

# On Social Cartography

Tommaso Venturini

**Public Understanding of Science XX (3)**

**Divining in magma: how to explore controversies with actor-network theory**

Tommaso Venturini

The **cartography** of controversies is a set of techniques to explore and visualize issues. It was developed by Bruno Latour as a didactic version of Actor-Network Theory to train college students in the investigation of contemporary socio-technical debates. The scope and interest of such **cartography**, however, exceeded its didactic origin. Adopted and developed in several universities in Europe and the US, the **cartography** of controversies is today a full research method, though, unfortunately, not as much documented one. To fill this lack of documentation, we draw on our experience as Latour's teaching assistant, to introduce some of the main techniques of the social cartographer toolkit. In particular, in these pages we will focus on explanation, leaving the discussion of visualization tools to a further paper.

**Keywords:** actor-network theory, **cartography** of controversies, observation methods, public understanding of science, representations of science, scientific controversies, studies of science and technology

**1. Warning: the cartography of controversies will not make your life easier**

The **cartography** of controversies is the exercise of crafting devices to observe and describe social debate especially, but not exclusively, around techno-scientific issues. It was initiated by Bruno Latour at the *École des Mines de Paris* some twelve years ago and it is currently taught in several European and American universities. Recently, the **cartography** of controversies has also become the object of the EU-funded consortium MACOSPO (Mapping Controversies on Science for Policy), which gathers together eight European universities and research centers.<sup>1</sup>

Since its introduction, the **cartography** of controversies has sometimes served as an educational version of Actor-Network Theory (ANT). Like ANT, it is a method "to be used, to know, and to practice in the complexity of issues" (Law and Hassard, 1999: 12). Unlike ANT, it avoids conceptual complications and is thereby more accessible to students. With some approximation, we can describe the **cartography** of controversies as the practice of ANT untangled of all theoretical subtleties.<sup>2</sup> As such, the **cartography** of controversies may appeal to those who are intrigued by ANT, but wish to stay clear from conceptual troubles.

At first, the **cartography** of controversies seems to fill one (or two) such expectations. During his lessons, when asked to spell out the instructions of his **cartography**, Bruno Latour answers with a monochord string: "Just look at controversies and tell what you see." Such slick definition is often received with some skepticism and not without reasons. Latour's cartography is nothing more than "observing and describing." It is not just actor-network theory put in plain words, but pretty much any social theory as well as any social methodology. Indeed, as suspect as this may sound, controversies mapping entails no conceptual assumptions and requires no methodological protocols. There are no definitions to learn, no premises to honor, no hypothesis to demonstrate, no procedure to follow, no correlations to establish. Unlike non-human animals released in the wild, students entering cartographic projects report bewilderment and surprise.

Euphoria, however, is not to last long. Despite (or rather because of) its theoretical and methodological minimalism, the **cartography** of controversies is no piece of cake. Far from being a simplified version of ANT, the **cartography** of controversies turns out to be hardly so as theory and practice. What seems to be, in theory, the simplest assignment ends up being, in practice, the hardest exercise. "Just observe and describe controversies"—nothing easier except for two little problems: "just" and "controversies."<sup>3</sup>

Those looking for some ready-to-apply research guidelines will be disappointed. The combination of "just" and "controversies" makes social **cartography** so complex as ANT. That's why we chose to begin this paper with a warning: unlike most research techniques, the **cartography** of controversies has never meant to facilitate investigations, but to make it slower and harder. Between the parentheses of "just" and "controversies," the easiest operations (such as observing and describing) become the most troublesome. Documenting social controversies, we have found to offer other than a long list of difficulties—so long, in fact, that we decided to break it into two sections. In the following pages, we will show how "just" and "controversies" turn the simplest observation into a huge problem. In a further paper, we will focus on how to observe showing how the **cartography** of controversies makes them so really difficult.

To be sure, the distinction we draw between observing and describing is largely artificial. It is just for the sake of clarity that we are going to separate two dimensions which are in fact inseparably entangled. Yet, the distinction is worth maintaining in order not to confuse the basic of applying the complexity of controversies (this article) with the task of ordering the complexity of controversies (next article).

**2. The three meanings of "just"**

When Bruno Latour instructs his students to "just observe" collective life, he doesn't mean "just" as mere emphasis. As often happens in Latour's discourse, the simplest word carries here the greatest meaning. In this case, a simple adverb implies at least three major consequences for the practice of social sciences.

The first consequence of "just" is that, as we said in the introduction, social **cartography** does not require any specific theory or methodology. This claim needs to be explained. "Just observe" does not mean that researchers are forbidden to employ pre-established theories and methodologies. On the contrary, not imposing any specific philosophy or procedure, the **cartography** of controversies invites scholars to use every observation tool at hand, as well as making them without restraint. At least at the beginning of their explorations, cartographers should make any effort to remain as open as possible. Surprise and curiosity should inspire their actions and protocols more than their other way around.<sup>4</sup>

The second consequence of "just" is that researchers cannot pretend to be impartial just because they comply with some theoretical or methodological guideline. According to the

**cartography** of controversies, research perspectives are never unbiased. Some viewpoints may offer a wider or clearer perspective on social landscapes, but no observation can escape its origin. Objectivity can be pursued only by multiplying the points of observation. The more numerous and partial are the perspectives from which a phenomenon is considered, the more objective and impartial will be its observation.<sup>5</sup> That's why the **cartography** of controversies refuses to engage with any single philosophy or protocol and encourages instead theoretical and methodological promiscuity.

The third consequence of "just" is that researchers are obliged to reconsider their attitude toward their subjects of study. The **cartography** of controversies entails the idea that participants in social phenomena may be as informed as investigators. After all, actors are constantly immersed in the issues that scholars contemplate for a limited time and from an external viewpoint. Neglecting actors' observations and ideas just because they are not based on scientific theory or methodology is arrogant at best.<sup>6</sup> Social cartographers must have the greatest respect for the actors they observe. That's why it should be humble enough to recognize that when it comes to religion, there are no greater experts than the believers themselves; that when it comes to art, no one knows more than artists, critics, merchants, museum directors; that when it comes to disease, doctors, caregivers, patients and microbes are far more experienced than sociologists.

Let's recapitulate the three consequences of "just" as they constitute the three commitments of observation according to the **cartography** of controversies:

- 1) you shall not restrain your observation to any single theory or methodology;
- 2) you shall observe from as many viewpoints as possible;
- 3) you shall listen to actors' voices more than to your own presumptions.

Being in mind the three meanings of "just" should also prevent scholars from misunderstanding Latour's recommendations: "just observe" has nothing to do with the myth of unmediated observation. Despite of the pretensions of concepts and protocols, observation does not get any easier. On the contrary, it opens us all sorts of interference and imposition. Far from being a clear substance distilled from collective chaos, scientific knowledge is the result of an arduous contamination as possible.<sup>7</sup> Such is the lesson of "just" observation devices are the more valuable, the more they let those who are observed interfere with those who observe.<sup>8</sup>

Readers should begin to grasp why the conceptual and procedural minimalism of the **cartography** of controversies will not make their life easier. If Latour gives "just" to "observe", it was to prevent students from reducing investigation to single theory or methodology. In the **cartography** of controversies, all concepts and all protocols deserve consideration, especially if they come from actors themselves. All theories declined, observation is compelled to be as rich and complex as its subjects.

**3. What's in a controversy?**

Controversies are certainly and by far the most complex phenomena to be observed in collective life. In Macropol documentation, controversies are defined as such:

The word "controversy" refers here to every bit of science and technology which is not yet established, closed or "black boxed", we use it as a general term to describe shared uncertainty. (Macropol, 2007: 6, emphasis in original)

Venturini, T. (2008)  
Piccola Introduzione Alla Cartografia Delle Controversie  
*Etnografia e Ricerca Qualitativa*

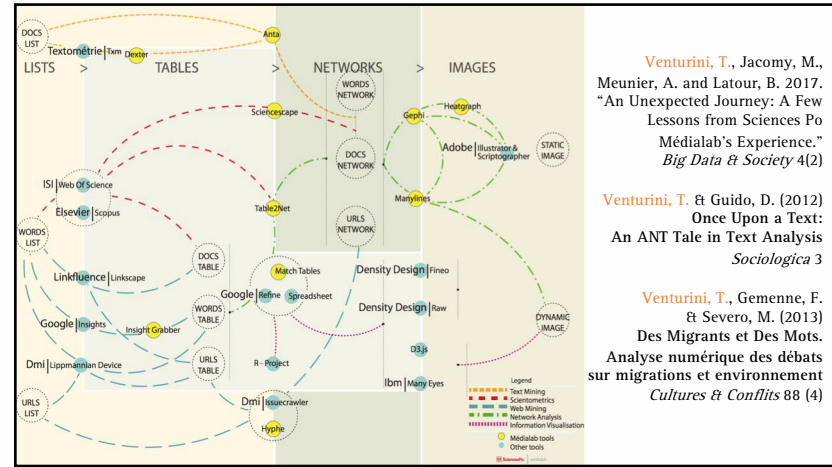
Venturini, T. (2010)  
Divining in Magma: How to Explore Controversies with Actor-Network Theory  
*Public Understanding of Science* 19(3)

Venturini, T. (2012)  
Building on Faults: How to Represent Controversies with Digital Methods  
*Public Understanding of Science* 21(7)

Venturini, T. & Munk, A. (forthcoming)  
*Controversy Mapping A Field Guide through Actor-Network Theory and Digital Methods*

Controversy mapping (or social cartography) is an ensemble of methods to [1] explore, [2] represent and [3] contribute to public sociotechnical debates through digital quali-quantitative methods

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**médialab Tools**  
Tools we develop, and tools we use

**Hyphe: web corpus builder & links crawler**  
Hyphe is a web corpus builder that facilitates a distributed and parallel crawling for the 2010-2015. The crawler Hyphe is available for the 2010-2015. The crawler Hyphe is available for the 2010-2015.

**Manylines**  
Manylines is a tool for network analysis. It is a tool for network analysis. It is a tool for network analysis.

**ScienceScope**  
ScienceScope is a tool for network analysis. It is a tool for network analysis. It is a tool for network analysis.

**Table 2 Net**  
Table 2 Net is a tool for network analysis. It is a tool for network analysis. It is a tool for network analysis.

**Khartec**  
Khartec is a tool for network analysis. It is a tool for network analysis. It is a tool for network analysis.

**Catwalk**  
Catwalk is a tool for network analysis. It is a tool for network analysis. It is a tool for network analysis.

**Hyphe Browser**  
Hyphe Browser is a tool for network analysis. It is a tool for network analysis. It is a tool for network analysis.

**Google Bookmarks**  
Google Bookmarks is a tool for network analysis. It is a tool for network analysis. It is a tool for network analysis.

**Advanced tools for developers**  
sigma.js  
arbo.js  
Sandcrawler

**Other uncontinued projects**  
Heelighigh  
ANTa, actor-netw analyzer  
ZUP  
Drive-ic  
Hantcrawler  
Issue 2  
Hantcrawler

**Tools from others we use & like**  
Gephi  
Dm1 tools  
Flow  
GorTest

**Usage**  
Installation  
1) Node.js  
2) Couchbase  
3) Application

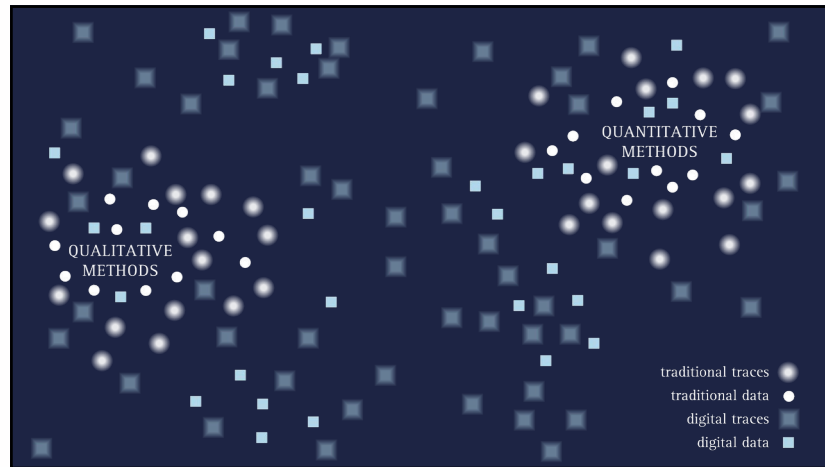
**5 the 5 steps workflow**  
1. ...  
2. ...  
3. ...  
4. ...  
5. ...

tools.medialab.sciences-po.fr

Controversy mapping (or social cartography) is an ensemble of methods to [1] explore, [2] represent and [3] contribute to public sociotechnical debates through digital quali-quantitative methods

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- [1] Explore  
(observe and describe collective associations)
- [2] Represent  
(allowing the consideration of heterogeneous elements)
- [3] Contribute  
(keeping in mind the political affordances of maps)

# [1] Explore

P: I have no patience for context, no. A frame makes a picture look nicer, it may direct the gaze better, increase the value, but it doesn't add anything to the picture. The frame, or the context, is precisely what makes no difference to the data, what is common knowledge about it. If I were you I would abstain from frameworks altogether. **Just describe.**

S: 'Just describe'. Sorry to ask, but is this not terribly naïve? Is this not exactly the sort of empiricism, or realism, that we have been warned against? I thought your argument was more sophisticated than that.

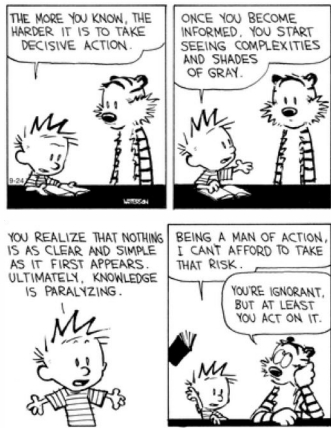
P: Because you think description is easy? You must be confusing it, I guess, with strings of clichés. **For every hundred books of commentaries, arguments, glosses, there is only one of description. To describe, to be attentive to the concrete states of affairs, to find the uniquely adequate account of a given situation—I have, myself, always found this incredibly demanding.** Ever heard of Harold Garfinkel

Latour, Bruno. 2003. "On Using ANT for Studying Information Systems: A (Somewhat) Socratic Dialogue." In *The Social Study of Information and Communication Study*, edited by C. Avgerou, C. Ciborra, and F.F. Land, 62–76. Oxford: University Press.

Controversies  
as natural and large-scale  
breaching experiment

“Procedurally it is my preference to start with familiar scenes and ask what can be done to make trouble ... to produce disorganized interaction should tell us something about how the structures of everyday activities are ordinarily and routinely produced and maintained” (p. 37)

Harold Garfinkel, 1967, *Studies in ethnomethodology*.



“My husband and I were watching television. My husband remarked that he was tired. I asked, ‘How are you tired? Physically, mentally, or just bored?’

(S) I don't know, I guess physically, mainly

(E) You mean that your muscles ache or your bones?

(S) I guess so. Don't be so technical. (After more watching)

(S) All these old movies have the same kind of old iron bed-stead in them

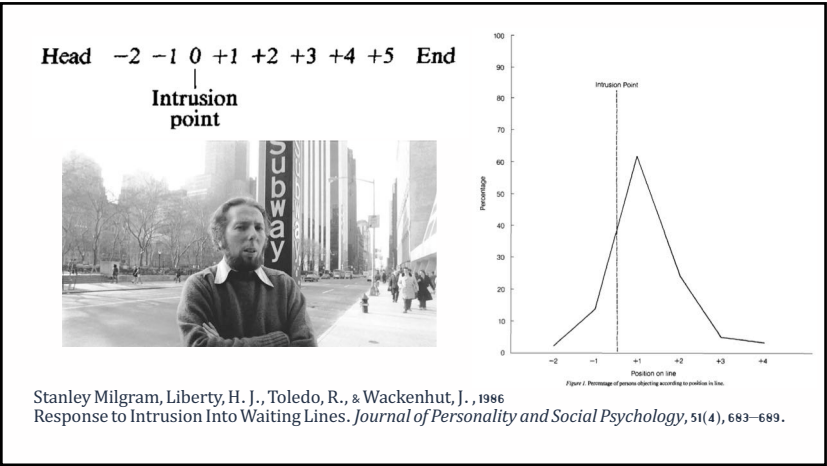
(E) What do you mean? Do you mean all old movies, or some of them, or just the ones you have seen?

(S) What's the matter with you? You know what I mean

(E) I wish you would be more specific

(S) You know what I mean! Drop dead” (p. 43)

Harold Garfinkel, 1967, *Studies in ethnomethodology*.





CO2s scientometric landscape (1995-2000)

Sortir du nucléaire ?

**Tirez la prise de l'immigration, pas celle de l'électricité !**

**Votez NON**  
le 27 novembre

politiquesdelaterre.fr

UDC | UDC - Pas de sortie du nucléaire sans solution concrètes.  
Devenez membre !  
www.udc-gp.ch

Venturini, T., & Latour, B. (2010). "The Social Fabric: Digital Traces and Quali-Quantitative Methods" In *Proceedings of Future en Seine 2009*

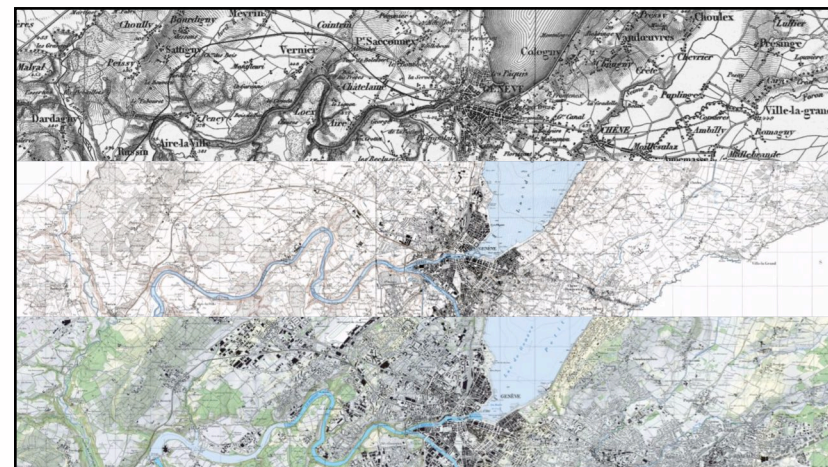
Latour, B., Jensen, P., Venturini, T., Grauwin, S. & Boullier, D. (2012). "The Whole Is Always Smaller than Its Parts": a Digital Test of Gabriel Tardes' Monads *British Journal of Sociology* 63(4)

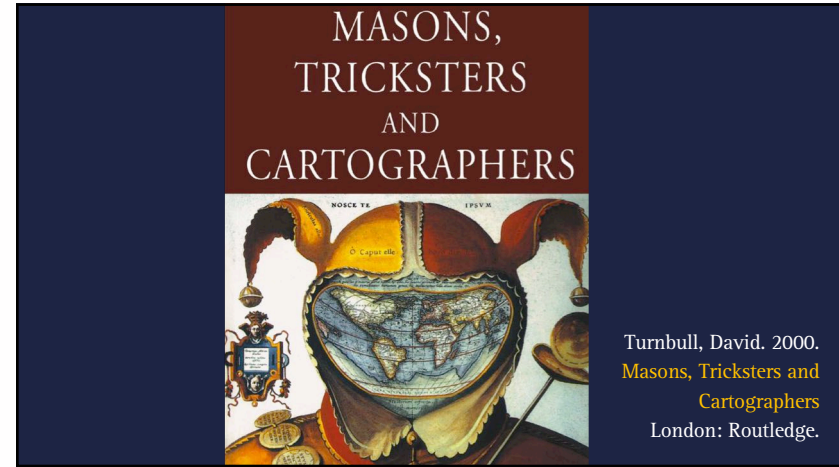
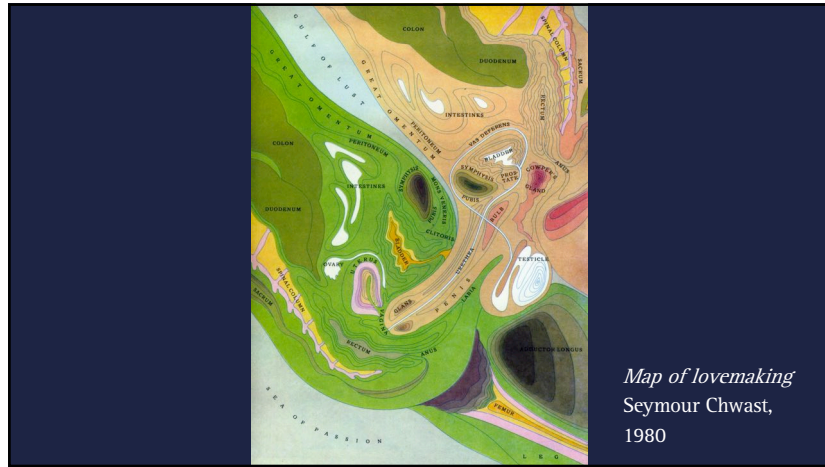
Venturini, T. (2012). "Great Expectations: Méthodes Quali-Quantitative et Analyse Des Réseaux Sociaux" In *L'Ère Post-Media*, Fourmentraux, J.P. (ed.). Hermann.

Venturini, T., Jensen, P. & Latour, B. (2015). Fill in the Gap: A New Alliance for Social and Natural Sciences *Journal of Artificial Societies and Social Simulation* 18(2):11.

Venturini, T., Cardon, D. & Cointet, J.P. (2015). Méthodes Digitales: Approches Quali/quant Des Données Numériques - Curation and Presentation of the Special Issue. *Réseaux* 188.

[2] Represent





*Ceci n'est pas une pipe.*

*This is not a social network.*

*This is not a digital network.*

Venturini, T., Munk, A.,  
& Jacomy, M. (2016)  
**Actor-Network VS Network Analysis  
VS Digital Networks: are we Talking  
about the Same Networks?**  
In D. Ribes & J. Vertesi (Eds.),  
*DigitalSTS: A Handbook and  
Fieldguide*

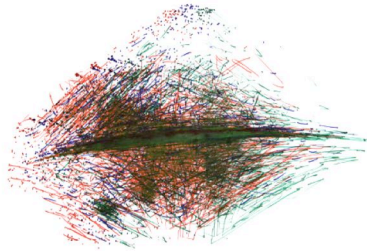
Bounegru, L., Venturini, T., Gray, J. &  
Jacomy, M. (2016)  
**Narrating Networks: Exploring the  
Affordances of Networks as  
Storytelling Devices in Journalism**  
*Digital Journalism*

1. Partiality of digital inscriptions
  2. (Lack of) heterogeneity of nodes and edges
  3. (Lack of) reversibility of nodes and networks
  4. Dynamics of relational change
- Networks are not networks  
(graphs are not actor-networks)**



## An Aesthetics of Networks

Conjunctive Experience in Art and Technology



Anna Munster

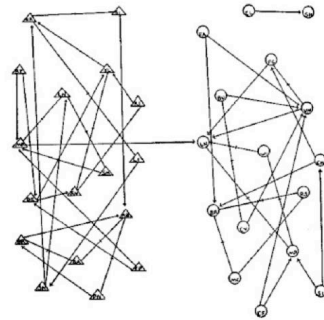
Munster, A. (2013).  
*An Aesthetics of Networks*.  
Cambridge Mass.: MIT Press

A diagram of a network, then, does not look like a network but maintain the same qualities of relations – proximities, degrees of separation, and so forth – that a network also requires in order to form. Resemblance should here be considered a resonating rather than a hierarchy (p. 24).

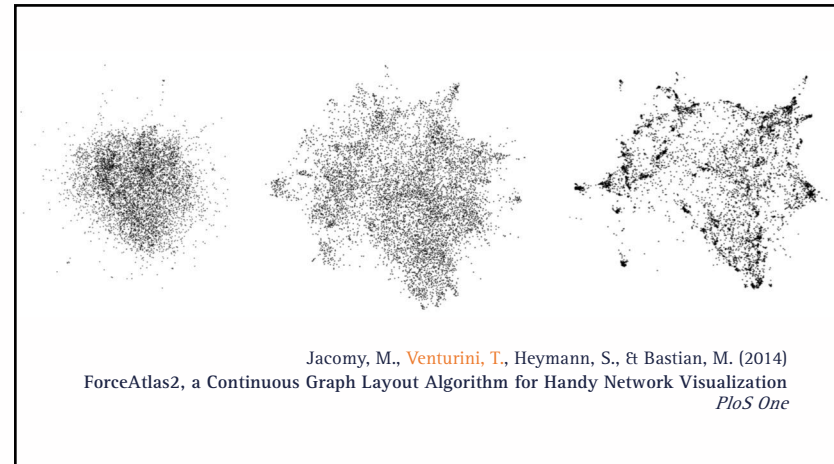


## EMOTIONS MAPPED BY NEW GEOGRAPHY

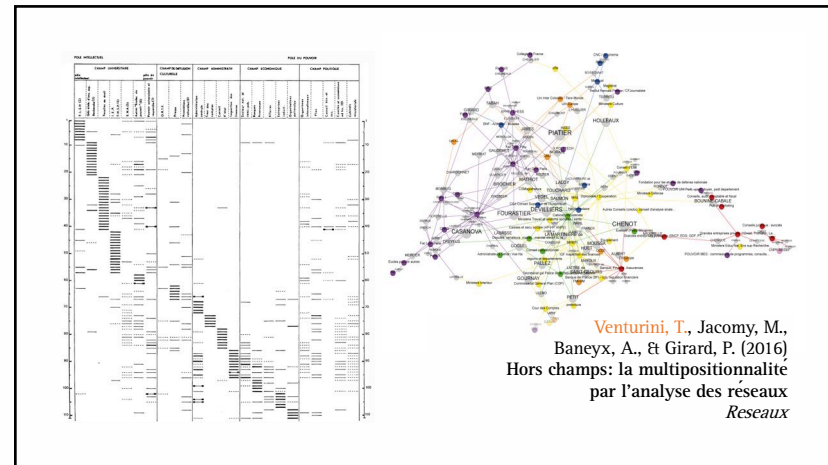
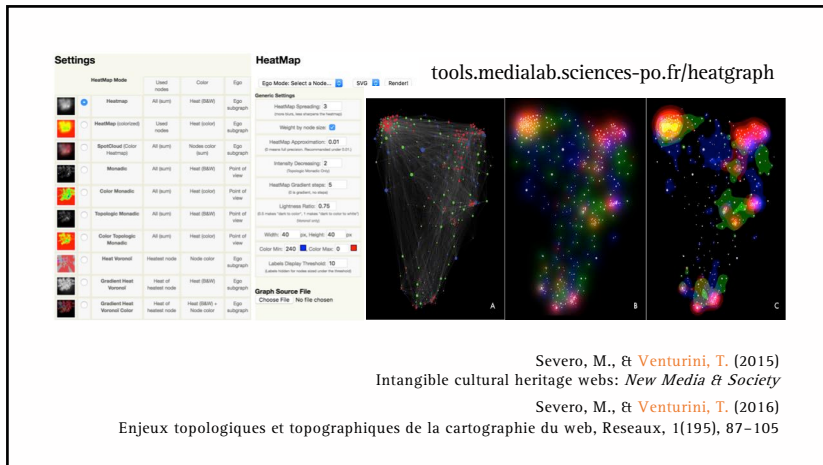
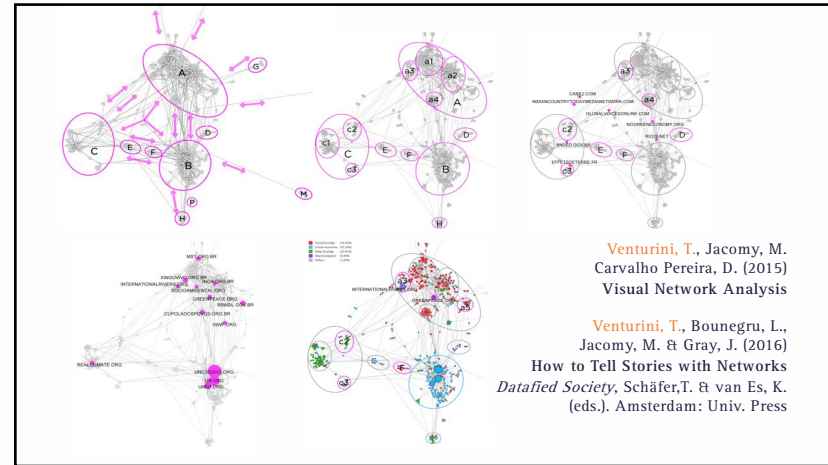
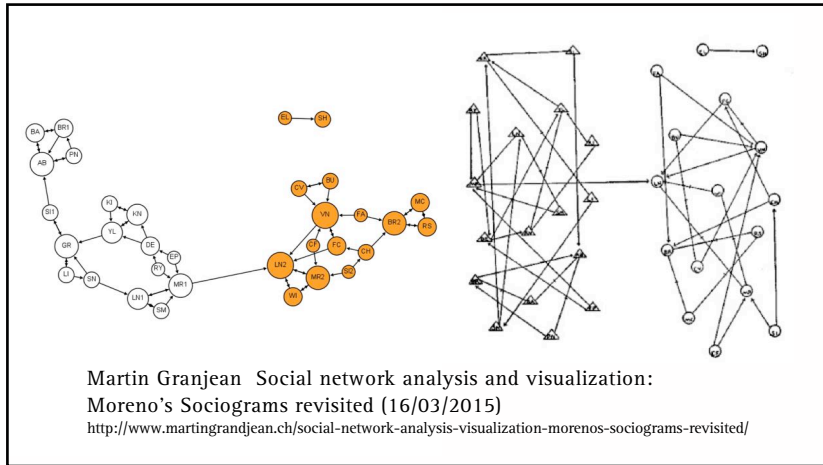
Charts Seek to Portray the  
Psychological Currents of  
Human Relationships.



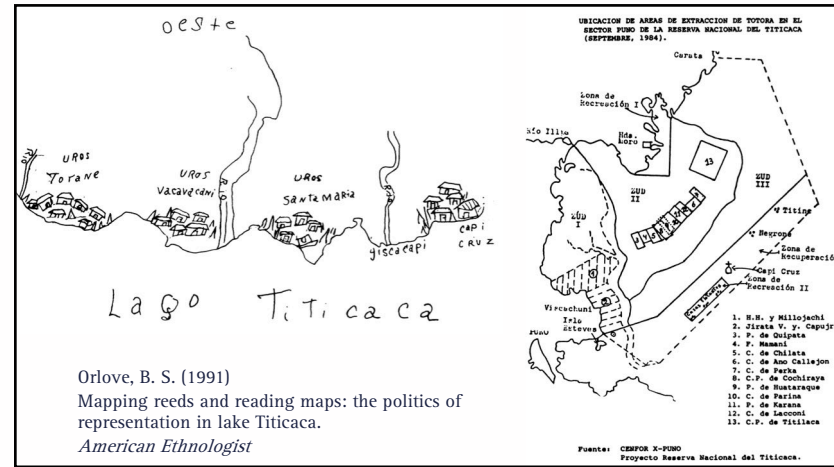
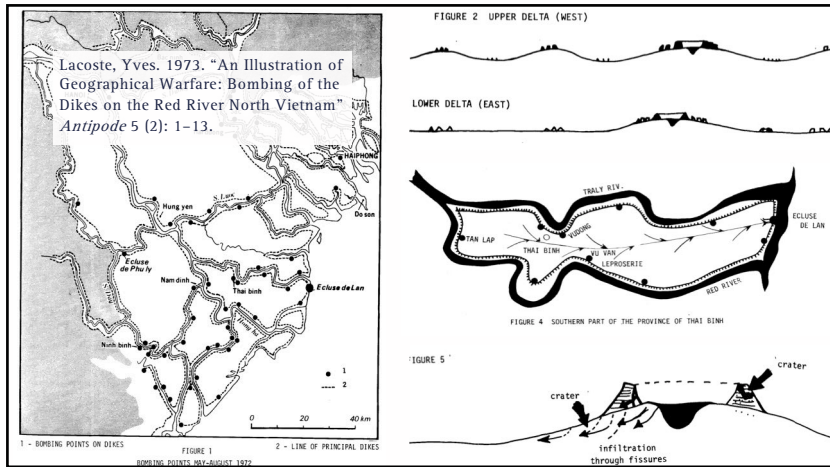
Jacob L. Moreno (April 3 1933, New York Times)



Jacomy, M., Venturini, T., Heymann, S., & Bastian, M. (2014)  
ForceAtlas2, a Continuous Graph Layout Algorithm for Handy Network Visualization  
*PLoS One*



# [3] Contribute



Orlove, B. S. (1991)  
Mapping reeds and reading maps: the politics of representation in lake Titicaca.  
*American Ethnologist*

Researchers, along with stakeholders, act as the “cartographers” of different, viable policy pathways and their practical consequences by acting as the “mapmakers” of the political solution space. They provide a guidebook with alternative options for policymakers (i.e., the “**navigators**”) and the public. Such maps cannot replace **travelling** (i.e., decision- making), nor can they resolve all environmental policy conflicts, yet they can **provide an important orientation** in otherwise uncharted territories (p. 63)

Edenhofer, O., & Kowarsch, M. (2015).

Cartography of pathways: A new model for environmental policy assessments  
*Environmental Science and Policy*, 51, 56–64, p. 63.

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MODIFIED VERSION OF Edenhofer, O., & Kowarsch, M. (2015).

Cartography of pathways: A new model for environmental policy assessments  
*Environmental Science and Policy*, 51, 56–64, p. 63.

1. The first principle of critical mapping is that **maps are incredibly useful ways of organizing and producing knowledge... but ... also incorporate unexamined assumptions** which act as limits which deserve to be challenged
2. **One way to challenge these orders of knowledge is by putting them into historical perspective...** maps and spatial knowledges have been deployed has varied tremendously between cultures and places
3. Critical mapping also holds that **geographic knowledge is shaped by a whole array of social, economic, and historical forces**, so that knowledge does not exist except in relation to power
4. The critical mapping project is also one which has an **activist, emancipatory flavor to it**

Crampton, Jeremy (2010).

*Mapping: A Critical Introduction to Cartography and GIS.*

We don't know what a researcher who today affirms the legitimacy or even the necessity of experiments on animals is capable of becoming in an *oikos* [configuration of research] that demands that he or she think “**in the presence of**” **the victims** of his or her decision (p. 997)

Isabelle Stengers, 2005

“The Cosmopolitical Proposal”

In *Making Things Public Atmospheres of Democracy*,  
Latour, B. Weibel, P. (eds.) Cambridge Mass.: MIT Press



### Data Sprint – WHO?

- Social Sciences Researchers
- Developers
- Designers

*But also*

- Controversy experts
- Representatives of the public

### Data Sprint – WHAT

- Pose the research questions
- Operationalise them in digital mapping projects
- Collect and clean the data
- Write the code
- Design visualisation and navigation interfaces
- Promote engagement and co-production of knowledge and policies

Thank you



