Assignment 3

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Part 1 Interaction

• What is the difference between Overview+Details and Focus+Context? Try to describe the pros and cons of each approach.

- Overview + Details means that we use two separate views. One view shows the whole dataset (overview), and another view shows detailed information. The advantage is that there is no distortion and both views are clear. The disadvantage is that the user must mentally connect the overview and the detailed view, which increases cognitive load.
- Focus + Context means that we use one integrated view. The surrounding context remains visible, but the focus area is emphasized in the view. This supports continuous navigation and exploration. The advantage is that the context is always visible, putting the focus in a context and not just kept standalone. The disadvantage is that it often uses distortion and can become visually complex.

• What is the difference between the Graphic Fish-eye and Logic Fish-eye views? Can they be combined? If yes, how (give an example)?

Graphic Fish-eye and Logic Fish-eye are both Focus+Context techniques, but they work differently.

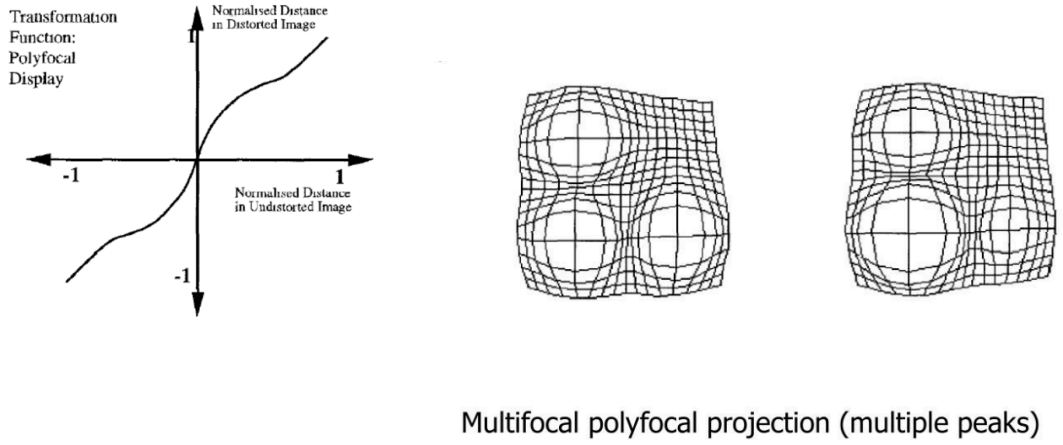
Graphic Fish-eye distorts the geometry of the visualization. Objects near the focus become larger, and objects far away become compressed. Logic Fish-eye does not distort geometry. Instead, it changes the level of detail based on importance, for example expanding important nodes in a tree.

They can be combined. For example, in a network visualization we can first use a logical importance measure to select important nodes (Logic Fish eye) and then visually enlarge them using geometric distortion (Graphic Fish-eye).

• What are Polyfocal Displays? What are they used for? Draw the transformation function for Polyfocal Displays.

Polyfocal Displays are visualizations with multiple focus areas. Instead of having only one focus region, several areas are magnified at the same time. They are used when the user wants to compare different regions of the data simultaneously. The transformation function

of Polyfocal Displays has multiple peaks, meaning that several areas are enlarged while the rest of the space is compressed smoothly.



Multifocal polyfocal projection (multiple peaks)

• Describe the idea behind Magic Lenses. Can you provide an example of a magic lens not discussed in the lectures together with a short description?

Magic Lenses are interactive filter layers that can be moved over a visualization. They modify what is shown underneath without changing the base visualization. A Magic Lens can highlight, filter, or transform data locally.

An example of a Magic Lens ; When placed over a visualization, it could show confidence intervals or highlight uncertain data values while leaving the rest unchanged. This helps users understand data quality without modifying the whole visualization.