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# Data Sprints: A Collaborative Format in Digital Controversy Mapping

*Anders Kristian Munk, Axel Meunier, Tommaso Venturini*

*"The critic is not the one who debunks, but the one who assembles. The critic is not the one who lifts the rugs from under the feet of the naive believers, but the one who offers the participants arenas in which to gather." (Latour 2004, 246)*

*"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 that demands that he or she think 'in the presence of' the victims of his or her decision. Of importance is the fact that an eventual becoming will be the researcher's own becoming; it is in that respect that it will be an event and that what I call 'cosmos' can be named." (Stengers 2005, 997)*

The notion that researchers should think through the consequences of their knowledge claims in the presence of those affected by them, here formulated by the Belgian philosopher of science Isabelle Stengers, has long struck a chord in STS. First and foremost as the underlying credo of a genre of critical engagements with modern techno-science, but increasingly with STS researchers themselves assuming roles as caretakers and facilitators of public involvement in techno-scientific projects (Law 2009; Landström et al 2011; Jensen 2012). At stake have been questions concerning the public trust in science and technology (Wynne 2007; Felt & Fochler 2008), the role of experts and expertise in democratic processes (Nowotny et al. 2003; Callon et al. 2009), the robustness of scientific knowledge claims (this is the position taken by Stengers in her call for a democratization of the academy, Stengers 1997; Stengers 2000), and the viability of designed and engineered solutions in everyday use practices (Woolgar 1990; Hyysalo 2006; Brandt 2006; Ehn 2008; Petersen & Munk 2013). From it has emerged a plethora of collaborative formats for involving and engaging publics (Rowe & Frewer 2005), such as participatory modeling (Yearley et al 2003), consensus conferences (Einsiedel et al 2001), deliberative mapping (Burgess et al 2007), living labs (Björgvinsson et al 2012), or competency groups (Whatmore 2009).

The EMAPS project (Electronic Maps to Assist Public Science), from which the present paper draws its example, was in many ways conceived in this broad tradition of participatory STS. It emerged in response to a call by the European Research Council to assess "the opportunities and risks in the use of the web and social media as a meaningful information tool and for developing a participatory communication between scientists and their different publics" (ERC FP7, [http://cordis.europa.eu/project/rcn/101858\\_en.html](http://cordis.europa.eu/project/rcn/101858_en.html)). But where "scientists" in such participatory experiments have usually implied someone else than the STS researcher (who has

tended to assume positions somewhat on the sideline of events, or as a mediator between the experts proper and their publics), the division of labor was deliberately different in EMAPS. Yes, there were experts involved, notably climate scientists and various kinds of adaptation specialists, and there was a stated ambition to render the complexities and controversies of the field of climate change adaptation navigable and interrogable by a concerned public. But the real object of the participatory experiment - the thing that was being thought through in the presence of its victims, if you will - was the mapping of these controversies itself, a practice that is, by its own accounts, distinctly STS in its origins and purposes (e.g. Latour et al. 1992; Venturini 2010; Venturini 2012; Yaneva 2012; Marres 2015).

Controversy mapping was conceived by Bruno Latour, Michel Callon and others in the late 1980s and early 1990s as a set of techniques for charting socio-technical debates, and as a pedagogical approach to teaching STS to engineering students. Although digital methods are not an obligatory part of a controversy mapping project, the ability to harvest and analyze digital traces has become part and parcel of how the method tries to achieve its ambitions (see especially Venturini 2012 or Marres 2015). EMAPS is thus a successor project to the likewise EU funded MACOSPOL (MApping COntroversies on Science for POLitics) which posited that “citizens need to be equipped with tools to explore and visualize the complexities of scientific and technical debates” and therefore sat out to “gather and disseminate such tools through the scientific investigation and the creative use of digital technologies” (<http://www.mappingcontroversies.net/>).

As we will elaborate below, the MACOSPOL project raised a number of questions about what exactly such democratic equipment could be expected to achieve and how it could be devised in order to do so. EMAPS was founded on the realization that a careful rethink of how a controversy mapping project engages with its users in specific contexts was necessary if indeed a cosmos, as Stengers puts it, was ever to be named. What kind of common world, we asked ourselves, was a controversy mapping project trying to bring about (Venturini et al. 2015)? The core idea was that such a rethink should take place in direct collaboration with the users of the maps, which in the case of controversy mapping coincides with the objects of the cartography, namely the actors in the controversy. The data sprint format, which we will present in this paper, constitutes the eventual realization of such a participatory approach to controversy mapping.

## In the belly of the monster

Stengers’ notion that knowledge claims should be put at stake in the presence of their victims is especially pertinent in the context of a participatory approach to controversy mapping. For Stengers and others controversies are the potent situations that make it possible to put anything authoritatively ‘expert’ at stake in the first place. Controversies not only energize participation, but they engender a world in and about which inquiries can be fruitfully undertaken. They are thus generative in the sense that it is through them that both the researcher and the researched can acquire their identities and become aware of what they have at stake in each other’s practices. Importantly, it is also through controversies that these identities can be challenged and remade. “Controversies”, writes Michel Callon, “establishes a brutal short circuit between specialists and laypersons” and “for a time, the relative equalization of ‘rights to speak,’ [affords]

the opportunity for everyone to argue on his or her own account and to question the justifications of others" (Callon et al. 2009, 33). It resonates with the pragmatist notion that "issues spark a public into being" (Marres 2005) and the proposition by Latour that it is by following controversies that we will be able to study the social in its making (Latour 2005).

For the controversy mapper it begs the question how the cartographic instruments deployed interferes with or contributes to these already potent becomings. When controversy mapping sees its *raison d'être* as that of equipping a concerned public with navigational aids it is thus not only designing such aids, but (attempting to) re-design the controversy itself and thereby its emergent publics. With a term borrowed from design research one could say that controversy mappers engage in the "infrastructuring" (Björgvinsson et al 2012) of controversies: The controversy and its emergent publics are not (because they cannot be) staged on the cartographer's drawing board. Instead, what must be achieved is the collective mapping into knowledge of a "matter of concern" (Latour 2004), a thing that will persistently prevent any one position from reducing the others to mere fact or fiction.

We will argue that this mapping into knowledge cannot be achieved unless the mapmakers acquire stakes in the controversy and, vice versa, unless the actors of the controversy acquire stakes in the mapping. We are, as Donna Haraway (1988) puts it, always and already "in the belly of the monster". We base this argument on our experiences not only with EMAPS and MACOSPOL, but with teaching and facilitating controversy mapping projects in a range of contexts. These experiences have fermented our understanding that tools and equipment do not cut the mustard alone, but that such equipment must be acquired - by the actors, the citizens, the users, the stakeholders, depending on the situation - for specific purposes in specific contexts.

Such an acquisition is not unproblematic. Powerful data visualization instruments put at the disposal of actors in a controversy are easily appropriated to reduce the discussion in various ways. It is therefore crucially important that the position of the controversy mapper - as one who seeks to stage the arena of debate in its complexity and heterogeneity - is also put at stake and thus hardwired into the collective. The fact that we are mapping the *controversy* – rather than trying to empower any given actor-centric position - means that the controversy mapper must find ways to deploy conflicting positions while still lending an opportunity to the individual actors to acquire their own stakes in the cartography.

On top of that comes the practical challenges of facilitating a mapping project which, in order to be agile and adaptable to user input, must bring developers, designers and domain experts into a close and concrete dialogue. And it is of course not merely a practical challenge; more than anything STS has contributed to our understanding that robust knowledge is a distributed achievement (Latour 1993; Rheinberger 1997; Nowotny et al. 2003). Given that one of the key partners on both MACOSPOL and EMAPS had extensive experience with facilitating such collaborative processes through their winter and summer schools in digital methods (see for example <https://wiki.digitalmethods.net/Dmi/SummerSchool2015>), we took inspiration partly from their tried and tested format (Berry et al. 2015), and partly from the buzzing scene of bar

camps and hackathons associated with the developer and design community (Knapp et al. 2016), in appropriating the data sprint format. Before we get to that, however, we will provide an overview of the experiences gained through MACOSPOL and the early stages of EMAPS which led to the idea of the sprint.

## Controversy mapping and public engagement

Public engagement was not always an evident course of action in controversy mapping. Cartographies of techno-scientific debates were first pursued in STS to gain analytical purchase on a set of heterogeneous objects that were difficult to represent (Callon et al. 1983; Callon et al. 1986; Latour et al. 1992), not to make them available to public scrutiny in different ways or otherwise reconstitute their implications for the democratic process. In this respect controversy mapping is aligned with a development that has taken place in the actor-network theoretical branches of STS more broadly. From its early applications as a way of crafting situated accounts of science and technology in action, and thereby as an instrument for a critique of correspondence based theories of truth (Latour & Woolgar 1979; Latour 1987; Latour 1993; Callon 1986), to its later merits as an intervention that multiplies and interferes with singular and essentialist ontologies (Mol 2002; Moser 2008), or assembles alternative forums for public involvement (Callon 1999; Callon 2009; Latour 2004; Whatmore 2009), the agnostic prescription to let actors deploy their own worlds has served a variety of interventionist strategies (Munk & Abrahamsson 2012). And just as the more general question of whether and how actor-network theory "means business" (Law 2005) has been broadly debated (see also Vikkelsø 2007; Woolgar et al. 2009; Law 2009; Petersen et al 2012; Jensen 2012), so the specific interventions that controversy mappers engage in have developed through a series of experiments of which the EMAPS project represents one of the more recent.

The first hint of controversy mapping engaging a public can be found in the STS classroom of the 1990s, where it is often claimed that the method blossomed as a way of teaching engineering students basic insights about science and technology in society. According to legend (which is liberally recounted by those who were there, but about which little has to our knowledge yet been published) controversy mapping became popular chiefly as a didactic approach that did not require wholesale conversions of the students to SCOT or ANT. This is certainly still the case in the now extensive network of universities teaching controversy mapping to students in political science, geography, engineering, architecture, media studies, design, techno-anthropology, sociology, etc. (see <http://controverses.sciences-po.fr/archiveindex/> for an overview of student projects). By encouraging students to observe how techno-scientific controversies unfold in practice, complicated theoretical arguments can be pragmatically demonstrated rather than lectured from the black board. In a sense nothing more than a convenient remedy for a problem that almost any teacher with an STS curriculum has faced, but it did contain the nucleus of what later became controversy mapping's primary commitment to public engagement: if students could be 'tooled up' with STS sensibilities, then so could issue professionals and decision makers.

At the outset of the MACOSPOL project the primary point of reference for what controversy mapping was supposed to achieve was thus firmly anchored in the classroom. Controversy mapping had been developed primarily as a pedagogical intervention and the tools and methods associated with it had never been tested outside that context. A narrative had emerged, however, about the relevance and application of controversy mapping in democratic processes. According to this narrative, which drew on pragmatist political theory, democratic publics would need to have the right representational skills in order to assemble and engage constructively with their matters of concern. Here is how Bruno Latour formulated it at the outset of MACOSPOL:

*“How you represent a river as an agent is a very interesting question. I do not know any river now that is not a contentious issue. In France, we even have a law to represent rivers politically. We actually have an institutional organ for river representation. But when you go to this parliament of rivers, which is the literal word they use, the representational tools from hydrography and geography are extremely disconnected with this question. So you have masses of maps in a traditional sense, which are critically informative but not necessarily what is needed to represent a river in this political river assembly, and that is precisely where all the questions of controversy mapping comes from. In the phrase “controversy mapping,” the word “mapping” is not metaphorical but literal. We want to be able to help the citizens of this new parliament of things to have **the representational skills that are at the level of the issues.**” (Latour 2008, 134; our emphasis)*

It is however one thing to acquire these representational skills at the level of the issues. In essence this has always been the driving ambition in controversy mapping, even in the very earliest attempts by STS scholars to develop computational ways of visualizing socio-technical debates. But it is quite another to expect others - users, citizens, students, stakeholders - to do the same. It not only requires that a skillset (and its associated tools and methods) is available, but that those others understand what the skills are for, i.e. understand what issues are and why they “deserve more credit” (Marres 2007).

## The MACOSPOL experience: Tooling up the public?

The notion of democratic equipment was pivotal in the MACOSPOL project. This is perhaps best illustrated by the development of the Lippmanian Device which took place in the context of MACOSPOL. Walter Lippmann, writing at the beginning of the 20th century, famously posited that the democratic ideal of a public capable of making competent decisions about the problems directly affecting it had become increasingly elusive (Lippmann 1927). Lippmann believed that, with the right tools at its disposal, the public could at best be expected to put its weight behind experts and representatives that it considered capable of taking action on specific issues. In itself a momentous challenge considering that such tools were rarely available. Lippmann observed that the complexity of the public's problems was of such a scale and magnitude that citizens would all too easily fall prey to special interests and partisan reporting when trying to orient themselves. He thus formulated a problem that others, not least his contemporary interlocutor John Dewey (1927), have since been struggling to solve: how can a democratic

public manifest itself when the issues at hand are ill-defined, rife with uncertainty, and thus irreducible to questions for which expert advice can be easily and unambiguously solicited?

The Lippmanian Device (<https://wiki.digitalmethods.net/Dmi/ToolGoogleScraper>) scrapes Google for resonance of a set of keywords across a set of web pages. The idea is to provide the user with an indication of actors' commitment to different issues. In the fracking debate, for example, who talks about native land rights? Who talks about climate change? Who talks about natural parks? Who talks about earthquakes? And who talks about water security? The tool presupposes a user who is not an expert of, but still sufficiently implicated by, a controversy to need a temporary means of orientation; a user who has a preliminary idea of what to look for, but is not a native of the terrain he or she is trying to navigate.

In doing so the Lippmanian device offers a demonstration of how MACOSPOL imagined its commitment to public engagement. Towards the end of the project a workshop was held in Venice where potential users were invited to test tools. They were primarily journalists and decision makers - the kinds of people for whom the MACOSPOL online platform (<http://www.mappingcontroversies.net/>, now offline) had been designed and intended from the start. They were asked to map a topic of their choosing. The idea was that these types of users, qua their profession, would routinely have stakes in a changing cast of controversies and would thus self-evidently see the point of becoming controversy mappers themselves. The reality proved more complicated.





MACOSPOL final workshop in Venice: The participants are journalists and decision makers (because they are supposed to deal with controversies in their work). They sit around a table on filled with computers. MACOSPOL assistants stand behind them to help the prospect mappers conduct their mappings.

In one of the intermediary project reports from MACOSPOL it was noted that “*what we need in the first place is to have a set of tools that targets the selected public (journalists and decision makers) as possible users of the platform*”. This was in many ways achieved, except that what was ignored here was the question of how exactly journalists and decision makers can be said to constitute a public? Sure enough, they are people whose job it is to act in/steer through/report on controversies, typically by trying to settle them, either by exercising editorial privileges or by acting politically. But this also implies that they are not by definition interested in opening up the controversy for exploration, especially not if they can establish criteria from which to judge up front who is right and who is wrong. They are, in other words, not necessarily inclined to become controversy mappers.

On the photo above we see MACOSPOL researchers standing behind the users, helping them out with the tools. A frequently posed question in this situation was how the tools would compete with picking up the phone to ask a trusted expert what was important and what was not. This was how most of the users would routinely handle their encounters with controversies. The public, in this setup, was thus staged in a manner quite similar to the students learning



controversy mapping - their instructors at the ready to help out where needed - but their stakes in the situation were of course completely different. In Venice we encountered users with ingrained ways of questioning the world that were not easily aligned with the tools.

It is key to understanding the MACOSPOL experience that the development and testing of tools was entirely delegated to different work packages where team members were mapping their own research topics. The experimental alpha users of the tools were thus people with a very specific, and STS informed, prior understanding of controversies and their potentials. When they conceived of the tools as 'speeding up' inquiry, for instance, it was always in comparison with the extremely labor intensive work of manually and agnostically charting the arguments brought forth by actors in a controversy without *a priori* determining their relevance. This type of inquiry is not the standard *modus operandi* for journalists and decision makers. From this setup arose the fallacy that if the users only knew about the tools and how to *use* them, they would also *need* them. You could say that MACOSPOL was paradoxically and inadvertently enacting a version of the very same deficit model that it had been founded to challenge.

If MACOSPOL told us something, it was that it does not suffice to simply make tools and maps available if they are to have public effects. In order for these things to be truly “public things” (Di Salvo et al 2014) care and attention must be devoted to making them matters of concern to the users. MACOSPOL rather naively imagined that equipping the public would amount to offering tools that would allow concerned citizens to become cartographers of controversies themselves.

## Towards the sprint: Early experiments with participation in EMAPS

When EMAPS succeeded MACOSPOL it was thus decided to shift our engagements with the public in two important ways (at this point we had all become engaged with the project, whereas two of us had worked on MACOSPOL as well). *Firstly* the idea of generic tools and equipment as a goal in itself was abandoned. Focus would instead be on maps tailored for specific issues. *Secondly* the users invited to the workshops would now include people with more immediate stakes in one such issue, not just journalists and decision-makers with a professional obligation towards it. We chose to split the work in two phases, first taking on a pilot case about aging in the UK, where the new approach would be tested, and then a case study on climate change adaptation, for which an online issue atlas would be published ([www.climaps.eu](http://www.climaps.eu)). It was planned to have ample time for iterations, going back and forth between user workshops and drawing board, instead of the linear format adopted in MACOSPOL with a user workshop in the end.

MACOSPOL had no doubt contributed to the development of a common toolset for controversy mappers, but the feeling was that it was necessary to demonstrate what could be done with this toolset before one could realistically consider its affordances in actual use contexts. The first workshop arranged in relation to the pilot study on ageing thus saw EMAPS researchers bringing readymade maps that they explored together with care workers, advocacy groups, and

other issue professionals of the ageing debate. This was possible partly due to the domain expertise of one of the EMAPS partners, the Young Foundation, who had prior experience with social innovation in that sector, and could thus provide valuable input to the preparation of maps prior to the workshop. The purpose was to observe how people responded to maps that were, to the minds of the EMAPS researchers, the state of the art with the available toolset.



Early EMAPS workshop in London: Researchers from the project sit around the table along with other workshop participants. One assistant in each group asks questions, moderates the discussion and takes notes. On the table are pre-fabricated maps which are shown and interpreted one after the other.

On the photo above we see EMAPS researchers sitting down with the users, listening in and taking stock of how they engage with their maps. The scene is notably different from the MACOSPOL workshop in Venice where they assumed the role as tool instructors helping their 'students' produce maps themselves. As the pilot phase progressed, however, we gradually moved from this fairly 'product-centric' mode of engagement to a more 'use-centric' mode (we credit our design advisor on the project, Lucy Kimbell, for this conceptualization (see also Venturini et al 2015)). In order to make better sense of the maps it was decided that they would have to depart from research questions derived more directly from the practices of the users.

In the first instance this was attempted by simply going back and improving the maps based on user input between the first and the second workshop. No actual additional qualitative work was undertaken outside the workshops to get a sense of what kind of questions the users might be

interested in or (perhaps especially) to situate these questions in the everyday worlds of the users. The users were merely asked to respond to maps, and then to respond again to a set of revised maps. During the two first workshops, however, we were able to identify one user in particular who was both engaged in advocacy work, had a sick mother herself, and seemed genuinely curious about the potentials of the mapping. She agreed to let an ethnographer from the EMAPS team work closely with her to articulate research questions that made sense in her world and in the professional lives of her colleagues. These questions were then translated into digital mapping projects, the results of which were explored with a broader selection of users at an issue safari in London. It was the first time that the EMAPS team got a sense that the cartography of controversies was being meaningfully acquired by actors in a controversy.

This taught us not only that hardwiring the mapping projects into the everyday practices of the users was essential, but also that doing so required an extremely agile and adaptable collective effort on behalf of the team. For the next phase of the project, which was supposed to build an issue atlas of climate adaptation (the eventual result is available at [www.climaps.eu](http://www.climaps.eu)), we would have designers from Milano, digital methods experts from Paris and Amsterdam, domain experts from Dortmund, social innovation facilitators from London and a range of invited issue experts involved in what was essentially a distributed exercise in collective controversy mapping. The challenge was at once to find a way of managing such a distributed work process, while efficiently translating the concerns of the actors in the controversy into feasible digital methods projects.

Encouraged by our experiences at the issue safari in London we were determined to find engaged issue experts with obvious and immediate stakes in the controversy. We had learned the hard way not to expect cartography to imbue participants with an appetite for maps. Instead we would make very sure, by interviewing and spending time with potential participants in advance, that they brought such an appetite with them to the project. In a sense this reversed the roles when it came to acquiring a stake in the mapping, or at least it made us realize that it was just as much (and probably more) a matter of us learning from the issue experts how maps could be useful in their domain, as it was a matter of them learning something about controversy mapping from us. In turn, this realization also came with some obvious risks. There was a keen sense, for example, that we could easily end up simply servicing the data crunching and visualization needs of issue experts who knew quite well what kind of maps would aid their agenda; that we would, as one project partner formulated it, end up “giving too much away for the process”.

The solution came from our project partners at the Digital Methods Initiative in Amsterdam who had the following program lined up for their 2013 Winter School in digital methods:

*“The 2013 Digital Methods Winter School is devoted to emerging alternatives to big data. The Barcamp, Hackathon, Hack Day, Edit-a-thon, Data Sprint, Code Fest, Open Data Day, Hack the Government, and other workshop formats are sometimes thought of as “quick and dirty.” The work is exploratory, only the first step, outputting indicators at most, before the serious research begins. However, these new formats also may be viewed as alternative infrastructures as well*

*as approaches to big data in the sense of not only the equipment and logistics involved (hit and run) but also the research set-up and protocols, which may be referred to as "short-form method." The 2013 Digital Methods Winter School is dedicated to the outcomes and critiques of short-form method, and is also reflexive in that it includes a data sprint, where we focus on one aspect of the debate about short- vs. long-form method: data capture. To begin, at the Winter School the results of a data sprint from a week earlier (on [counter-Jihadists](#)) will be presented, including a specific short-form [method for issue mapping](#). One outcome of the Winter School would be a comparison of short-form methods for their capacity to fit the various workshop formats (barcamp, sprint, etc.), with the question of what may be achieved in shorter (and shorter) time frames. We also will explore a variety of objects of study for sprints, including data donations, where one offers particular data sets for abbreviated analysis"*

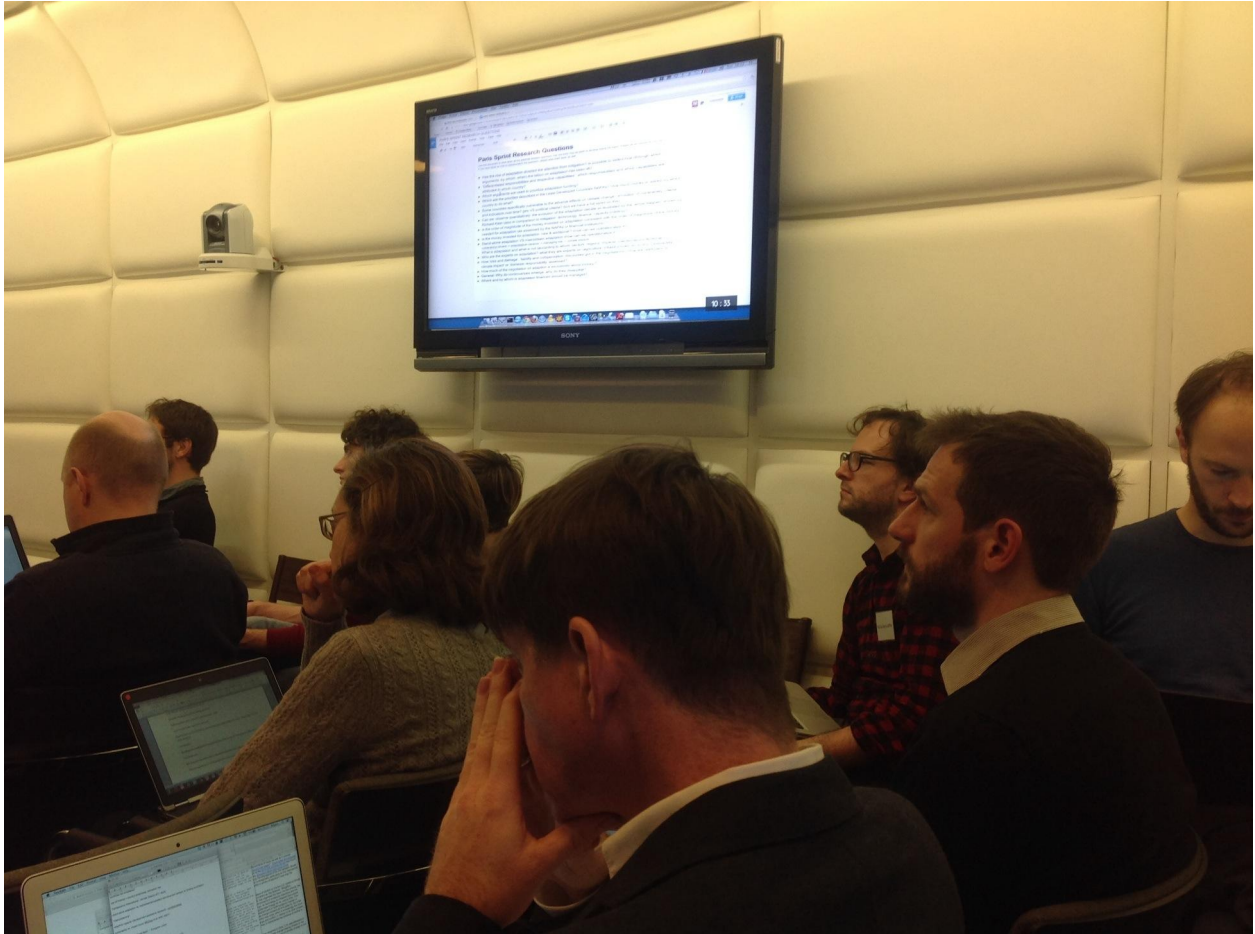
Drawing inspiration from the developer community and its tradition of hackathons (hack marathons) we decided to organize four consecutive *data sprints* (we credit Liliana Bunegru and Erik Borra at the Digital Methods Initiative for this term, see also Berry et al. 2015) where we would invite issue experts, designers, developers and social scientists to work together for five consecutive days on a pre-selected theme. Over the course of a year (January-September 2014) we thus organized sprints in Paris (around the international negotiations on adaptation), Amsterdam (around the question of vulnerability assessments and indices), Oxford (around the question of financial compensation) and Milano (focusing mainly on the design of the platform for the issue atlas). Below we go through the process of one such sprint in order provide a feel of its gait and composition.

## The Paris sprint in pictures



*On the morning of the first day of the sprint, the invited issue experts present and discuss controversies in the international negotiations around climate change adaptation. The issue experts included: 1) Farhana Yamin, associate fellow at The Royal Institute of International Affairs (London) with extensive experience as an environmental lawyer and policy expert on climate change; also a lead author for the IPCC and has served as senior adviser to the European Commission and the EU Commissioner for climate change. 2) Richard Klein, senior research fellow at the Stockholm Environment Institute (SEI), lead IPCC author, and senior policy adviser to a range of governments and international organizations on the subject of climate adaptation. 3) Kees van der Geest, who expert on loss and damage and researcher at the United Nations University in Bonn. 4) Alix Mazounie, policy expert on adaptation from the French branch of the NGO Climate Action Network. 5) Nicolas Bériot, secretary general of the French National Observatory for the Effects of Global Warming (ONERC) and head of climate adaptation policy at the French Ministry for the Environment. 6) Francois Gemène, a specialist in environmental geopolitics at the Institute for Sustainable and International Development (IDDRI) in Paris. Francois was tasked with mediating the discussion among the experts.*



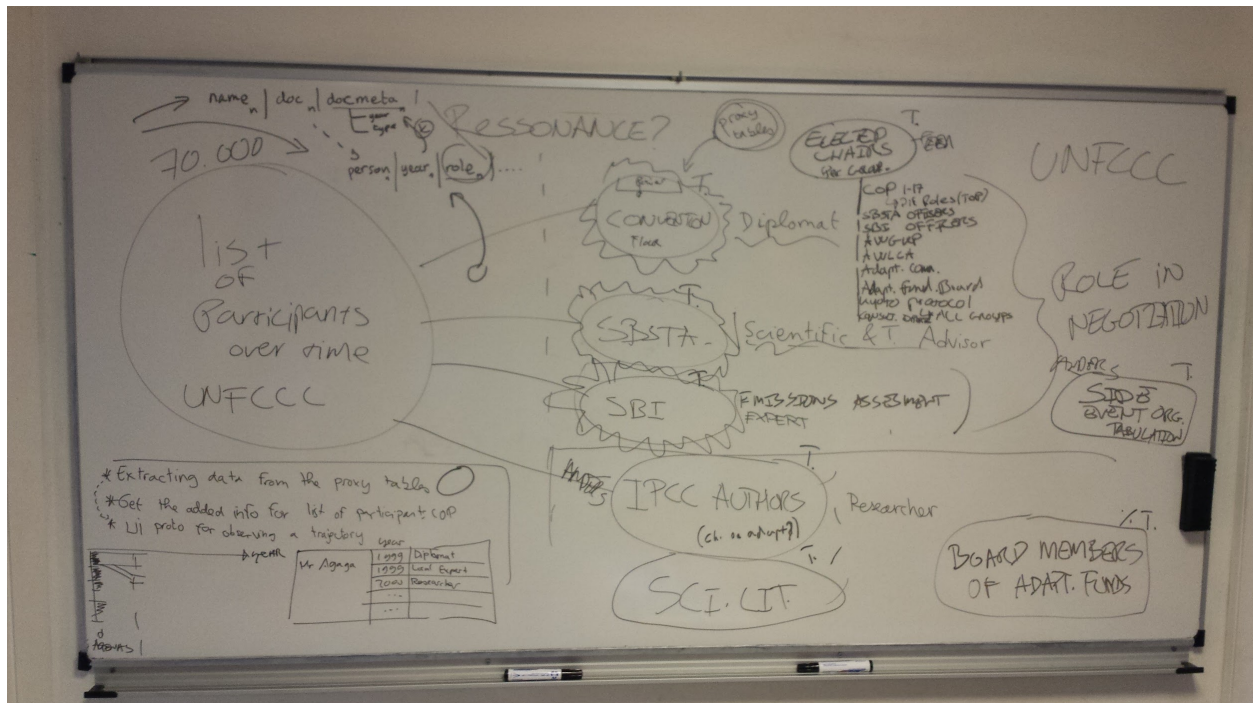


*While the issue experts present and discuss, the EMAPS team consisting of 25-30 designers, developers and social scientists take notes in a shared Google Doc (projected on the screen on the wall). This is the beginning of the translation process from the concerns of the issue experts into workable digital methods projects. The team knows in advance which datasets have been collected and can start reflecting on whether and how they might be useful to the sprint.*

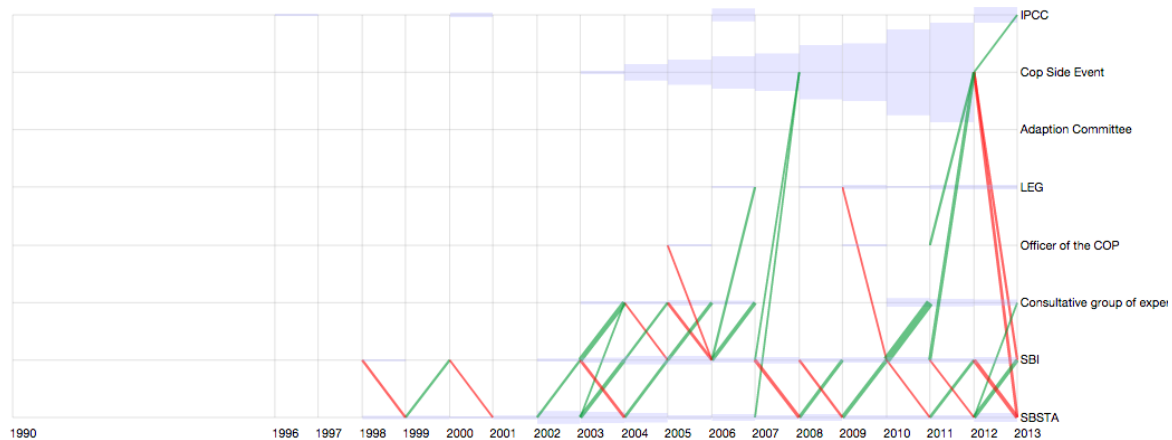




*During lunch break the collective notes of the team are condensed into 6 potential mapping projects that are pitched on a so-called **issue auction**. The team has already been divided into 5 working groups who can now decide which projects they want to work on and make a bid for it. This left one orphan project, which was deliberate: we tried to condense the collective notes as respectfully as possible and prioritized to have meaningful and coherent project briefs even though it meant the number of briefs would be higher than the number of groups that were able to take them on.*



During the afternoon of the first day of the sprint the working groups gather to decide how they are going to operationalize their project briefs. The issue experts circulate between the groups to offer their commentary and help clarify the questions they have raised in their presentations. In this case the group is tackling the question “who are the experts of adaptation”. It was raised by several issue experts who asserted that, in the international negotiations, much depend on who has privileged access to which rooms and negotiating tables. No good dataset had been prepared in advance for a question like this. Together with the issue experts the group devised a mapping strategy that scraped the participants lists year by year for all the COP’s and then searched the meeting notes for a range of committees and subcommittees to see who had been granted the rights to speak in which forums over the course of the negotiations.



#### Settings

- ☐ Normal - All participations are displayed
  - ☒ Filtered - Only with 4+ persons from one arena to another
  - ☐ Side Events - People that participated to a Side Event (once or more)
  - ☐ NO Side Event - People that NEVER participated to a Side Event
  - ☐ Single person - A person's trajectory. Pick in the list, ordered by amount of participations
- Carlos Fuller - 21 participations

*As work progress towards the milestone presentations on the third day of the sprint, intermediary visualizations are built to explore the potentials of the mappings with the issue experts. Here it is an online interface developed for the project “who are the experts of adaptation?” (you can explore it here: <http://ladem.fr/misc/sprint2014/trajectories.php>). Compared to the chaotic whiteboard of the first day we now have a workable prototype that allows both issue experts and other sprint participants to get tactile with the datasets and explore it's potentials and limitations. One of the motivations for this particular subproject was to have a hands-on tool that would allow a participant in a COP to quickly survey another participants track record and standing in different expert groups, forums and subsidiary boards. Another quite different motivation was to be able to gauge, on an aggregate level, how expert groups, forums and subsidiary boards share and exchange experts. The mock-up allowed a*



*On the afternoon of day three the issue experts are invited back to the conference room, but this time it is the working groups delivering the presentations of their intermediary results. It is around this point in the sprint that issue experts begin to acquire a more concrete stake in the mapping. Contrary to the presentations and discussions on the first day, where the rest of the participants try to get their heads around the different problems and positions of the international negotiations on climate change adaptation, the issue experts now have a h. It has become clear that the options are not endless and that the process of crafting workable maps requires specific ways of thinking and doing. In the subproject being presented here the issue experts have been drafted in to help tag a dataset on adaptation funding based on the main thematic areas of intervention. According to one of them, this has been an eye opening experience that have helped bring some of her more lofty expectations to the instant potentials of data visualization healthily down to earth. During the first three days, then, it is not only the resident controversy mappers who have become more issue-savvy, it is just as importantly the issue experts who have become more attuned to the challenges of controversy mapping.*

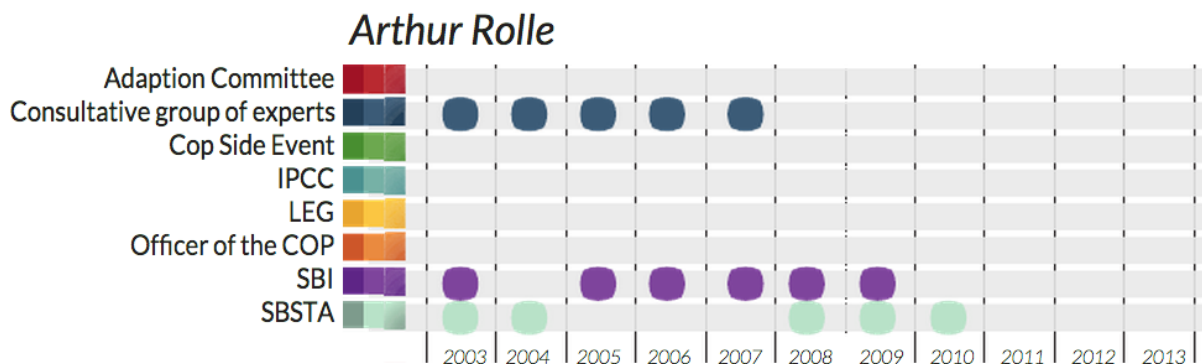




*During the milestone presentations on the third day the issue experts listen in and respond. They are being asked to imagine how the presented mock-ups may or may not be (made) useful for them in their own practice. This is also an opportunity for the working groups to deliver feedback on each others' work. The session sets the pace for the remaining days of the sprint. The job is now to finalize a set of mappings that will conceivably be of use to the issue experts and their professional communities. This involves a number of tough choices. The first three days have thrown up a range of opportunities, but the time constraint of the sprint is now acutely felt and the need to deliver a product that will conceivably travel with the issue experts by the end of the week becomes the imperative that guides our decisions. There is excitement about the projects, but there is also a considerable amount of frustration as the EMAPS team, who are largely academics and accustomed to keeping questions open, have to compromise and temporarily close down avenues of exploration.*



*As the sprint progresses, the working groups spontaneously abandon their designated rooms and decide to gather permanently in the lunch area. Besides eliminating the need to break for food, it offers several other advantages. Developers have been distributed between the groups, but their specific skills are often needed in other groups; data-sets that are being harvested or cleaned by one group, turn out to be useful for another; results of one mapping project turn out to be interesting for the questions posed in another. This may seem like a trivial point about layout, but we found that sprints became less efficient and engaging the more sub-groups were physically contained and the work organized in siloes.*



*On the last day of the sprint a number the finalized visualizations from each project are presented to the team and the issue experts. It provides a sense of closure to the sprint, and a tangible target to work towards. A race towards a finish line, if you will. Here we see a further development of the interface for the subproject on “who are the experts on adaptation?”. It has been designed with the scenario in mind where a negotiator on the COP floor needs to acquire a quick track record on another COP participant. It is of crucial importance that not only the finished maps and visualizations, but to the extent possible also the datasets, the tools and the*



*code used is made publically available along with a protocol that explains the projects. As Berry et al. notes, "data sprints are based on reproducibility: the work done needs to be documented and shared online in order to foster similar work and further developments" (Berry et al. 2015:2). The results of the Paris sprint were published on the EMAPS blog (<http://www.emapsproject.com/blog/archives/2348>) and a reworked version of the results are available in the final issue atlas of the project ([www.climaps.eu](http://www.climaps.eu)).*

## What's in a sprint?

Data sprints in controversy mapping are extended research collectives that assemble over several days to collaboratively explore and visualize a set of pertinent questions. They comprise the necessary competencies to a) pose these questions; b) consider their relevance and implications for the controversy; c) operationalize them into feasible digital methods projects; d) procure and prepare the necessary datasets; e) write and adapt the necessary code; f) design and make sense of the relevant data visualizations; and g) elicit feedback and commentary through consecutive versions of these visualizations. In practice this means that the following roles should be considered necessary to the functioning of the collective:

**The issue experts/alpha users:** Regardless of the subject matter of the sprint, the first order of business is always to formulate research questions. This is done with the help of people that have something at stake in the topic of the sprint (either because they are affected by it, produce knowledge about it, intervene politically in it, or - highly likely - a combination of the above). They are at once the issue experts, who are able to deploy their matters of concern for the rest of the sprint participants, and the alpha users, who will be able to provide feedback and commentary on the evolving maps from the point of view of someone who might conceivably make use of them in their practice. The selection of these issue experts/alpha users does not presume to be representative (as is for example the case in citizen conferences) but is driven by the research collective's need to acquire stakes in the controversy. As Whatmore and Landström puts it in the context of their competency groups, actors are called for that are "sufficiently affected by what is at stake to want to participate in collectively mapping it into knowledge and, thereby, in its social ordering" (Whatmore & Landström 2011, 2).

**The developers:** Sprints are supposed to be agile. They must be able to adapt not only to what the issue experts/alpha users bring to the table, but to what the research collective as a whole make of these contributions. The one asset that more than anything ensures this agility (or hampers it if neglected) is developers. Successful sprints are fundamentally anathema to the idea that development needs can be fully anticipated much less serviced in advance. If this is possible it almost certainly means that the labor intensive and resource demanding process of sprinting will have been unnecessary. The job of the developers is both to adapt tools and scripts for particular analysis needs, harvest new datasets, and help the designers build applications for exploring the datasets with the issue experts when necessary.

**The project managers:** Research questions must be asked in such a way that they are amenable to the available digital methods and yet still pertinent to the issues they concern and the issue experts that asked them. This requires a translational competence. Project managers

must be sufficiently knowledgeable of the controversy to understand the questions posed by the issue experts and sufficiently adept with digital methods to see the potentials and constraints flagged by the designers and the developers. This is especially critical in operationalizing the research questions where the project managers become, in a sense, the stewards of the alpha users. It is also crucial in the interpretation and exploration of the maps where the project managers can help the issue experts understand what can and cannot be claimed with digital traces.

**The designers:** A sprint process rely on visualizations through several of its key stages. They are especially essential for facilitating the ongoing exploration of the datasets and the proposed analysis of them with the issue experts (which mostly happens through quick prototypes and mock-ups along the way). To the extent that the research collective is making their results public by the end of the week and are risking failure for their maps in everyday practices of the issue experts, the design mindset and competence is absolutely key. It is often the designers who have their eyes best trained on the final product and are able to force the pace of the sprint towards the end.

**The sprint organizers:** Besides making the necessary practical arrangements for the sprint to take place (booking rooms and accommodation, organizing food, distributing programs and practical info, etc.) the organizers play a key role in the preparatory phase leading up to the sprint. The most obvious occasion for this is the decision on the overall sprint theme. Although sprints should be agile enough to accommodate evolving research questions, thematic framing is necessary for a number of reasons. In order to invite issue experts it is not only necessary for the organizers to know who they are looking for, but necessary for those invited to know why they should come. Good issue experts are likely to be dedicated people with busy agendas. It falls to the sprint organizers to provide them with an incentive by giving them a sense of what their stake in the sprint could be. Thematic framing is also necessary for pre-selecting datasets. Again, although sprints should be agile enough to accommodate the harvest of new datasets, if so required by the operationalized research questions, the organizers should do what they can to anticipate relevant datasets. In effect this means that important processes of scoping and foreshadowing precedes the successful sprint.

In practice these roles can be filled by the same people who have cross-over competences. It is our experience that the possibility to have developers with design competencies, or vice-versa, can be highly beneficial to the sprint. It is in itself an important learning outcome of a sprint that participants become more attuned to each other's practices. A good example of this is provided by issue experts who in several cases have used their experiences with the sprint to formulate and launch digital methods projects of their own.

You will notice that there is no such role as 'the controversy mapper'. Sprints are in many ways the embodiment of what Noortje Marres calls "distributed methods". They require all the competencies in the room and they draw on every available extraneous source (whether code or data) and make every attempt to contribute back to the open source / data community. To our

minds, the sprint participants are, if successful, all controversy mappers in the making; they are complicit in mapping into knowledge what thus becomes a collective matter of concern.

Below we go through the different phases of the sprint in a more stylized manner:

### **A) Posing research questions**

During the EMAPS sprints we experimented with several ways of posing research questions. Common to all of them was the fact that the invited issue experts were given time on the first day of the sprint to deploy the controversy from their respective points of view. Typically this took place as 30-40 minute keynotes on a pre-agreed theme. During the sprint in Paris these presentations were the first opportunity the other participants had to acquaint themselves with the perspectives of the issue experts. During the second sprint in Amsterdam this was changed so that issue experts were now asked to prepare written project briefs in collaboration with EMAPS researchers that could be circulated in advance. This meant that research questions were more developed at the outset of the sprint in Amsterdam, in the sense that they were more attuned to the needs and wants of a digital methods project (we will elaborate below under "operationalising research questions"). It also meant that research questions were more hardwired to the interests of specific issue experts, in the sense that initial project briefs were developed without the interventions of other issue experts (we will elaborate below under "relevance and implications of research questions"). In preparation for the sprint in Paris there had indeed been extensive consultations with issue experts about the possible forms a research question could take in a controversy mapping project, but these were mainly aimed at getting the academically trained issue experts to present their perspective on the controversy - i.e. present themselves as stakeholders - instead of what they considered to be the balanced overview of the controversy suited for a research project context.

### **B) Considering the relevance and implications of research questions**

The main point of asking the issue experts to pose their questions on the first day of the sprint is to ensure that the digital methods projects, on which the sprint participants will be working for the rest of the week, are informed by, and acquire stakes in, what the actors of the controversy consider to be important matters of concern. There is an auxiliary point, which is to give the sprint participants, who cannot be expected to have prior experience with the controversy, an opportunity to get acquainted with the issues they will be working with, but both require that time is prioritised to take the problems raised by the issue experts properly into account. This can be done through conventional q&a sessions or panel discussions following the presentations by the issue experts, but it can also, and often times more fruitfully, take place as informal consultations between project groups and issue experts as part of the running feedback and commentary on datavisualisations (see under E below). It is both a matter of sprint participants - designers and developers for instance - getting to grips with the scope of the questions. But it is also, quite importantly, a matter of issue experts questioning each others positions. Effectively this means that no one issue expert is issued a monopoly on the mapping projects.

### **C) Operationalising research questions into feasible digital methods projects**

In a sense, this process begins already before the sprint where the organizer tries to gauge, in very ballpark terms, what type of projects the sprint might be liable to end up with. We found that an excellent way of doing this initial vetting was to ask issue experts to suggest interesting datasets in advance. This provided a chance to get back to the issue expert and explain why dataset had the wrong structure for certain types of hypothetical projects, for example, and thus getting them attuned to what a digital methods project can and cannot achieve. The actual operationalization, however, happens in the work groups led by one of more project leaders.

#### **D) Procuring and preparing datasets**

As mentioned, it is of course desirable to have datasets available in advance, but also incompatible with the agility of the sprint to fully anticipate what kind of data will be needed. During the Paris sprint we thus invited a data provider from the NGO Climate Funds Update as an auxiliary issue expert. We also had developers putting a significant effort into procuring new datasets as a consequence of the questions raised by the issue experts. It often happened that datasets were indeed available, but had been parsed in a way that was not amenable to the projects undertaken.

#### **E) Writing and adapting code**

In stark contrast to the work done in Macospol, where focus was on stand alone tools that would be operable by a user, the sprints can potentials build customized scripts to do the kind of analysis that is required by the research questions raised by the issue experts. These projects are only as agile as the coders who are there. This does not mean, however, that old tools cannot be fruitfully adapted during the sprints, and indeed several useful developments of the controversy mapping toolset came out of the sprints.

#### **F) Designing and making sense of maps**

The driving factor of a sprint is its tangible outcomes. In the course of five days the research collective produces a series of data visualizations that the issue experts can bring with them, that will be made openly available, and that, in the case of EMAPS, the sprint participants know they will be making public together on a website ([www.climaps.eu](http://www.climaps.eu)). It is therefore obvious why data design and data narration needs to be part of any data sprint in some measure. In EMAPS, however, we also took the opportunity to dedicate an entire sprint (namely the last one in Milano) to designing the final web platform. This involved selecting and redesigning maps, publishing and organizing datasets and code, narrating stories across projects, and generally thinking through what it takes to make controversy maps public.

#### **G) Eliciting feedback and commentary**

It has almost become a cliché in controversy mapping circles that the main value is not in the map but in the mapping. Although sprints work from very concrete expectations of finished maps it is important to remember that the main learning potential – for all parties – lies in the process of making maps together. Sprints are not reducible to five days of hard labor with a clear agenda and a fixed production deadline. They deliberately incorporate opportunities to alternate between doing things together, and stopping momentarily to think through whatever is being done. This is mainly possible during the three plenary sessions on day one, three and

five, but the fact that the work is co-located means that an informal conversation between, for instance, issue experts, social scientists and developers, takes place in the corridors. This should not be missed, but in fact encouraged through ongoing opportunities to have casual interactions, such as eating together or being able to take breaks in a nice surrounding.

## Towards controversy mapping as co-production of knowledge

Having gone through the paces of the sprint as a participatory format in controversy mapping, we can now ask what a researcher who affirms the necessity of social cartography will become in the presence of his or her victims?

Michel Callon (1999) has argued that the involvement of lay people in science and technology comes in roughly three varieties: the public education model (PEM), premised on the idea of a knowledge deficit and a fundamental opposition between lay and expert knowledge; the public debate model (PDM), which acknowledges the stakes of specific, situated publics in the production of scientific knowledge, and thus accepts a need to keep knowledge claims provisional until commentary from those affected by their consequences can be obtained; and the co-production of knowledge model (CKM), in which a public is entrusted with the competence to participate on an equal footing in all aspects of the scientific process and the lay-expert divide is thus no longer maintained.

One of the great qualities of Callon's framework is its implication that the most upstream public engagement exercise in the PDM register remains incommensurable with true co-production of knowledge if it confines lay competence to situated and local knowledge domains. If experts remain privileged as the final arbiters of what gets to count as objective and universal, so the argument goes, the much cited ambition to restore public trust in science and technology is unlikely to be more than an empty gesture. Here Callon resonates with a sentiment in much recent STS scholarship. The acute risk that a public involvement initiative will be perceived as a mere legitimization exercise, no matter how early or often the stakeholders are consulted, is now frequently noted and agreed upon. So much so that an author like Brian Wynne (2006) deems any attempt to "instrumentally (...) engender public trust in science, whether by "public dialogue", engagement or by any other means" intrinsically futile.

For others, and arguably also for Callon, the futility is less intrinsic, or at least the means of engendering public trust are potentially available if CKM is taken seriously. The reasons given are quite pragmatic: If it is the case that scientists build trust in their own knowledge claims through a series of translations (and this is how actor-network theory accounts for it), then something similar ought to be true for publics. Without a first hand appreciation of the reductive

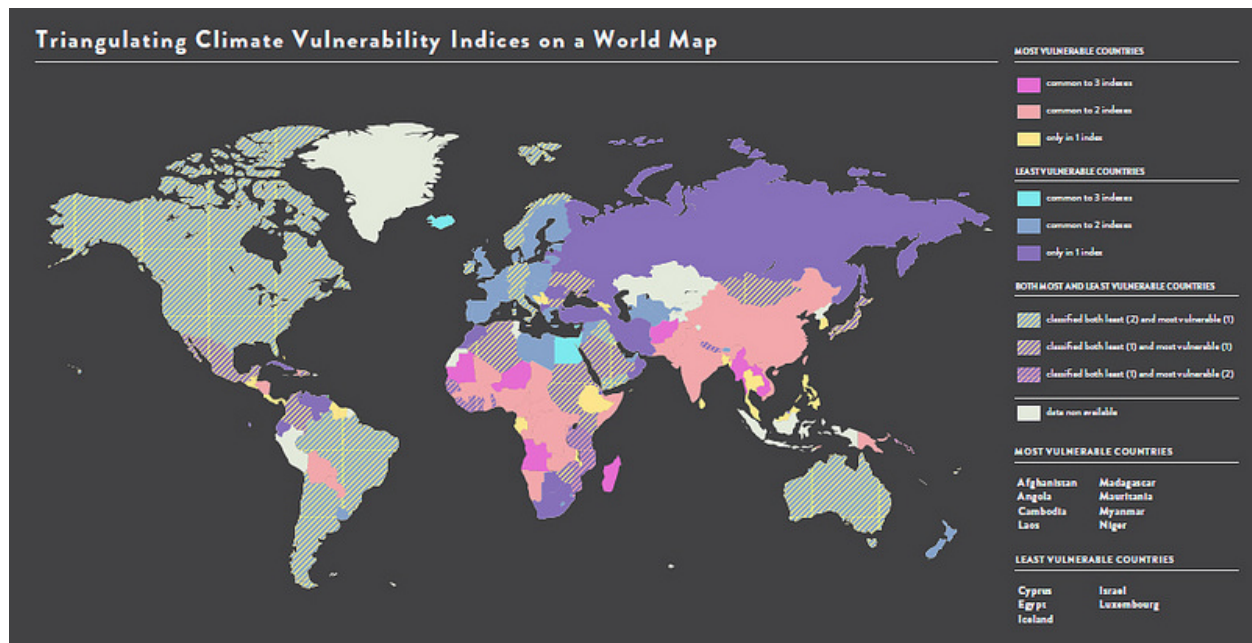
choices that goes into stabilizing a knowledge claim, trust cannot be expected to emerge out of the blue. One recent STS project which has taken this premise to its fullest and most radical consequence is the Pickering Flood Research Group, set up in North Yorkshire in 2008. Central to the success of this “competency group”, as it dubbed itself, was the notion of apprenticeship and the maxims to be “doing things together” and “making things public” (Whatmore 2011).

The development of the cartography of controversies through projects like MACOSPOL and EMAPS to our minds describe a movement from a quite classic PEM approach, where the public is construed as being in a navigational deficit that can be fixed by ‘tooling up’ the citizens, over a PDM model in the early phases of EMAPS where maps are produced in the cartographer’s workshop and then solicited for commentary with the users (stakeholders in the ageing debate), to the sprints as a version of CKM that allows the mapmakers to acquire stakes in the controversy and the actors of the controversy to acquire stakes in the mapping. In the end all participants became competent sprinters, sufficiently savvy about each other’s domains to be mapping things together.

In this mode of engagement it not only becomes possible to simultaneously make controversy mapping relevant for its users and manage a necessarily distributed cartographic machinery, it also allows the research collective to render the controversy as a controversy; to deploy it in its complexity without reducing it to a single point of view.

The map below was prepared as a framing for the second data sprint on vulnerability indices in Amsterdam. It shows the conflicting ways in which different indices assess countries as vulnerable to climate change. It was subsequently posted on the webpage of the climate vulnerability monitor (<http://www.thecvf.org/comparing-climate-change-vulnerability/>) and it demonstrates how the sprint, with its mobilization of different issue experts, in this case authors of different vulnerability indices, allows a common world to be named that manifests rather than silences a controversy.





How do vulnerability indices agree or disagree in their assessment of different countries? Notice the countries that have been deemed simultaneously most vulnerable and least vulnerable by different indices. This map was made in October 2013 in preparation for the Amsterdam Sprint in March 2014 and framed the invitation. Source: [DARA Index](#), [Germanwatch](#), [Gain Index](#).

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