

# Geographic Data Science

(Geo)visualisation

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# Visualization

*“Data graphics **visually display measured quantities** by means of the **combined use** of points, lines, a coordinate system, numbers, symbols, words, shading, and color.”*

*The Visual Display of Quantitative Information. Edward R. Tufte.*

121 84 93 90 87 76 84 86 82 100 89 84 73 64 79 72 55 66 68 62 63 72 74 67 65 67 64 68 75 72 67 74 74 80 73 77 90 73  
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[Source]

# Visualization

- By encoding information visually, they allow to present large amounts of numbers in a meaningful way.
- If well made, visualizations provide leads into the processes underlying the graphic.

*The Visual Display of Quantitative Information.* Edward R. Tufte.

# Geovisualization

# Tufte (1983)

*“The most extensive data maps [...] place millions of bits of information on a single page before our eyes. No other method for the display of statistical information is so powerful”*

# MacEachren (1994)

*“Geographic visualization can be defined as the use of concrete visual representations –whether on paper or through computer displays or other media—to **make spatial contexts and problems visible**, so as to engage the most powerful **human information processing** abilities, those associated with vision.”*



# GeoVisualization

- Not to replace the human *in the loop*, but to augment her/him.
- Augmentation through engaging the **pattern recognition** capabilities that our brain inherently has.
- Combines cartography, infovis and statistics

# A map for everyone

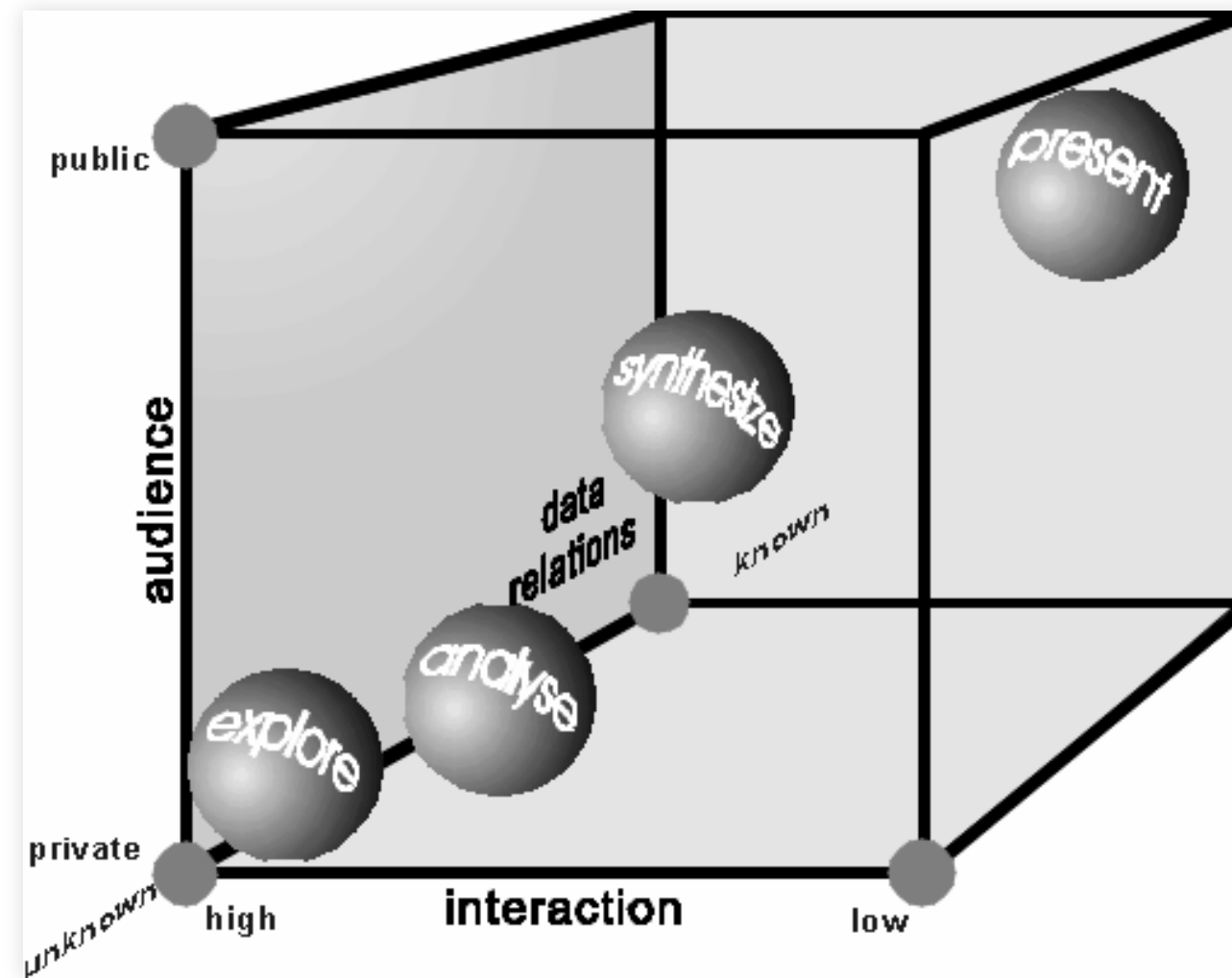
Maps can fulfill several needs, looking very different depending on the end-goal

MacEachren & Kraak (1997) identify three main dimensions:

- Knowledge of what is being plotted
- Target audience
- Degree of interactivity

# MacEachren & Kraak (1997)

## map cube





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