Taxonomy

By Laura Wing

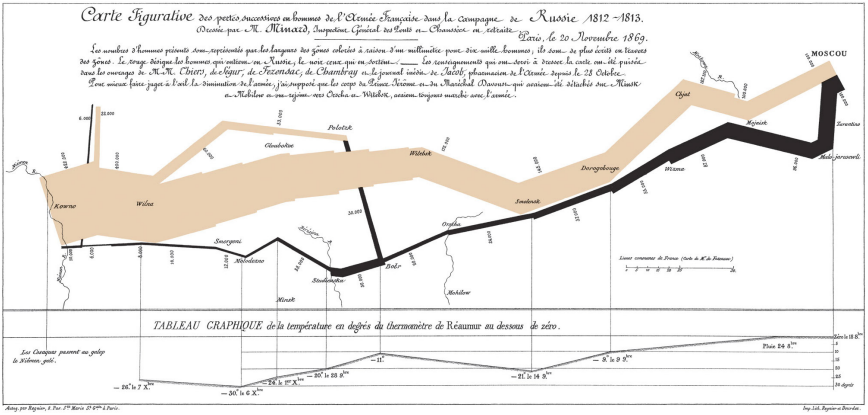
"A valuable characteristic of objective human knowledge (objective in the sense that it exists in the public domain) is that macrocosmic systems which are only fully comprehended by a few specialists are made known to ordinary citizens by means of microcosmic models."
- John Walker
The London Underground Diagram

"If communism vs. capitalism was the struggle of the 20th century, then control vs. freedom will be the debate of the 21st century. If our question then was how best to control, our question now will be come whether to control. What would a free resource give us that controlled resources don't?
What is the value in avoiding systems of control?"
-Lawrence Lessig
The Architecture of Innovation

I.

In the taxonomy of illustration, the diagram is an empirical artifact. In formal categorization it is considered technical. The conservative visual economy relies on relatively simple delineating symbols to communicate abstract propositions or mental processes. Still, its definitive structures and revelatory capabilities exhibit a kind of emotive persuasion producing a kind of loyalty and gratitude from its viewer. Consider the diagrammatic form of the data visualization. The petabytes of data currently being generated across social, economic, and institutional platforms has information cultures clamoring for methods to distill insight from the logarithmic collections. Data visualizations are 'on the rise' across virtually all print and electronic media, boasting to provide us with 'quick bursts of art and knowledge on the environment, politics, social issues, health, sports, arts and culture.'

Bearing in mind the history of the diagrammatic deployment, let us first consider a definitive example of mastery from 1869. Still lauded today as one of the most exemplary distillations of historical information, *Carte figurative des pertes successives en hommes de l'Armée Française*



"Minard Map.png" image courtesy of Wikipedia.

dans la campagne de Russie 1812-1813 (figure 1) was created by Charles Joseph Minard on the subject of the French Invasion of Russia in 1812. The graphic displays the following array of complex systems within a single image:
(figure 1)

(1) Geography – The graphical depictions are set within geographical reference to rivers, cities, and battles in addition to the latitudinal and longitudinal co-ordinates.
(2) Path – The path of the army is drawn directly into the map and is color coded by direction: gold heading into Russia and black retreating out.
(3) Counts – The number of soldiers is represented by the width of the path, from 480,000 at the start to 10,000 at the end.
(4) Temperature – For the retreat only, the air temperature is given at select points along the journey, represented by a line chart at the bottom, with the lines linking the two charts.
(5) Time – Time runs two ways: left to right for the invasion and right to left as the army retreats; the line chart on the bottom gives dates at several locations.

A narrative that would require thousands of words to achieve the same clarity is presented on a map of relational aspects. The graphic presents a more widely available and distributable form of knowledge. Being in the form of an image, it engages a wider audience, including those who may not be as inclined to read a historical account of Napoleon's Army. In this instance, the graphical form illustrates nearly flawless communication while providing greater access to the knowledge presented.

The design of such an object requires critical insight and precision; it works with the same clarity. We might say that

"Eric Fischer.jpg" is taken by Eric Fischer.

the nature in which the object is made structures the way it acts. In the instance of web design, exact and refined like language, the code produces fluidity. As the demand for the translation of macrocosmic data continues to increase, it is of critical importance that the application of intentional rigor, such as in Minard's map, be incorporated into contemporary practice.

II.

When the main purpose of diagrams and visualizations is to clarify and engage audience, it is often impractical to avoid a certain level of visual complexity. As the medium continues to be explored, perhaps we can ask questions through the nature of the way it is visualized, incorporating fuzzy edges or alternative ways of articulating spatio-temporal constructions. Consequently, we should also think of certain kinds of data visualizations as visual ways to convey the richness of involvement and feelings of engagement that we experience in our everyday lives rather than simplifications of the world.

The slick veneer of data visualizations not only raise suspicion of journalistic pursuits, they represent a larger epistemological question. When data is treated as fact and makes no reference to the subjective structure through which it is made, the ramifications, now buried below consciousness, can be wielded to dangerous scale. So seduced are we with the sensation of revelation that the object often takes the place of action. The image threatens to neuter and depoliticize knowledge.

In their research in temporal modeling, Johanna Drucker and Bethany Nowviskie postulate ways of making interactive tools for visualizing subjective, inflected, non-homogeneous temporal relations:

We are experimenting with the use of embedded dial interfaces to reveal and

compare cyclical patterns or factors in the temporal compositions users may devise. By wrapping into concentric circles what may, in an initial model, have been figured as linear progressions of events, and by interactively turning and adjusting those embedded dials, our users will be able to experiment with cycles and repetitions in their own data.

Through reconsidering the very nature of the structuring of information, of experimenting with non-linear approaches to the way we conceive of recorded information, we may discover valuable tactics for unraveling the ways to question or disrupt approaches toward universalizing ideologies and the notion of linear human progress. In the manner, the made-ness of the data becomes more apparent. The visual evidence of its limitations may lead to new discovery. John Thackara states, "These opportunities afforded by Big Data are real enough — but they also contain a danger: that we become be so focused on numbers that we lose sight of other opportunities. Consider, for a start, all the things that matter, but which cannot be counted." It may be more effective to approach the problems of unquantifiable information with experiments, rather than from a solutionist perspective. The 596 Acres project is an excellent example of turning the unused resource of vacant lots into a platform to promote community involvement and skill sharing.

Consulting methodologies of other disciplines, we might consider establishing and enforcing citation standards to enriching the depth of interpreted data in order to provide the possibility for further inquiry and research upon viewing the representation. This takes shape in the critical construction of metadata, indexes, or open source code repositories like GitHub. The power is a collective power; the value is built on and strengthened by access. For example, a community of mappers that contribute and maintain data about roads, trails, cafés, and railway stations make OpenStreetMap. The data is 'open' for use. This means that anyone is free to use it for any purpose as long as you credit OpenStreetMap and its contributors. This presents a stark contrast to the economically driven, 'closed' model of Google Maps.

Access can be defined as the systems of functioning and the codified structure of permissions that grant the right or opportunity to participate or use a service. When we look at the question of data and the question of the made artifact we are also looking at the ideals of property. In effect, by deconstructing the object and what it does, we are also examining the systems of control. The objective is then to create persuasive propositions to rupture ideals of permission and access, giving precedents to objects with alternative sets of permissions and non-linear paths. In order to expand the possibilities of design, we must understand what we are doing when we design and execute with intentionality.

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