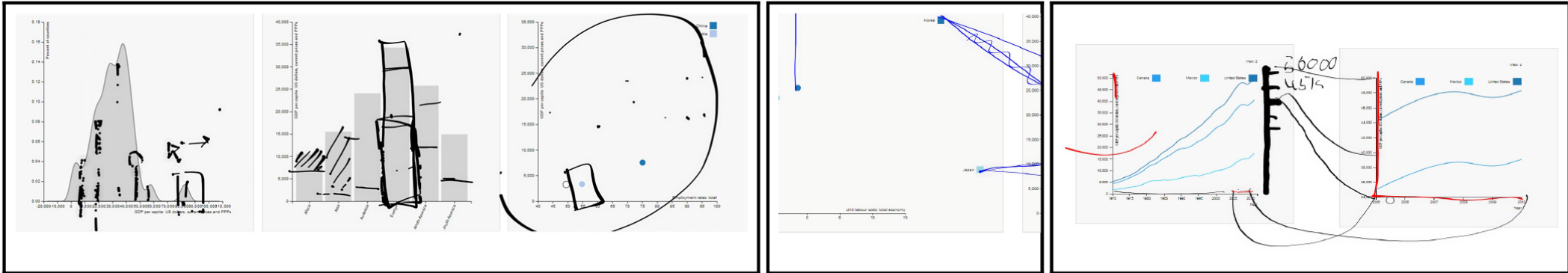
(C)

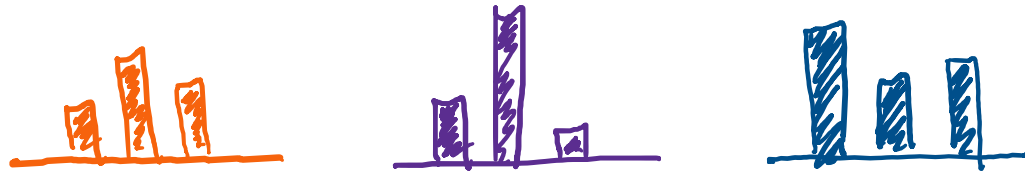


View Relations: An Exploratory Study on Between-View Meta-Visualizations

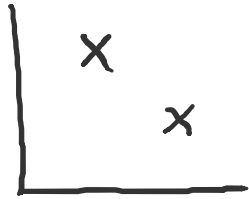
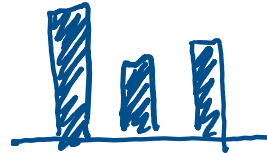
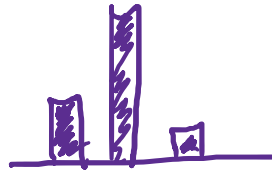
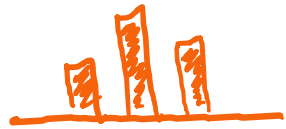
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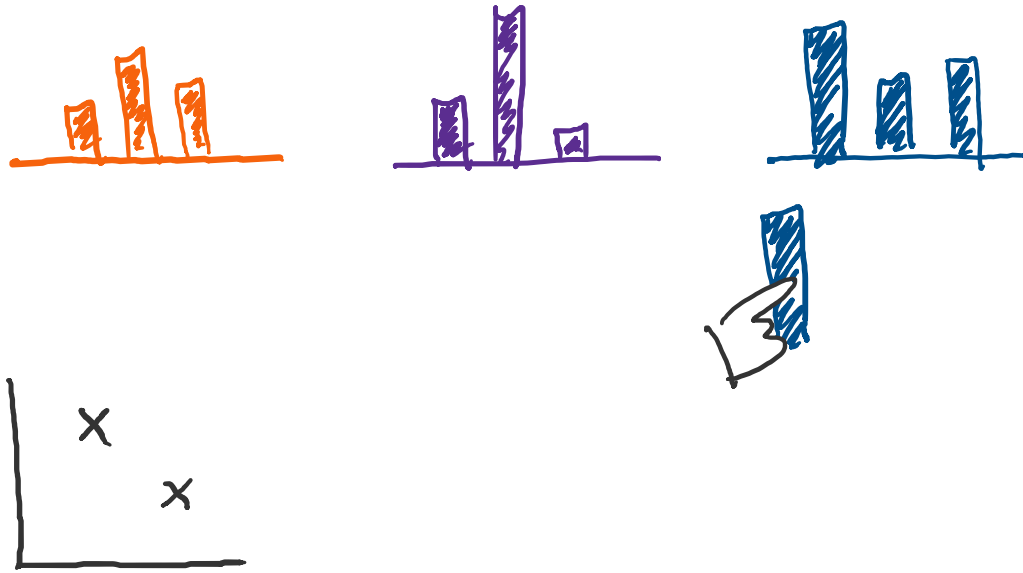




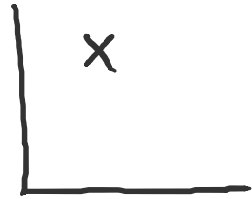
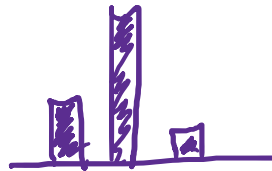
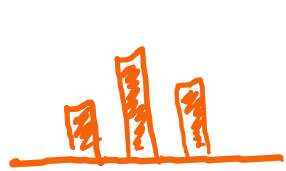
“Our initial inspiration came from observing and interviewing people using a multiple-view system for large displays. In this system, people created many views that they thought would help them in their analysis tasks. For example, a person created three views, one showing a bar chart of patient distributions across hospitals, the two other views showing gender and age distributions, respectively. Working through their analysis, these views were used as filters for other views. For example, a bar in a bar chart represented the amount of admissions for a given hospital. This bar could be dragged onto other views to filter based on that hospital. Likewise, a hospital bar could be dragged onto a view to create many views, each showing the original view, but for a specific ward at the particular hospital. These types of actions from experts, raised the possibilities of thinking of views as toolboxes. If each part of the view, as in the bar in the above example, represents a specific tool, that tool can be used on many other views. In addition, depending on the content of the view it is dragged to, different interaction results are possible. As such, thinking of views as toolboxes, might provide a wide selection of functional aspects, including using components of both the data representation and the visualization structure, to interact with other views.”



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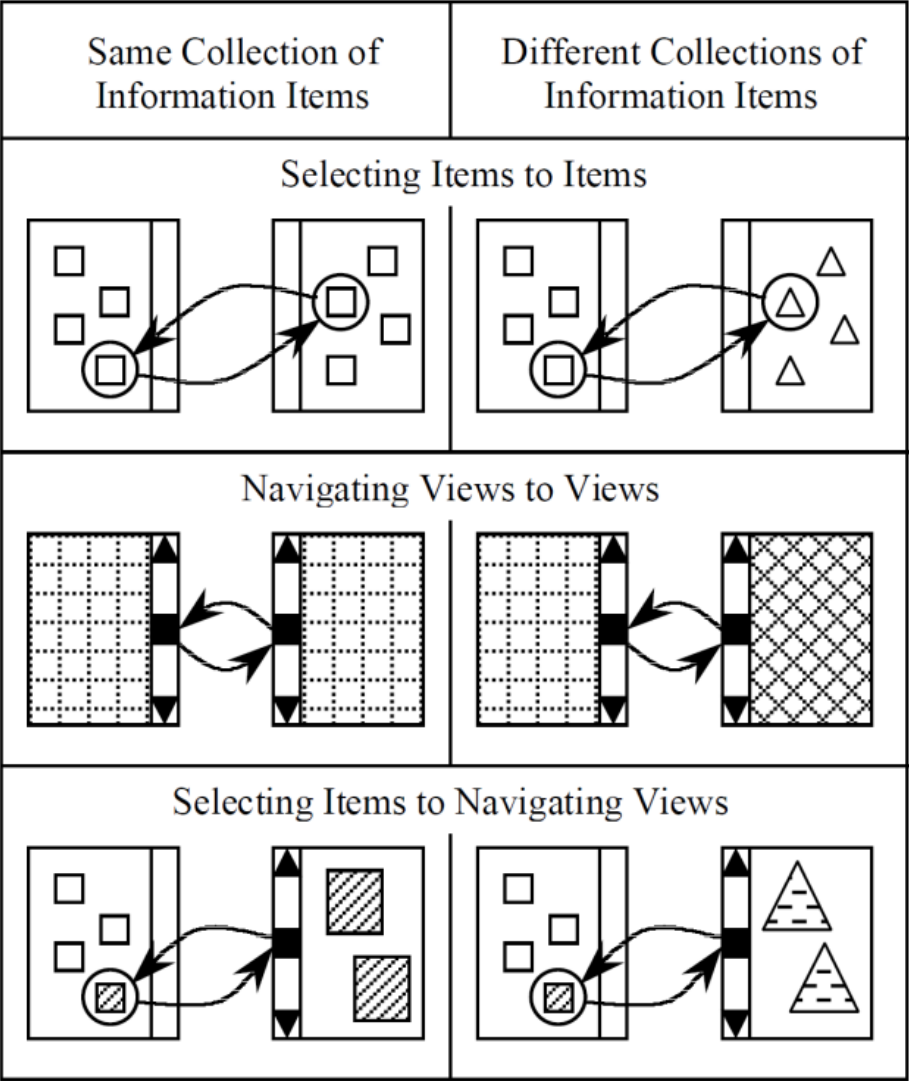
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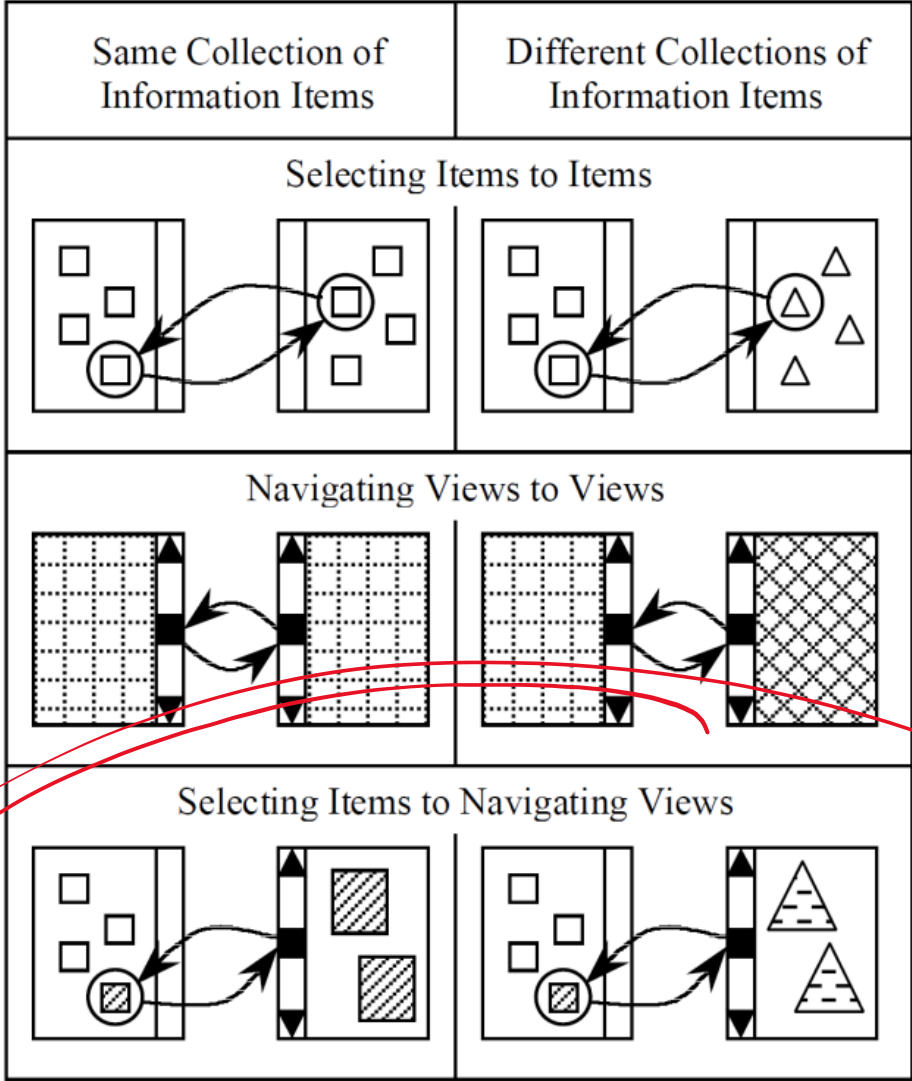
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VIEWS AS TOOLS?

Use data in one view to scroll data space in another view

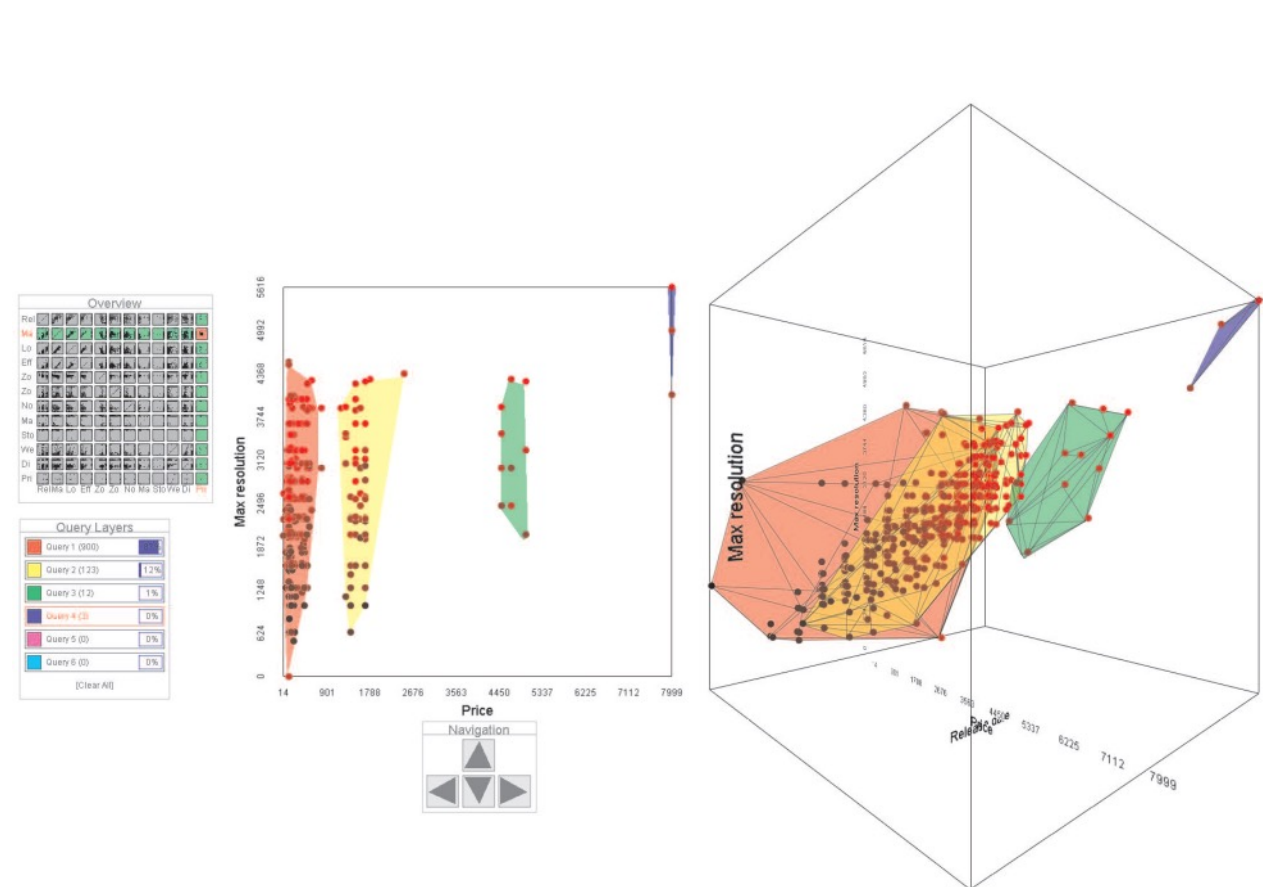


North, 1997. "A Taxonomy of Multiple Window Coordinations."



North, 1997. "A Taxonomy of Multiple Window Coordinations."

Use a scatterplot matrix to select dimensions to see in detail in another view.



Elmqvist, 2008. "Rolling the Dice: Multidimensional Visual Exploration Using Scatterplot Matrix Navigation."

For the concept of tools to be interesting, we think that a view should be useable for more than a single thing.

VIEWS AS TOOLBOXES?

1

A view should offer more than a single interaction technique for interacting with other views.

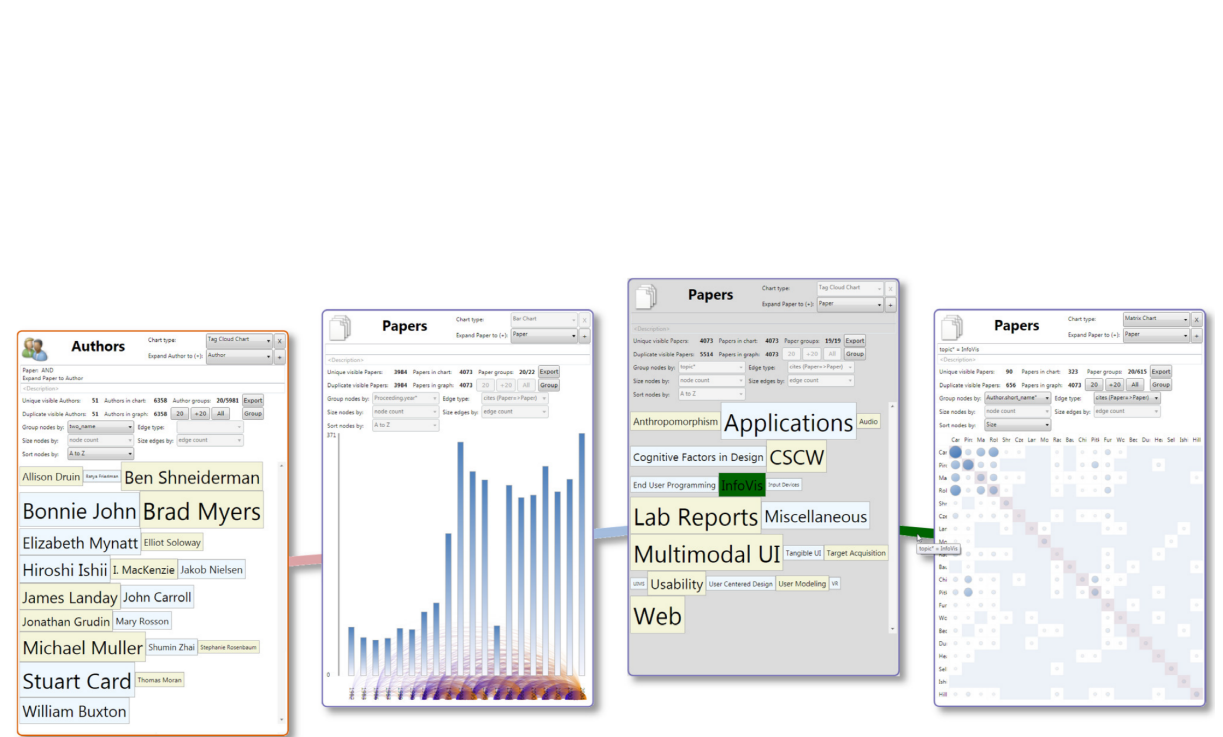
1

A view should offer more than a single interaction technique for interacting with other views.

2

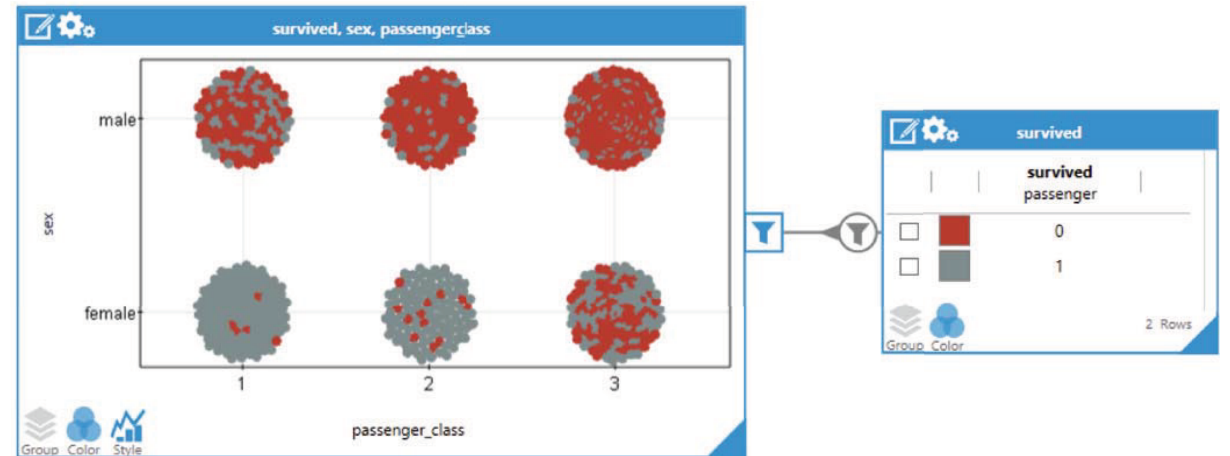
These interaction techniques should target other individual views.

Add the elements of one views' data set to another view



Dunne, 2012. "GraphTrail: Analyzing Large Multivariate, Heterogeneous Networks While Supporting Exploration History."

Design concept of “Derivable Visualizations” led to interesting design choices, such as directly considering legends as views.



Zraggen, 2014. “PanoramicData: Data Analysis through Pen and Touch.”

**DESIGNING TO LET PEOPLE
CREATE TOOL OR TOOLBOX VIEWS**

- Can we go beyond using data to interact with another view, through interacting with data points, thus using data points as tools?
- Can data points be dragged to many parts of a view, to obtain many different results?
- Can automation help to provide sensible results for a range of views and types of data and if so, then how do we strike a balance between user control and automation?

- Should different views offer similar or different functions?
- Can we use the notion of toolbox views to create varied types of views, that are more suitable for use as toolbox views?
- What makes a view useful as a tool?
- What other types of views might toolbox views operate on?

WORKSHOP GOALS

- While the notion of toolbox views seems interesting, it is limited in comparison to some of the possibilities afforded by reification, polymorphism, and reuse.
- Can we extend the ideas we presented to afford more openness?
- Can some of our ideas be applied outside of visualisation and visualization views?



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