Illustrative Data Graphics in the 18th–19th Century Style

AVIZ — informatiques mathématiques Inria

Benjamin Bach, Pierre Dragicevic, Samuel Huron, Petra Isenberg, Yvonne Jansen, Charles Perin, Andre Spritzer, Romain Vuillemot, Wesley Willett, and Tobias Isenberg

Download the poster and more information:

http://tinyurl.com/historicaldatagraphics

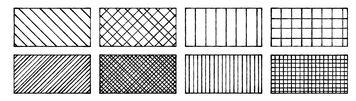
The well-known historic hand-made visualizations that were created in the 18th and 19th centuries by artists such as Charles Joseph Minard, William Playfair, Joseph Priestley, and Florence Nightingale (as seen below) have long been a great source of inspiration for contemporary visualization work. We present a case study in which we attempted to imitate the graphical style of these historic infographics. Our goal was to emulate this hand-crafted style and aesthetic and apply it to a modern personal data graphic based on the personal and research life of our team leader.

Techniques

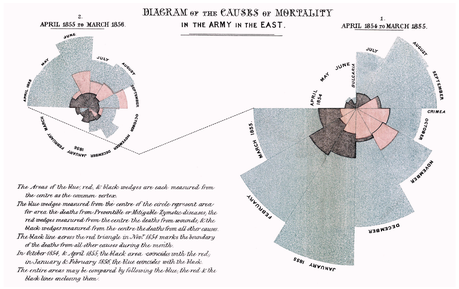
To emulate pen strokes we implemented an inked line renderer that manipulates the outline of line shapes and varies the width over the course of a line to simulate variations in pressure and stroke speed.

HIJKLM

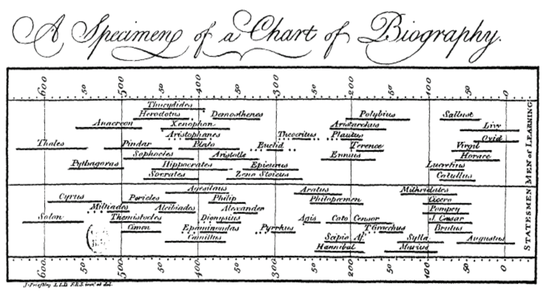
Our inking technique was inspired by the font AntiquarianScribe, which imitates the writing style used by the 18th century cartographer Henri Abraham Chatelain.



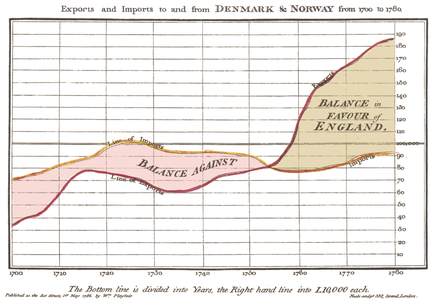
Examples of hatching styles generated using our line inking class. Each vertical pair uses the same hatching pattern but different parameters for line spacing and variation between strokes.



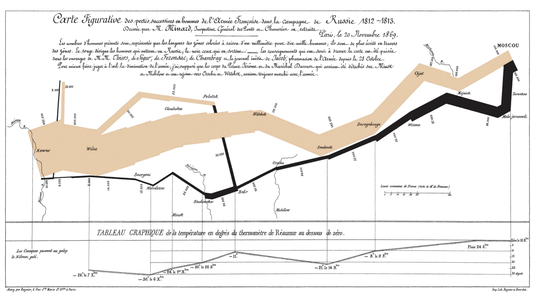
Nightingale's visualization of causes of mortality in the Army in the East, published 1858. [Public domain.]



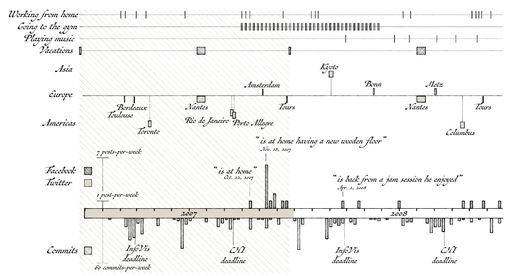
Priestly's visualization of historical birth and death dates, published in 1765. [Public domain.]



Playfair's visualization of 18th century British imports and exports. [Public domain.]

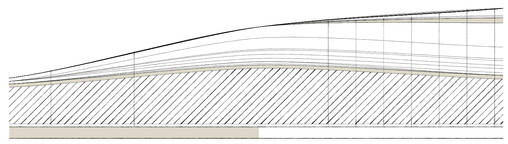


Minard's visualization of Napoleon's 1812 Russian campaign, published in 1869. [Public domain.]

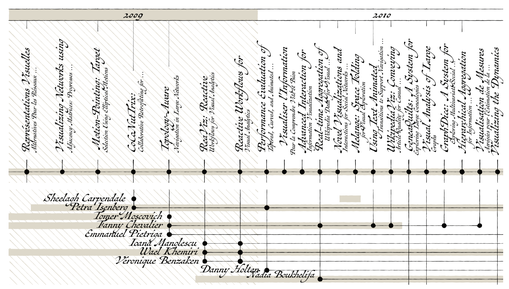


Visualizations

The top three visualizations represent regular activities, parsed from a shared group calendar; voyages undertaken, aggregated from several calendars; as well as two different kinds of data "commits" – postings to social media sites as well as commits of code to our group's shared software versioning system.



A citation and collaboration graph occupies the center of the poster. Citations are stacked based on the publications' temporal order. The streams themselves are rendered as connected cubic Bezier curves to indicate the gradual and non-linear accumulation of citations. The stack of paper citations from every other year is rendered in beige, which makes it possible to track each year's worth of publications over time.



Co-authorship relationships are listed below the paper titles in a connected grid visualization. Each column corresponds to a paper, while each row corresponds to a co-author. Authors are ordered based on the date of their first collaboration. Black dots connect authors to their publications, vertical lines connect all authors of a given paper with its title on top, and horizontal lines connect all publications of the same co-author over time. Beige bars indicate the periods when collaborators were members of the AVIZ research team.

Hatched portraits from the poster (left and center) are generated from simple black and white drawings generated by hand. The center portrait was derived from the drawing to the right.