

# Bertin's Semiology of Graphics

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## Rationale

Bertin's Semiology of Graphics has a one to one correspondence with more standard terms in statistical learning.

Informational invariant - this is more commonly called the dependent or target variable.

Information components - these are more commonly called the independent variables or predictors.

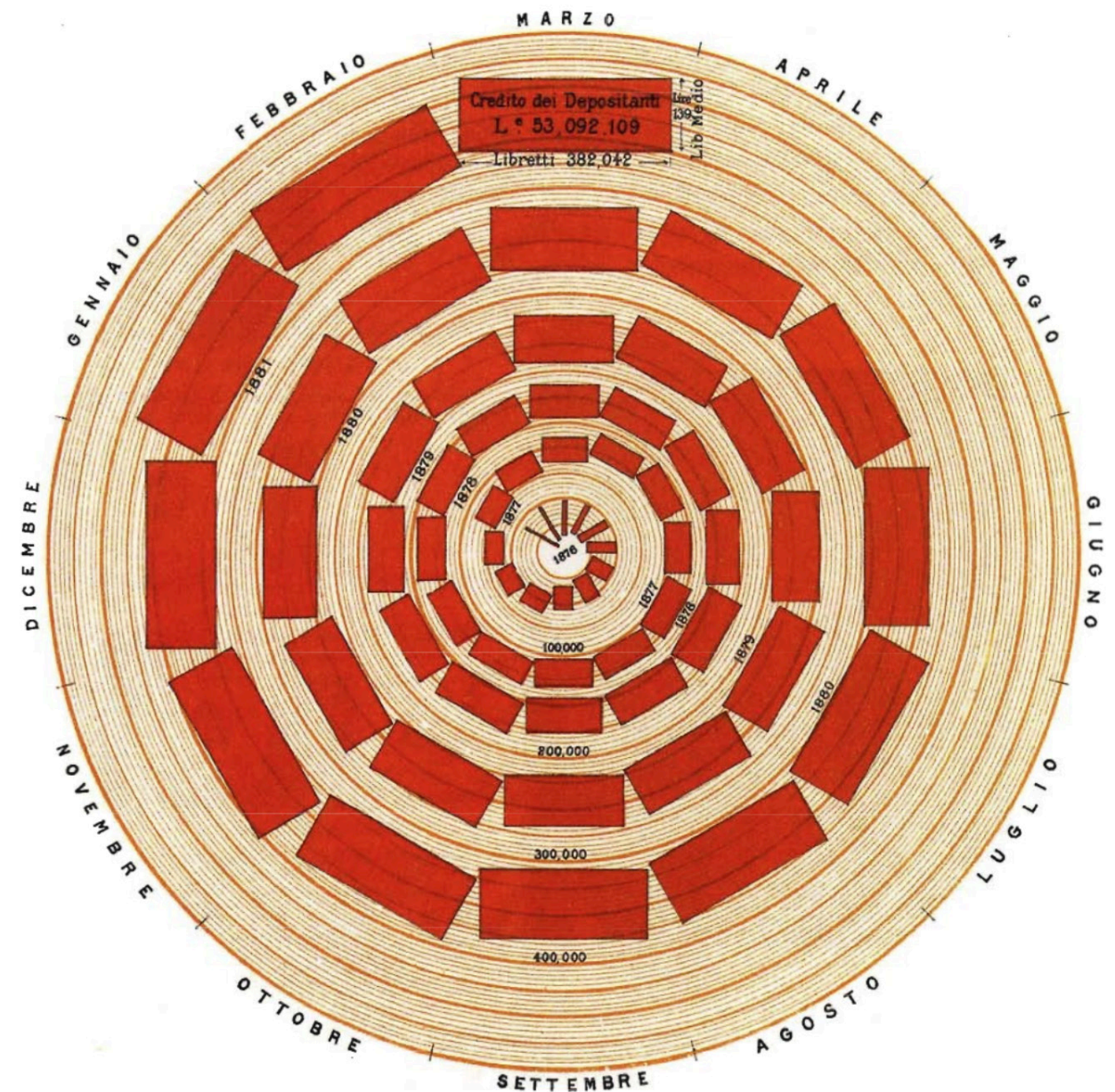
Levels of Organization - These are just nominal, ordinal and rational data types.

Perceptual Tasks -The four elementary perceptual tasks are: associative, selective, ordered, and quantitative. Through visual variables he suggests ways of displaying these perceptual tasks with such things as size, value, pattern, color, orientation, and shape.

## Evolution of savings deposits into the Italian post office

— The informational invariant (dependent variable) is total savings (real) and information components (independent variables) are number of deposits (int), average deposit (real) and month (nominal).

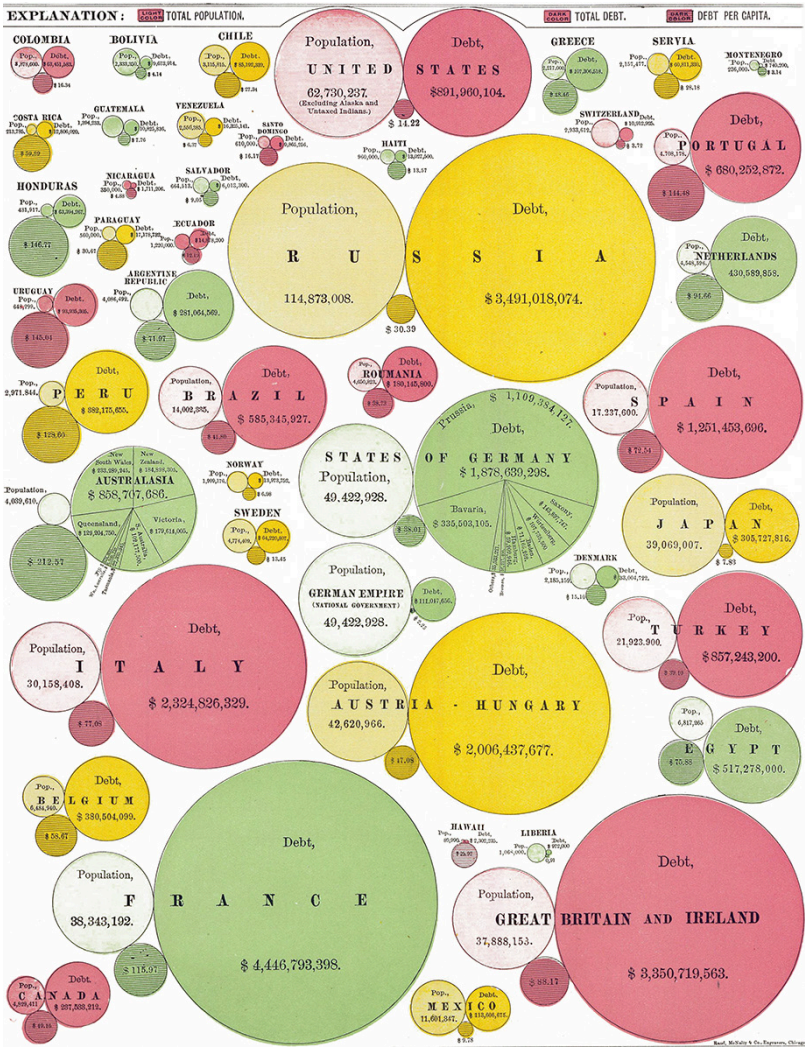
— The elementary perceptual tasks as related with: the information components, the visual variables, and the implantations. We are using a pattern (spiral), color (red and beige), size (area) and have a cyclical decaying ordering.





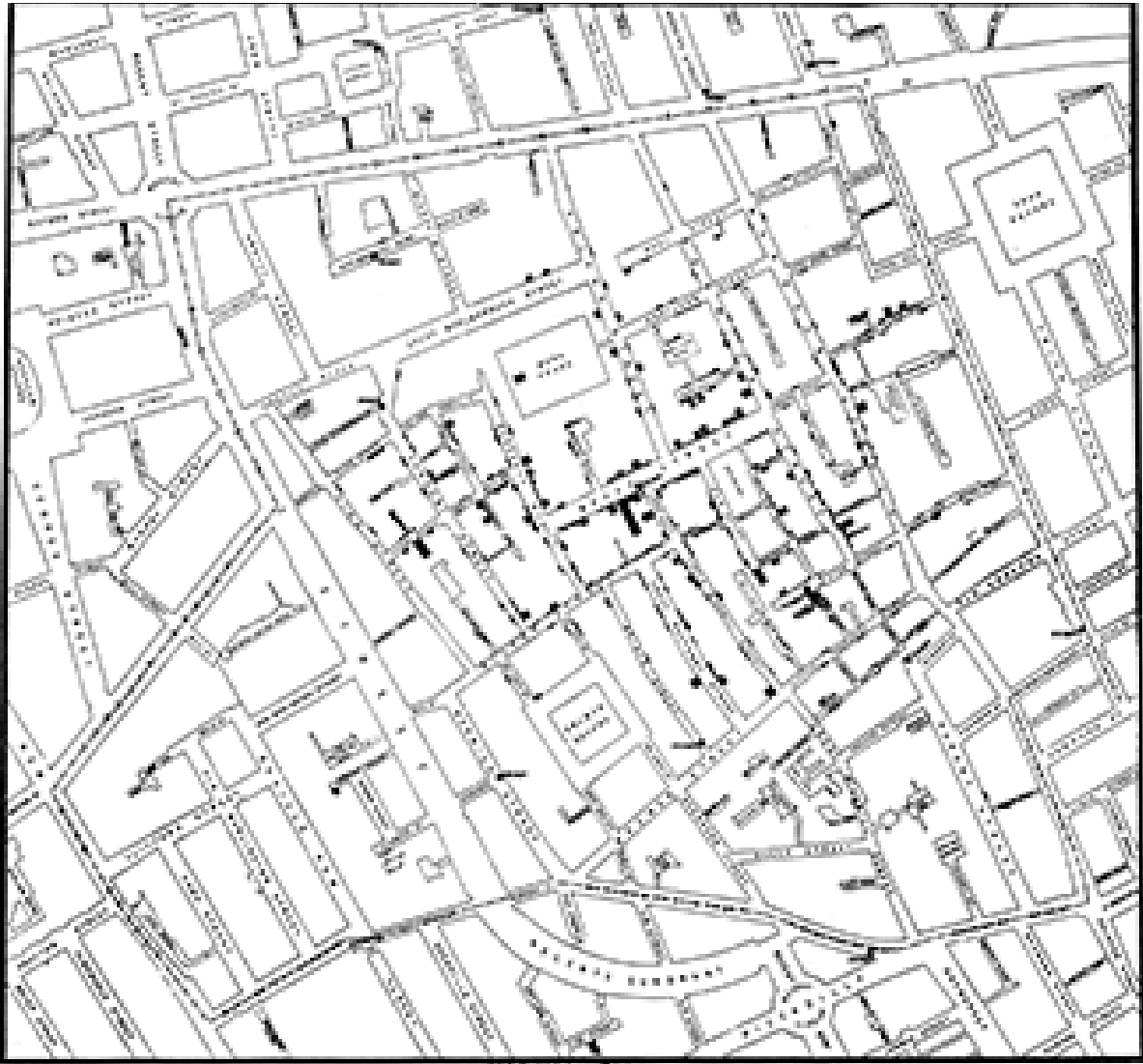
# National debts of foreign countries, compared with the United States

- The informational invariants (dependent variables) are total population (real), total debt (real), and debt per capita (real). and information component (independent variable) is county (nominal).
- The elementary perceptual tasks as related with: the information components, the visual variables, and the implantations. Size is used to reflect total population (real), total debt (real), and debt per capita (real). Color is used as in a map coloring to help seperate the countries. Tone of the color is used to seperate the three informational invariants.



# Cholera cases in London

- The informational invariant (dependent variable) is cholera cases (int) and information components (independent variables) are location x (real) and y (real) on the map.
- The elementary perceptual tasks as related with: the information components, the visual variables, and the implantations is clustering. That is looking for patterns.



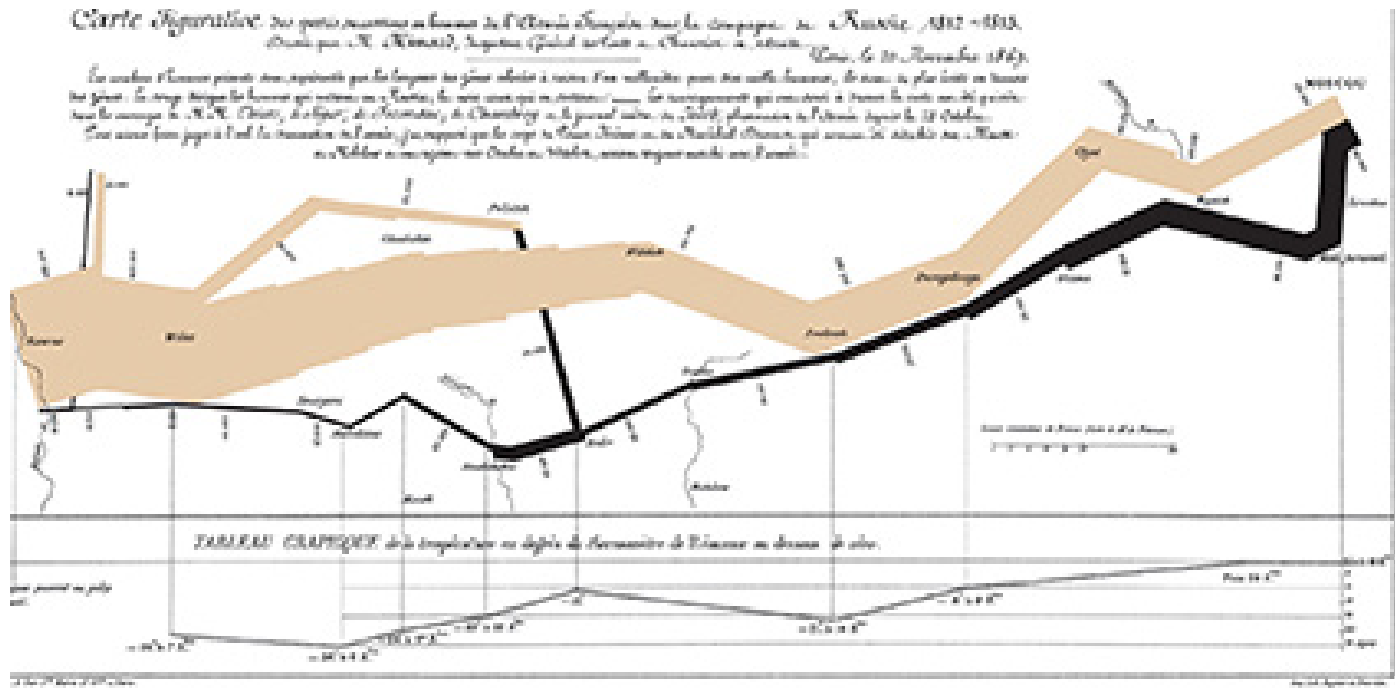
City and rural population

- The informational invariant (dependent variable) is human negros (int) and information component (independent variable) is places stratified by population (ordinal).
- The elementary perceptual tasks as related with: the information components, the visual variables, and the implantations. The length of the line seems to map to the informational invariant (number of negros) and the color is used like a color map to seperate the groups. The top of the chart has the highest population and the bottom the lowest. The line is distorted to allow for large differnces in the informational invariant.



Napoleon's Russian campaign of 1812

- The informational invariant (dependent variable) is the size of Napoleon's army (int) and information components (independent variables) are advance (green)/retreat (gold) (nominal), day of the year (date), temperature (int), latitude (x, real) and longitude (y, real)
- The elementary perceptual tasks as related with: the information components, the visual variables, and the implantations are the ordering by day of the year, the width of the line corresponding with the informational invariant, another ordinal temperature line. The temperature line does not use color to indicate the freezing weather conditions of the Russian winter. The latitude and longitude indicate the direction of travel; and location relative to specific dates. The arrows coming off the main bar also show where smaller forces left the main army and later rejoined it.





# The Histomap: Four Thousand Years of World History

—The informational invariant (dependent variable) is relative power (real) viewed as a zero-sum game and information components (independent variables) are time (date) and a set of various “peoples” (nominal).

—The elementary perceptual tasks as related with: the information components, the visual variables, and the implantations are time (the y-axis), the relative power (the x-axis), the color is used like a color map to disinguish “peoples”.

