A Feminist Intervention into Cartography of Controversies: Digital Methods as Humanist Data Science

Abstract
This paper discusses the authors’ experiences teaching digital methods adapted from the Cartography of Controversies curriculum as a way to bring an ethnographic sensibility to work with big data analytic software tools. The Cartography of Controversies approach aims to teach students about the complexity of social phenomena by having them explore and map relations in a qualitative-quantitative approach. In our adaptation of this approach we have aimed to bring in a feminist STS and ethnographic sensibility in order to engage students in critical reflection on how these digital tools co-constitute the kinds of questions that can be asked.

Author Keywords
Digital Methods, Cartography of Controversies, Epistemology, Speculative Figuration, Digital Sociology, Actor Network Theory, Feminist STS.

ACM Classification Keywords
H.5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

Introduction
In this paper we discuss the role that digital methods can play in developing a human-centered pedagogic approach to the analysis of large datasets. We have been developing this approach for a course called "Navigating Complexity: Mapping, Visualization, and Decision-Making (NavCom for short)" at the IT University of Copenhagen. The course is a required introductory course for a MSc in Digital Innovation and Management (DIM). While not focused exclusively on data science, this program offers students courses on big data analysis, critical data systems, data management process, alongside courses on IT development and management and topical courses on IT and society. The NavCom course thus aims to provide a foundation from which students can think critically about the role of methods in both knowledge...
construction about IT as well as management processes. Later courses might offer best practices for cleaning, analyzing, and developing use cases from large datasets but NavCom takes an experimental and exploratory approach to method where students try out different social scientific and computational techniques to navigate, map, and visualize complex data sets. The aim is for students to develop facility framing epistemological questions – i.e. how such methods mediate and shape what we can know.

The course is thus in conversation with recent developments at the intersection of Science and Technology Studies, Anthropology, Media Studies, and Digital Sociology that aim to extend qualitative analysis into the digital realm, working with available online datasets (some call it big data.) These various fields share a concern with the role of digital media and computational methods in social and cultural inquiry as well as how an ethnographic sensibility for capturing and conveying rich contextual meaning can be embedded into quantitative data analysis and visualization [see for example 1-6].

One of the key debates in this new emerging area, which for the sake of simplicity we can call “digital methods” [6], focuses on the role of method in social inquiry, drawing on foundational work in Science Technology Studies which aims to examine the social construction of knowledge and the “social life of methods” in the scientific laboratory and beyond [7,8,9]. This work has developed analytic techniques to examine the role of methods in shaping the phenomena we aim to study at an ontological and epistemological level, which have been taken up into digital sociology and media studies in order to consider the role of computational methods in producing sociological knowledge. Rogers [6] for example questions how we might “follow the medium” to take the specificity of digital media seriously in how we “ground” claims with online data. Marres [7] asks how methodological biases embedded into digital media (e.g. Facebook) shape the “relations between agencies of research… subjects and objects [and] assumed hierarchies” among them. Rather than simply import computational methods, these scholars are asking what it means to make them “our own”?

In initiating our own course, we drew upon one particular technique from this area of “digital methods” developed by the médialab at Sciences Po in Paris that is called “mapping controversies” or “cartography of controversies”. We selected this approach not only because it aims to develops an integrated “quali-quantitative” perspective into data [3] but also because it utilizes readily available data sets which can be scraped from social media and the web allowing students to generate data quickly. However, over time, through reflection with our students, we came to realize that this approach too was not immune from the embedding of methodological biases or epistemological assumptions into its tools and techniques. This paper is a discussion of these limitations we uncovered and our attempts to augment these with an emphasis on process over result by drawing out a feminist approach to the cartography of controversies.

**Cartography of Controversies**

If you are not familiar with Cartography of Controversies (CoC), here is a definition of sorts: CoC is an approach that looks for technological or scientific controversy as phenomena through which to
understand how things have come to be as they are. CoC is a means of both description and analysis that can be carried out using analogue tools. However, since the early 2000s experiments have taken place to also map controversies as they present themselves on-line, i.e. using digital traces. In the course we have used a set of open source tools developed for teaching students how to collect online data, visualize it and use the visualizations to propose new positions or otherwise intervene in the studied controversy. (For a list of tools, see here: http://www.medialab.sciences-po.fr/tools/).

NavCom introduces students in their first semester to issues of epistemology and to the role of methods in knowledge making. In designing learning objectives for the course we have focused on students becoming fluent, both in the tools as in reflecting on what it means to use such tools for data collection, analysis and presentation. As mentioned, we wish to teach them about the non-neutrality of methods, but this gets complicated by the explicit ambition of CoC to explore and map the vast space of big data to enlighten the general public on controversial matters in technoscience.

The tools allows for seeing certain things and not others, for example scraping twitter data gives a fairly good idea about what people who tweet find interesting in relation to certain events. But do we know the social dynamics? How one tweet influences other tweets? However, it is not the partiality that we find problematic; it is the widespread belief that with big data and the right tools, eventually, we can get the total overview (create knowledge 'wholes') and facilitate the ever-increasing need for societal transformation and digital enlightenment in the service economy.

**A Feminist Intervention into CoC**

In 1982, Science Fiction author Ursula LeGuin wrote a story about an all-female expedition to the South Pole in 1909. The expedition finds the abandoned campsites of earlier attempts at the pole and finding them messy, moves on to set up a campsite that is built into the ice, digging into the transparent surface, forming ice caves and sculptures. The women leave little trace of their journey, make only the maps they need to remember their way, and upon their return, tell no one of it. The story itself reads as a personal piece of writing that has been placed along with other personal items into a chest of clothes and toys that may be passed along through familial ties. LeGuin’s story explores the possibilities of “what if some women had actually been there before all the famous men, but didn’t say anything about it” - the story explores and critiques the value of achievement by telling the story of a different way of encountering the vastness of the unmapped space, the largeness of that space, in contrast to the smallness of mapping it.

“The backside of heroism is often rather sad; women and servants know that. They know also that the heroism may be no less real for that. But achievement is smaller than men think. What is large is the sky, the earth, the sea, the soul.”

We bring up this story to tease out differences in exploring new territory. The story focuses on geographic territory, we are concerned with data territories, but the mapping attempts are comparable. In our teaching, rather than focus on the actor network
map, or data visualization, as the achievement, we rather focus on it as a way-finding tool that can be combined with ethnographic and feminist STS sensibilities.

**Feminist STS Techniques**
We have been arguing for feminist STS as a way forward in CoC. While the trend in the social sciences and humanities clearly is to create closer links with technical and natural sciences, we don’t want to suggest that integrating feminist values will save the day for controversy mapping. As a final point we would like to suggest feminist STS as a way of troubling the digital methods. Practically, in the course we did so by including analog mapping, such as knowledge/gap maps [10], messy and social arena maps [11], and approaching visualization through Haraway’s notions of mediated and situated knowledges [12].

Taken together, we see our contribution as one that highlights what Annemarie Mol has named ‘ontonorms’ by exploring the ontonorms of method in big data analysis [13]. We take up her concept to consider in more depth the question of the hygienics of knowledge production and pedagogy. In many ways the experience of teaching is not dissimilar from what Mol describes in that we are positioned by the students as there to tell them what to eat, what will nourish them, how to avoid ills, to produce proper good knowledge. How is it possible to get away from this?

**The Non-neutrality of Big Data Methods**
The critique we are raising here is based on a skepticism regarding the usefulness of an approach that sees digital tools as neutral tools for mapping new territory. Science and technology Studies have taught us that no technological device is neutral and that all knowledge construction is embedded in social relations. And this is why we focus our teaching on the to’ing and fro’ing rather than on the mapping as we teach students how they best enter, handle, leave and analyze the ‘digital archive’ provided by big data.

What we want to get at is that tools are non-neutral, big data provides no basis for creating knowledge wholes, but is a resource for investigating the new emerging spaces of social and organizational life; big data can help us pose new questions to socio-technical phenomena; mapping is a problematic root metaphor for exploration of the new spaces, because it assumes control rather than navigation.

Our students have begun playing with maps and learned how to enter into the big data territory with an understanding that maps are not all that powerful. In fact it is hard to make a powerful map. To’ing and fro’ing and way-finding can elicit interesting perspectives as to what is at stake.

**References**


