REVISITING THE HISTORIES OF MAPPING
Is there a Future for a Cartographic Ethnology?

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This paper revisits the cartography of material folk culture from the point of view of a current cartographic project in science and technology studies (STS) known as controversy mapping. Considering the mutual learning that has already taken place between ethnological engagements with material culture and material semiotic strands of STS, we ask, what kind of cross-fruition could be gained from expanding the dialogue to cartography and mapmaking? We suggest that a shared focus on open-ended assemblages of cultural elements, rather than functional cultural wholes, provides a good basis for such a conversation. We argue that the capacity of the atlases of material folk culture to draw their own theoretical assumptions into doubt could serve as a useful prototype for controversy mappers. Vice versa we suggest that recent innovations in controversy mapping might overcome some of the problems that have troubled earlier ethnological mapmaking projects.

Keywords: historical-geographical paradigm, diffusionism, actor-network theory, cartography, controversy mapping

A Return to Cartography?

Like so many of its fellow cultural sciences, the ethnology of material folk culture boasts a rich cartographic past.[1] The adoption of the historical-geographical paradigm within this discipline covers an era in twentieth-century ethnology where the spatiotemporal charting of material folk culture became a joint project for several generations of scholars in institutions across Europe. Tracing its origins to the late nineteenth century when German historians first began categorising and mapping the geographical distribution of agricultural implements and house types (e.g. Baumgart 1881; Rhamm 1905), the historical-geographical paradigm is sometimes seen as the closest thing ethnology has ever come to a period of Kuhnian normal science (see especially Stoklund 2003). It nonetheless still figures as a curiosity that has little or no relevance for today's research practices in the field. With very few exceptions (see e.g. Frykman et al. 2009), cartography remains a thing of the past. At its height, however, the cartographic method saw ethnologists across Europe and Scandinavia undertake a series of national atlas projects (e.g. Lithberg 1919; Erixon 1957), eventually culminating in the European atlas collaboration in the decades following the Second World War (Rooijakkers & Meurkens 2000). In its aftermath, the cartographic method has been dismissed for its lack of

proper theoretical foundation, its naïve empiricism and atomistic notion of culture, its lack of qualitative depth and its inability to get beyond synchronic snapshots of something essentially processual.[2]

In this paper we revisit those histories from the perspective of a contemporary cartographic project in science and technology studies (STS). Controversy mapping traces its origin to the actor-network theoretical branches of STS where it was developed by Bruno Latour in the 1990s as a method for studying techno-scientific disputes and their consequences for democratic deliberation (Venturini 2010). Our errand is precisely a revisit from this particular point of view. Rather than providing a comprehensive account of the historical-geographical paradigm, we want to launch a discussion about the legacy of the atlas projects in contemporary studies of material culture and perhaps re-energise an ethnological appetite for maps and mapmaking.

Controversy mapping is a cross-disciplinary enterprise that brings together ethnography, media studies, data mining, information design and scientometrics to exploit the potentials of digital mediation and follow the various traces left by actors online. The method is developed both for didactical purposes in a coordinated course program taught at a range of European institutions,[3] as well as for research purposes in a series of ongoing mapping projects (Rogers & Marres 2000; Marres 2004; Venturini 2010, 2012; Beck & Kropp 2011; Yaneva 2012).[4] It is, in our view, particularly interesting to revisit the cartography of material folk culture from the point of view of a mapping project that has strong actor-network theoretical roots. Actor-network theory (ANT) and material semiotics have been important inspirations in many of the recent ethnological returns to material culture studies (Damsholt, Simonsen & Mordhorst 2009), much like the ethnographic method has been one of the major inspirations for the actor-network theoretical approach to the study of science and technology (Law 1994; Latour 2005). The two fields are not unfamiliar to one another and there has been significant mutual learning and cross-fruition over the past decades. This cross-fruition, however, has never been extended to cartography and experiences with mapmaking. This is a shame. From the point of view of controversy mapping – and, we would argue, from the point of view of a material-semiotic ethnology as well – the alleged atomism and naïve empiricism of the historical-geographical paradigm does not appear off-putting and cluelessly deprived of theory. In fact one can argue that controversy mappers would look upon the historical-geographical paradigm and its insistence on tracing cultural patterns composed of traceable elements, as an early example of good social cartography. Where others would see primitive atomism, a controversy mapper would see the compositionism of Latour or the monadology of Gabriel Tarde realised in practice (Latour et al. 2012).

Ethnology and STS have already learned a great deal from each other, and more mutual learning may lie ahead if we consider the two disciplines' vastly different, but also strangely cognate, experiences with mapping. The purpose of this paper is to explore what might be learned from a closer dialogue between the cartography of material folk culture that dominated European ethnology at the apex of the twentieth century and the cartography of controversies that is currently emerging as a way of doing digitally assisted ANT. The critical point for us is to show how mapmaking in the context of a material semiotic analysis that risks being side-lined as theoretically clueless and naïve can, if pursued in the right way, be an experimental device that puts knowledge claims at risk and slow down existing forms of theoretically informed reasoning.

What Is Controversy Mapping, and Why Does It Matter to Ethnology?

A typical controversy mapping begins with a list. It will be sparse and preliminary at first, containing the main points of contestation, a few names of prominent actors, perhaps some references to relevant academic publications, reports from government agencies or NGOs, and probably some more specific technologies, events, places, or pieces of legislation that are known to be, in one way or another, significant to the discussion. The point of the list is to provide the mappers with a set of *traceable*

elements that they can follow across different datasets to determine who is talking about what, when they are doing so, and in which contexts. If the topic is a new immunisation scheme, then the list might contain the names of the pharmaceutical companies supplying the vaccine, the spectrum of reported side effects, the names of known anti-vaccination activists, or the most frequently cited studies on the safety of the vaccine.

The mappers will attempt to chart the presence and absence of these elements across web-pages and blog posts, across the scientific literature, in the news media, on the various social media platforms, in the search history of Google, in the editing history of a set of Wikipedia articles, or in more issue-specific datasets such as the reports submitted to the Vaccine Adverse Event Reporting System (VAERS). The goal is to enable a *visual exploration* of the controversy as it unfolds in *space and time*: Where are the important groupings? Who are the important actors? What are their respective matters of concern? Where are the defining faultlines and the relevant axes of difference? And when do these shift, dissolve, or become entrenched? Since actors in a controversy tend to promote their own specific view of the issue, the goal of the mapping is to assemble, element by element, a more hybrid overview of how actor worlds overlap, coalesce, or diverge to create a space of conflict. The goal is a cosmogram of the *controversy* rather than of one specific actor world within it.

As the project progresses and the mappers develop a sensitivity to the complexity of what they are dealing with, the list of elements expands and acquires detail. The mappers may learn that the use of adjuvants such as mercury or aluminium have been a contested issue in relation to other vaccines where interest groups have attempted to link them to a rise in the cases of autism. Indeed, they may have to extend the scope of their mapping in the realisation that the controversy is really about immunisation in general and not a particular kind of vaccine. They may discover that an argument like herd immunity is not only advanced by "pro-vaxers", but also attacked by "anti-vaxers" (two issue terms used by the actors) in support of their differing agendas, or they

may begin to distinguish between those fractions of the anti-vaccination campaign that are committed to homeopathic alternatives, and those who make no mention of alternative medicine at all.

What is crucially important about the multifarious items on this expanding list is precisely that they are *traceable*, which means that the mappers will be able to identify them (for example in a Twitter stream or in a large batch of scientific papers), and that they are viewed as *elements*, which means that they are in one way or another part of the changing composition of the controversy, but that the question of how and in which situations this is the case remains open and empirical. There is a list of things that are known to generate concern (mercury, aluminium, herd immunity, homeopathy, etc.), but it is understood that it is an open list, and that it might be necessary to add to it as we move into other contexts or as the controversy develops over time. Below (illustration 1) is an example of a map of the pro-vax and anti-vax online communities produced in collaboration with our students. It traces the issue of homeopathic alternatives across the two actor worlds. It was made by first producing a base map of websites that are engaged in the discussion for or against immunisation. It can be said to be a map because the hyperlinks between the websites are used to create a networked space where stronger interlinked websites appear closer to each other than weaker interlinked ones. So there are "regions" in this map, namely a pro-vax and an anti-vax one, and it makes a difference where (i.e. in which region) one finds certain keywords.

To an ethnologist who is versed in the historical-geographical paradigm and the various atlas projects that defined ethnological research on material folk culture through much of the early- to mid-twentieth century, this account of a controversy mapping project will probably sound familiar. Although the elements traced in controversy mapping are not hay rakes, flail types, or folk costumes (at least not in most contemporary controversies), and although the spatial ordering of these elements does not have to be geographical (it might be equally interesting to locate them, for example, in a network of websites, see
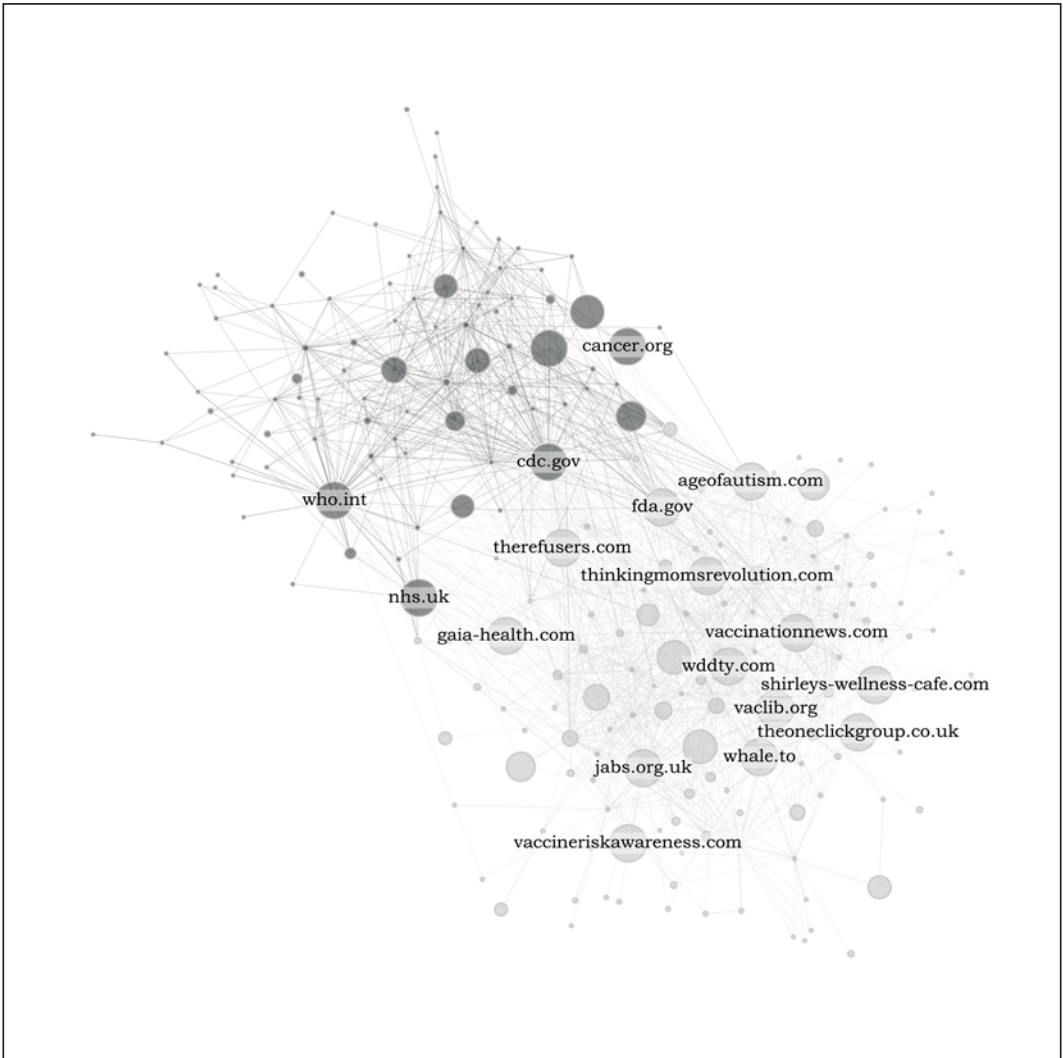
Ill. 1: Network of websites engaged in the vaccination controversy and the degree to which they talk about homeopathy. Websites that were specifically concerned with immunisation were scraped for hyperlinks using a tool called the Navi-crawler. A network graph of websites connected by hyperlinks was then spatialised using the spring based ForceAtlas2 algorithm. We used the Google Scraper to query each website for a series of issue-relevant keywords that we could plot on the spatialised graph to examine their distribution (represented by the size of the nodes). Here we see the distribution of the words "homeopathy" and "homeopathic". Notice that 1) the network has an anti-vax (light grey) and a pro-vax (dark grey) pole. 2) That there are many links between the two poles. This indicates that pro-vaxers and anti-vaxers are aware of each other's existence and point to each other in their discussions. We could say that they take each other into account. 3) That it is only some of the websites that talk about homeopathy (bigger nodes indicate more mentions). It tells us not only that it is an issue that divides the anti-vaxers (not all mention them), but also that it is a point of contestation that gets the pro-vaxers' attention (albeit primarily the institutional actors). The map was produced collectively by students in a controversy mapping class at the Danish Technical University in December 2013.

illustration 1), the similarities are still noteworthy. One could certainly say that early twentieth-century ethnologists also began with a list, namely the typology of artifacts that enabled them to ask their evolutionary and diffusionist questions about cultural origins and developments. And one could equally say that as the ethnological mappers developed a sensitivity to the complexity of what they were dealing with, that list rapidly became more detailed.

The hay rake, for example, was initially divided into a few basic types, but as the subtler variations in how one attaches the handle to the head turned out to be more interesting than first assumed, more types were added to the list and traced on the maps (see e.g. Stoklund 1990 and his comparison of Erixon 1931 and Erixon 1957). The result of this increasing complexity is well known: as more variations crowded the maps, and as the spreading patterns diversified and became more ambiguous, the theoretical assumptions that had originally provided the impetus for the big cartographic projects (diffusionist or evolutionary alike) became increasingly untenable, at least in their purest of forms. Illustration

2 shows a map from Oskar Moser's monograph on rake types in Kärnten, Austria. It is an early example of a complex map leading to new theoretical ideas. In this case it is the proposition that the appropriateness of certain rake types for hard work on the mountain slopes is dependent on differing cultural classifications of what is a man's and a woman's rake, rather than functional criteria (Moser 1952, see also Stoklund 2003).

Moser's map in illustration 2 essentially asks a question, namely: why can the distribution of rake types not be explained by functional criteria alone? The answer to that question then had to be found through other means of inquiry, resulting eventually in the idea of a cultural classification based on gender. This capacity of maps to do what the Belgian philosopher of science Isabelle Stengers would call to slow down reasoning and put knowledge claims at risk (Stengers 2000, 2005) is in fact at the heart of what controversy mapping is meant to achieve. Originally developed as a way of teaching engineering students some basic intuitions from social studies of science and technology, the idea behind con-
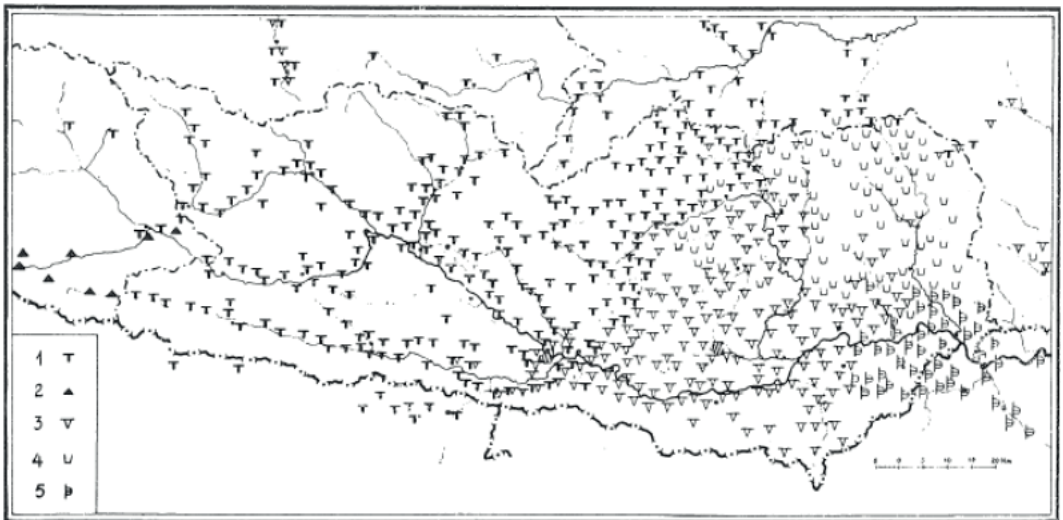
Ill. 2: Oskar Moser's map of rake types in Kärnten. The map shows five rake types (1: Blade handled rake. 2: Blade handled rake with short diagonal braces. 3: Simple split-handled rake. 4: Forked rake with natural handle. 5: Simple bow rake). The map does not show male and female rakes, but the distribution of rake types prompted the question that led to that conclusion. (Moser 1952, in Stoklund 1990: 13)

troversy mapping is essentially pedagogical: faced with the practical task of charting the claims made by different actors in a controversy over time (as well as the conflicting types of evidence and arguments deployed in support of these claims), students are prompted to reconsider any overly simplistic understandings that they might otherwise have been able to maintain about the role and place of scientific expertise in contemporary democracy. From this perspective, controversy mappers anno 2014 and the cartographers of material folk culture of the mid-twentieth century have a lot to talk about.

It must be acknowledged, however, that this is not always how the contentious story of the historical-geographical paradigm is being told. One of the more critical versions is summed up in the urban legend that as the mappers added ever more transparent overlays charting ever more formal variations to their base maps, what emerged was not the neat diffusion routes and well defined cultural zones that they had been hoping for, but a progressively overdrawn hairball that eventually went black with complexity. The story of a failure, in other words, and a failure that eventually lead to a paradigmatic shift. Another version is epitomised by the Dutch ethnologist J.J. Voskuil in his autobiographic novel *Het Bureau* (Voskuil 2000) about the capsised Great Atlas of European Folk Culture. Voskuil spent most of his career working on the atlas project and bitterly lamented the project leaders' increasingly dogmatic insistence on a methodology that produced very few results compared to the effort it required and, through its grandiose continental ambitions, systematically failed to take into account all the interesting problems that were emerging from mapping projects at the local and national scales. In their review of *Het Bureau* Gerard Rooijakkers and Peter Meurkens quotes a scene where, right towards the last convulsions of the European atlas project in the early 1980s, some of the first finished maps arrive for commentary in Amsterdam. Voskuil is addressing some of his assistants (Seiner is the alias for the leader of the German atlas project in Bonn, Matthias Zender):

He put the opened edition showing the Dutch map on top of the European one and pulled back a little in order to let Lien take a look at it. "That makes much more subtle distinctions." "Then who simplified it?" Lien asked. "Seiner." He looked at a distance at the European map. "In a way it is very German, isn't it? – such a European map. You see those signs march from the center of Europe towards the edges." "Do you think that this European Atlas initially is a German project?" Ad asked with unbelief. "Definitely! Just like the European Community. They are both a product of the national-socialism." (J.J. Voskuil, alias Marten Konig, in *Het Bureau*, translated and quoted in Rooijakkers and Meurkens 2000: 84)

The rather more positive legacy of the historical-geographical paradigm emphasises the maps' ability to enact a world of material folk culture that was both more complex than first thought, impossible to ignore once mapped, and thus something of an experimental device that prompted ethnologists to develop more sophisticated theoretical ideas, engage with new kinds of empirical material and acquire a broader suite of methodological approaches to do so (see for example Stoklund 2003). Along such lines, Thomas Højrup has made the case that maps were a powerful source of argumentation against political attempts to conflate nationality, ethnicity and culture. He thus writes about the European atlas collaboration that Voskuil and others so vehemently loathed:

It was not least within the study of building practices, which used to play a major role for the discussion about ethnic demarcations, that ethnologists torpedoed the basic presumption that folk culture develops according to national principles. (…) The European atlas collaboration, the study of diffusion paths, innovation centres and local forms of adaptation (…) heralded a modern European Ethnology (…) that trespassed not only the cultural nation states but also the iron curtain separating East from West. Part of the disciplinary ethos seemed to be that when the self-

dependant folk culture could not be deterred or confined by "random" political demarcations, then neither would the European ethnologist. The historical-geographical method and the strong focus on things and customs could be turned to a quiet but bitingly effective bastion for a critique of nationalism. (Højrup 2002: 650, our translation)

Our ambition in this paper is not to reconcile these differences between positive and negative legacies, or to reach a verdict on what would be a "right" or "fair" representation of how folklife cartography has figured in the disciplinary history of European ethnology. We see no reason, for instance, why a project like the Great Atlas of European Folk Culture could not simultaneously have been a badly managed systemic monster that left its participant researchers rather disillusioned, and a manifestation of a methodological approach that proved highly productive in other respects (Karin Gustavsson's contribution in this volume certainly supports the idea that cartography could also be a great source of enthusiasm and inspiration). What we will do, however, is to revisit the historical-geographical paradigm from the vantage point of controversy mapping in order to explore two closely related lines of inquiry that are, to our minds, of relevance to contemporary research practices in both ethnology and STS.

First, considering that many ethnologists have taken inspiration from STS, and in particular from ANT and material semiotics, during the past decade (see Ren & Krogh Petersen 2013 for an overview), we ask what else could be learned from extending the conversation between the two fields of study to also include their common experiences with cartography. What would happen if we considered mapping to be more than an heirloom, but as a potential research strategy? And *second*, considering that STS, and in particular ANT and material semiotics, have taken much of their key inspiration, if not explicitly from European ethnology, then at least from related ethnographic traditions, what could be learned if controversy mappers acquainted themselves with the historical-geographical paradigm?

What Ethnologists Might Learn from Controversy Mapping

Like several other disciplines concerned with the study of culture, ethnology has, over the past couple of decades, rekindled its interest in the materiality of its subject matter. One notable way of doing so has been to draw inspiration from STS and in particular its material semiotic branch sometimes known as ANT. Several examples of how to do cultural analysis with such a revamped focus on materiality have come out of this dialogue (see for example Nilsson 2000; Jespersen 2008; Sandberg 2009; Ren 2009; Munk 2010; Boll 2011; Krogh Petersen 2011; Beck, Niewöhner &Sørensen 2012, or the papers collected in Damsholt, Simonsen & Mordhorst 2009) and are now prompting a more theoretical meta-reflection over their possible place in the ethnological repertoire (e.g. Ren & Krogh Petersen 2013).

On the one hand it seems straightforward that ethnologists should be susceptible to the claim that things (non-humans) are important, that they play an active role, and that the social fabric is thus composed not just of mental structures, language or texts, but of technologies, ecologies and bodies as well. After all, this is well-known terrain for a discipline dedicated from birth to the study of material culture. Neither is it perhaps so essentially different to think in terms of "modes of ordering" (Law 1994) or "modes of existence" (Latour 2013) when one is already used to, and well versed in, notions such as discourses or life forms. There have in other words been some clear affinities between established ethnological approaches to cultural analysis and the newer inspirations drawn from ANT and material semiotics.

On the other hand there is something about the radical empiricism and the relational ontology, on which ANT and material semiotics rely that can appear incomprehensibly naïve to an ethnologist. How is it possible to claim that something is multiple and enacted, when anybody who has observed cultural phenomena such as ideas about "the good life" or people's morning routines will have noticed that they are frequently both extremely enduring, uncompromisingly singular and taken absolutely for

granted by their practitioners (Damsholt & Jespersen, this issue)? A critique to which those who find a material semiotic approach productive would habitually reply that such durations are indeed all the more interesting, since one would naturally have to wonder what kind of work and what kind of material devices achieve the amazing feat of keeping cultural phenomena so stable and enduring. The question is not so much what these phenomena are or what they do, but how they are being *done* (see especially Mol 2002 and her praxiography). The main concern for the cultural analyst may thus be to keep open the possibility of cultural phenomena being done differently, or even to actively contribute to their re-enactment (see Damsholt & Jespersen for a discussion of approaches to endurance vs. radical change, or see the papers collected in Jespersen et al. 2012 for a discussion of interventionist approaches to cultural analysis).

This problem of how to handle materiality as a part of cultural analysis is arguably predicated on what kind of concept of culture one adheres to. If culture is taken to be a unit of analysis with explanatory powers of its own, then the durability and particularity of cultural phenomena must be understood as the *consequences* of a culture. That, however, is not an option in a material semiotic analysis. What gets to count as "a culture" or "cultural" here is in itself the important research question, and thus something that must be answered empirically each time anew. The standard way of providing such an answer is to proceed ethnographically and "follow the actors themselves" (Latour 2005: 12), association by association, carefully assembling the phenomenon at hand. It is a radically empiricist approach that stubbornly adheres to "the prescription to be non-prescriptive" (Law 2009: 6), and it is slow and painstaking work.

To a certain extent, controversy mappers are in a similar kind of predicament. A frequently voiced reason for mapping controversies, and not some other phenomena, is precisely that they display most strikingly the social in its making (Venturini 2010). As we stressed in the beginning, the question of what belongs to a controversy, and in what way it does so,

always remains open and empirical – it is an inquiry into the assemblage of the social in that specific situation. But contrary to material semiotic ethnographers, controversy mappers have an additional set of options at their disposal when they have to deal with these open and empirical questions. *First*, although the slow ethnographic footwork of following the actors themselves is arguably preferable in terms of quality and depth of the account, it has some tangible and practical limits that are given by the time, manpower and field access of the project. By following a series of traceable elements through online datasets instead, using digital methods such as web cartography or text mining (whenever these are applicable and make sense), controversy mappers can significantly speed up the assembly process without defaulting on the relational ontology (phenomena are still emergent and given by the actors).[5] ANT has been experimenting since the early 1980s with various computer assisted methods, not least with inspiration from scientometrics, and it has always been with this capacity problem in mind (Callon et al. 1983; Latour, Mauguin & Teil 1992; Teil & Latour 1995). *Second*, the ability to easily render these mapped assemblages visually explorable arguably provides a different kind of presence to whatever is the object of analysis. What should be particularly interesting to contemporary ethnologists with a material semiotic inclination is of course that they have such potentials readily available in their own disciplinary annals.

In the introduction to his book from 2003 on the cultural history of artifacts (*Tingenes Kulturhistorie*), Bjarne Stoklund offered his reflections on the material turn that was brewing across the spectrum of cultural sciences at the time (Stoklund 2003). Spurred by the publication of the new transdisciplinary *Journal of Material Culture* in 1996 the now late professor of Danish ethnology expressed his hopes that artifacts could once again arouse the appetite of European ethnologists. After being dethroned by social relations as the preferred object of study during the spree of community studies in the 1970s, and later somewhat half-heartedly reintroduced as "signs" and "language" by the consumption re-

search program in the 1980s, artifacts, Stoklund argued, deserved to be taken seriously beyond the limits of textual analogy. They deserved to be recognised for their concrete and formative role in the human struggle for existence, and they deserved to be considered both as physical form and practical function, and not "just" as bearers of meaning, in a world where such things were understood to be of consequence to the development of human culture and society.

Stoklund was clearly contributing to a debate about the future direction of ethnological research, although his instrument was retrospective. By revisiting some of the seminal moments in the disciplinary history where the form and function of artifacts had figured prominently he struck up a distinction between artifacts as cultural elements and artifacts

as cultural products that is particularly interesting from the point of view of material semiotics and controversy mapping alike. The notion of cultural *element*, argued Stoklund, belongs to a concept of culture that traces its origins to Edward Bernard Tyler and is essentially additional insofar as it considers culture to be the sum of its multifarious constituent parts, whatever they may be at that point in space and time (see illustration 3). This allows artifacts to have a real say in a cultural assemblage. The notion of cultural *product*, on the other hand, presumes the pre-existence of a culture, Durkheimian and *sui generis* in nature, from which the artifacts passively receive their meaning.

If we accept that distinction, then it is perhaps not so far-fetched to consider the historical-geographical paradigm as a kind of precursor to the current
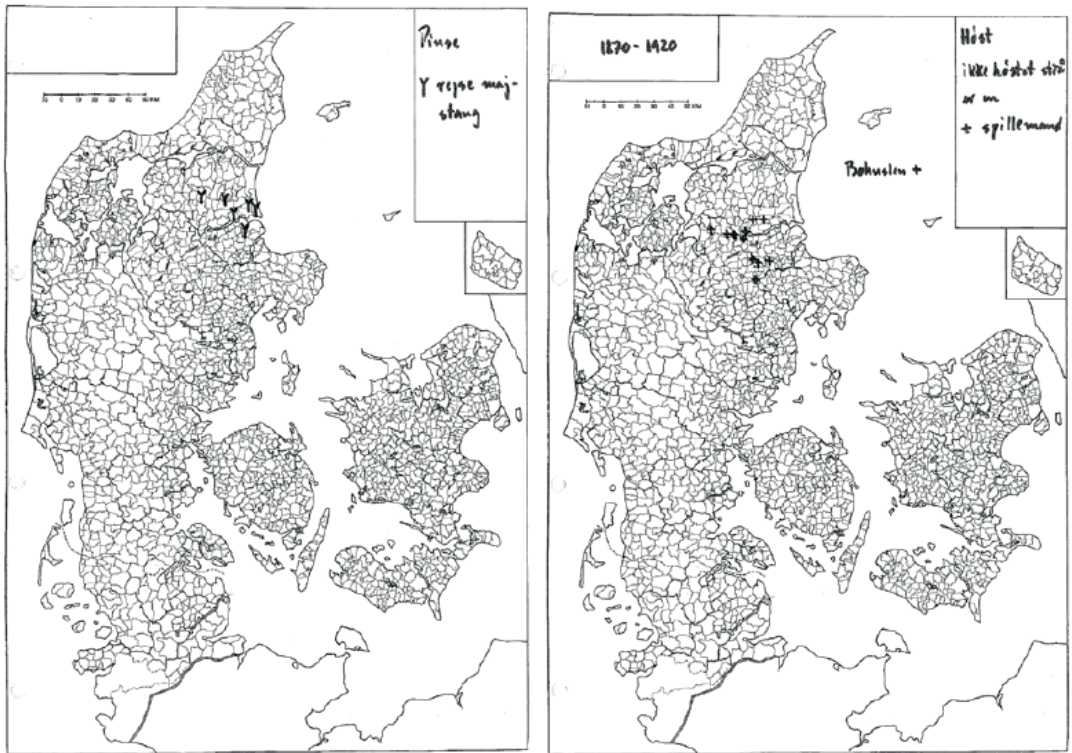
Ill. 3: Two examples of transparent overlays used to plot cultural elements from the archives of Ole Højrup (section on Eastern Jutland). To the left it is the practice of erecting Pentecostal May poles, to the right is the use of fiddlers for a particular part of the harvest. Here culture is in a very practical sense never more than the sum of its parts: it is by moving the transparent overlays on top of one another that a composition takes shape.

material semiotic types of analysis. At least they share the insistence on not deciding in advance what elements will be composed together, but devising instead a way of letting their changing composition be deployed and examined empirically. "The whole", in controversy mapping, is explicitly considered to be *less* than the sum of its parts (Latour et al. 2012). The same, we would argue, is true for the mapping of material folk culture (although not always for the theoretical agendas associated with it) and for material semiotic analysis in contemporary ethnology.

In this way one could say that ethnologists are currently going back to analysing open assemblages of cultural elements, but with a toolbox that was only later imported from British social anthropology to analyse self-contained cultural wholes and their various derivatives, namely the toolbox of ethnographic field methods like participant observation and semi-structured interviewing. Why not supplement this toolbox with some of the cartographic instruments that were originally available? There should be all the more reason to do so now, given the rapidly expanding array of topics that are considered suitable for ethnological analysis (indeed, the immunisation controversy itself has recently been subjected to such an analysis using participatory, ethnographic methods, see Cunha & Durand 2013). Whereas the historical realm of material folk culture could in principle be mapped and made available for analysis once and for all, contemporary ethnologists are faced with the challenge of having to enact a new object of study almost every time they engage in a new project. If mapping is a way of speeding up part of that assembly process, then it has a tangible and immediate application in contemporary ethnological research projects.

It has been suggested that cultural analysis should be particularly interested in computational methods because of the distributed nature of cultural phenomena (Abello, Broadwell & Tangherlini 2012). It is always desirable to be empirically as broad as possible when dealing with the everyday. Whereas we agree with this contention in general, we also want to make the more specific point about cultural analysis of the material-semiotic variety, that it champions

its ability to situate complex problems in everyday life situations as one of its important contributions. Crudely put, this means that ethnologists are no longer working on a well-defined, common object of study, but are constantly cultivating new areas of cultural analysis. This analytical "promiscuity", that has been so valuable in terms of making ethnology relevant to a broad range of societal problems, makes it necessary to find new ways of quite literally putting the ever changing objects of study on the map.

On top of that, with the possibilities offered by the advent of digital mediation, some of the problems that originally tarnished the reputation of the historical-geographical method have now become solvable in ways that would have been unimaginable to folklife cartographers half a century ago. One of those is the problem of diachronicity. Both Sigurd Erixon in Stockholm and J.J. Voskuil in Amsterdam eventually became more interested in the ethnohistorical study of local communities where the sources (peasant diaries, among other things) permitted a proper diachronic understanding of the cultural processes at play. It was one of the most insurmountable problems of the atlas projects that they had to lump together in one synchronic snapshot all reported pre-industrial findings of an artifact in a particular area, sometimes covering a time span from Medieval times to the twentieth century (Stoklund 1990: 11). The maps therefore conveyed static, condensed images of relatively long time spans, and the reader would have to consult the often very voluminous commentaries to get the cartographers' account of the developments over time (see for example Erixon 1957). Notice the missing time indication on the left overlay in illustration 3: these inconsistencies in temporal data were notorious in the atlas projects, especially the ones dealing with material folk culture (folk-tale cartography came somewhat closer to a solution [Tangherlini 2013]). The difficulties of registering and presenting diachronic data does not arise with the same gravity when mapping is based on digital traces. Digital traces are often either time-stamped themselves (like a tweet or a status update), or left in a context where a time stamp can easily be associated with them (like in a blog post or a scien-
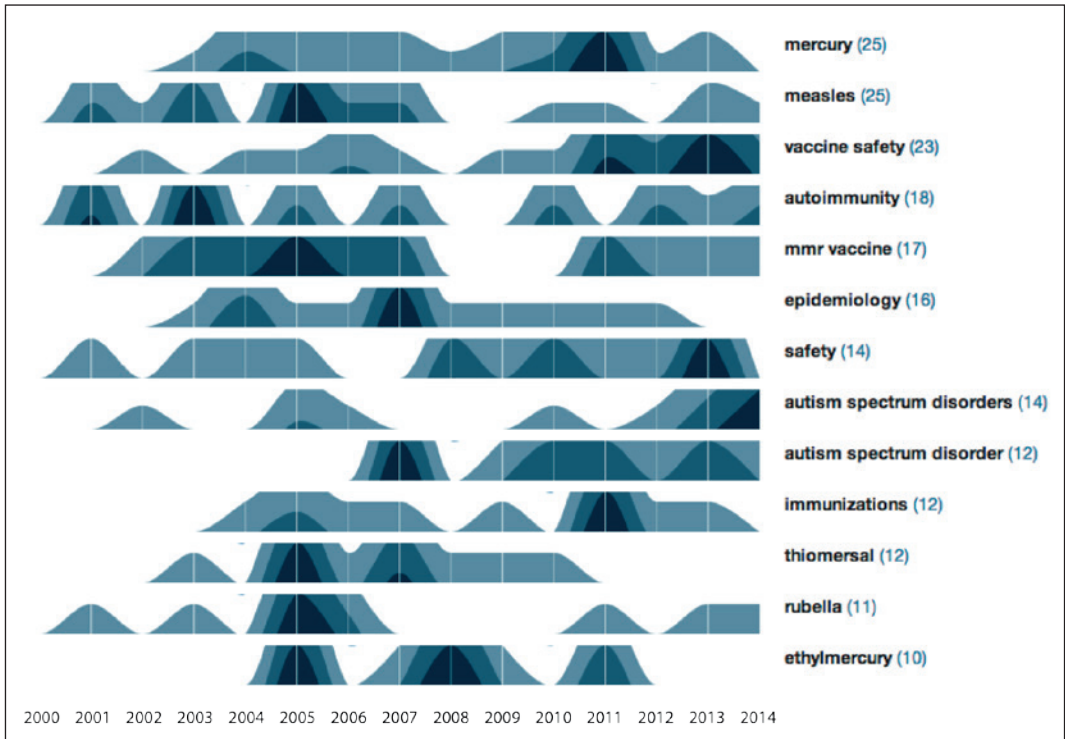
Ill. 4: Relative variations in author keywords in the scientific literature on immunization and autism over a time period from 2000 to 2014 on the horizontal axis. The data set was produced using the search query "(immuniz* OR vaccin*) AND autism" on Scopus and visualised using Sciencescape. The numbers on the right indicate the total number of papers on immunization and autism tagged by its authors with a specific keyword. The flowcharts indicate the publication of these papers over time. Mercury seems to have been particularly interesting to this literature in 2011, for example, whereas thiomersal or rubella topped in 2005.

tific publication). With time-stamped data, the plotting of variables against a timescale becomes readily accessible. As an example, illustration 4 shows the variations in keywords associated with immunisation and autism in the scientific literature over time.

Another of the notorious incapacities of the atlas projects that allegedly drove researchers like Erixon and Voskuil towards community studies, were their limitations with respect to local cultural processes. Such processes could effectively only be studied through a more in-depth qualitative approach. Looking at a map like the hyperlink network shown in illustration 1, very little seems to have changed in relation to this problem. The map itself is still equally incapable of qualitative engagements at the local level. What has to be taken into account, however, is that the previously insurmountable differences between the macro and the micro level of analysis is now only a click or a scroll away from one another. In fact, they are just different scalings of the same empirical material rather than two different analytical levels. Illustration 5 shows the content of a page on an anti-vaccination website that talks about homeopathy. It has been accessed directly from the network in illustration 1 and gives the researcher an immediate opportunity to explore qualitatively how a component like homeopathy becomes a matter of concern in this specific context. One can see the hyperlinks that give illustration 1 its structure and map-like qualities (herbalhealer.com, e.g.), and
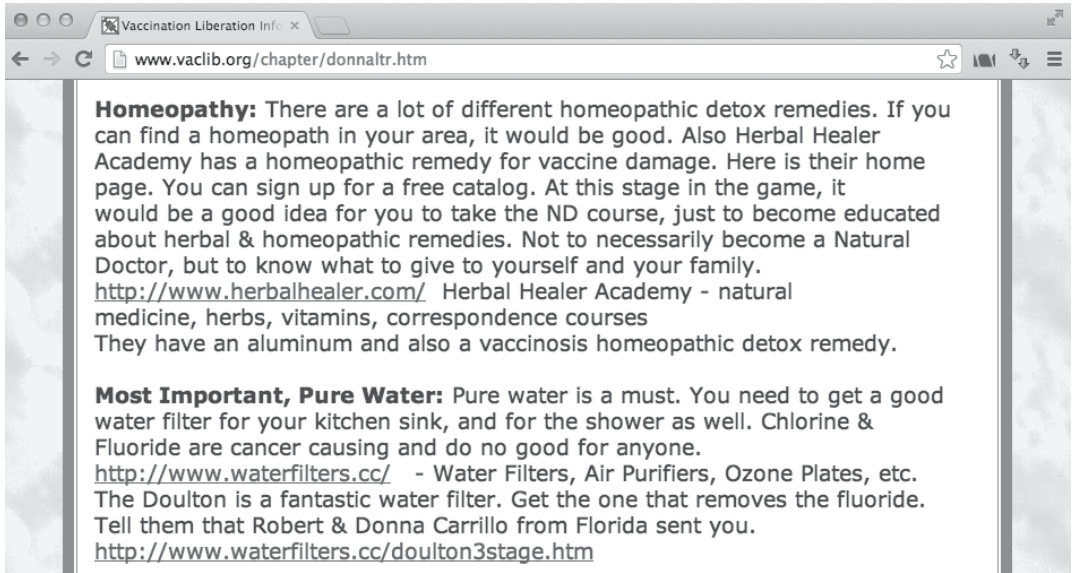
Ill. 5: Screenshot from an anti-vax website discussing homeopathy. The website has been accessed directly from the network in illustration 1.

one can explore the precise context in which they are used. There is also the possibility to situate the elements that we have traced, namely words like "homeopathy" or "homeopathic", in the text from which they were extracted.

These analytical moves were more or less impossible, or at least extremely laborious, for the cartographers of material folk culture. Although attempts were made to provide context in the elaborate comments to the atlas maps, it was always the mappers' interpretation of the maps. The flexibility that allows the same empirical material to be simultaneously explored through a map and through a qualitative analysis of the full record has only recently become available.

What Controversy Mappers Could Learn from Ethnology

But what if we were to turn the question on its head? What if we were to ask instead what controversy mappers could learn from their distant cousins in folklife cartography? To answer that question we should probably first try to establish what STS has already learned from ethnology. And strictly speak-

ing, if one looks into classic works of the STS literature (Latour & Woolgar 1979; Knorr-Cetina 1981; Lynch 1985; Shapin & Schaffer 1985; Pinch & Bijker 1987), the answer to that question would be a resounding nothing. STS seems to have established itself in a world, or a part of social science, that has been completely unaware of the existence of European ethnology. STS researchers refer to sociologists, anthropologists, historians and philosophers – in particular French, British and American ones – but never to European ethnologists. Judging from literature references the conclusion is therefore clear: STS has learned nothing from European ethnology.

It is, however, possible to reach almost the opposite conclusion if we broaden the perspective a bit. A leading historian of science, Peter Galison, recently introduced a book chapter with the following remark: "Behind the most significant accomplishments of the last thirty years of science and technology studies – behind laboratory studies and actor network theory, at the centre of our ventures into scientific intellectual property, authorship, historical epistemology, media studies, book history, discourse analysis, participant-observation and the

philosophy of experimentation – in back of all this is a turn toward locality" (Galison 2014: 197). If Galison is right that the turn to locality is the key intellectual source from which STS springs, then one could point out that this source was not of STS's own making. When STS established itself in the late 1970s it imported the turn to locality from other disciplines where this turn had been underway for several decades. In particular, STS drew on ethnography and pragmatist micro sociologies (e.g. symbolic interactionism and ethnomethodology). If we grant that the turn to locality, to "situatedness", to micro histories, to case studies and to field studies emerged on a broad front generated by exchanges within and between a number of cultural sciences, then it is not too far a stretch to give some of the credit for this localising turn to European ethnology. As a relatively new field, STS has had to find its inspiration elsewhere. One of them was in ethnography. Indeed, one of the founding moments can be said to have occurred when anthropologically trained scholars proposed to study science in its everyday practice (e.g. Latour & Woolgar 1979; Knorr-Cetina 1981; Lynch 1985; Suchman 1987; Traweek 1988). The conclusion then, is that STS has learned almost everything from the localising move that European ethnology was a part of and helped bring about.

What STS has not quite learned, however, is how to get comfortable with cartography, not as the object of a critical analysis (that has gone just fine, see e.g. Turnbull 1996 or Harley 1989), but as a methodological move that produces different and not always localising effects. While ANT and material semiotics have been helpful in prompting ethnologists to think through the material return of their discipline and establish new roles for themselves and their cultural analysis, ANT itself has been busy searching for a history to call its own. Born, as it were, in the late 1970s, scholars like Bruno Latour in particular have spent the past two decades substantiating the possible inspirations and forerunners that might define ANT as part of a specific tradition in the humanities and social sciences.

The gallery of forefathers now spans from American pragmatists like William James (whatever makes a difference is an actor) or John Dewey (a public is sparked into being by its matters of concern) to French philosophers such as Gilles Deleuze (the notion of rhizome and the notion of network) or Michel Serres (anti-correspondence theory), but what is perhaps most relevant here is the rediscovery of the pre-Durkheimian French sociologist Gabriel Tarde (Toews 2003; Latour 2005; Barry & Thrift 2007). In his day (the late nineteenth century) Tarde was considered to be the founding father of a burgeoning French sociology that was based around the study of associations. For him, the social had nothing to do with the *sui generis* existence that could explain collective behaviour that his predecessor Durkheim would later become famous for claiming. On the contrary, Tarde believed that the social was the very thing that had to be explained through what he called a monadological social science (Tarde 2011). The main feat of such a monadology would be the meticulous mapping of the basic components (monads) that made up the social fabric.

We can safely read "cultural elements" instead of "monads" here. Tarde explicitly stated his methodological ambitions for a corps of sociologists that would travel the French countryside and "write out with the greatest care and in the greatest possible detail, the succession of minute transformations in the political or economic world" (Tarde 1999: 130–131), and that this would include charting the spread and variation of both dialects, artifacts, habits and rituals, much like the various atlas projects over folk culture that would later be launched by ethnological departments across Europe. While we tend to think about the historical-geographical paradigm in the study of material folk culture as originating in German *Volkskunde* (e.g. Baumgart 1881; Rhamm 1905), a simultaneous experiment with diffusion maps was going on in France.[6]

Contrary to this Tardean vision, which was never realised, most likely due to a practical lack of hands, the historical-geographical paradigm in ethnology actually came to fruition, and not only that: it stayed within the mainstream of ethnological research for well over half a century. That is particularly interesting in the landscape of cultural scientific disciplines

from which STS has otherwise drawn its inspiration. Atlas projects were also carried out in anthropology, leading for example to the "Standard Cross-Cultural Sample" (Murdock & White 1969), the *Ethnographic Atlas* (Murdock 1969) and the *Atlas of World Cultures* (Murdock 1981). The approach here was very different, taking as a given the existence of well-defined cultural wholes (mainly tribes) to which habits and rituals could be ascribed. In stark contrast to this, the ethnological atlas projects were truly monadological, which is arguably why they succeeded in putting the knowledge claims of their diffusionist, evolutionist and nationalist forefathers at risk. They might serve as a positive role model for controversy mappers in a world where cartography is far too often associated with imperial power and colonial dominance. They show us that maps can work on material semiotic terms.

Conclusion: Mapping as an Experimental Device

Revisiting the historical-geographical paradigm, as we have done in this paper, and bringing it into dialogue with the current mapping controversies efforts in STS may not seem the most obvious thing to do. After all, many contemporary ethnologists consider the historical-geographical paradigm to be something of an epic failure that one would be ill advised to spend more time on. In this paper we have attempted to argue the contrary: We argue that a reconsideration of the historical-geographical paradigm in a dialogue with STS might provide contemporary ethnology with a cartographic future.

To set the stage for our argument, we have pointed out the dialogues that are already taking place between ethnology and STS. Briefly put, ethnologists have recently drawn on STS to rekindle their interest in materiality. And, again briefly put, STS is essentially based on the turn to locality that ethnology along with other social sciences brought about in the mid-twentieth century. But the shared interest in materiality, everyday practices and locality are not the only possible objects of dialogue between ethnology and STS. There is also mapping.

It is all too easy to suggest that the current mapping controversies projects in STS and the ethnological atlas projects of the twentieth century are worlds apart: Search engines vs. bicycles, databases vs. notebooks, Twitter streams vs. hay rakes, digital data vs. physical objects. But as we have pointed out, the mapping projects in STS and ethnology share some fundamental features that set them apart from other mapping projects, such as Murdock's anthropological atlases. To identify these shared features, we have focused attention on the role played by, for example, lists of traceable elements. Cartographic ethnologists of the past and controversy mappers of the present began and begin their endeavours with a simple list of elements that they set out to trace. As the collection of elements proceeds, the list is expanded and revised. The cartographic projects that grow from this starting point entail a commitment to the idea that "a culture" or "a controversy" is an assemblage, which is composed out of a constantly evolving multitude of bits and pieces. In Stoklund's terms the collected objects are seen as *cultural elements*, that is elements that collectively produce an assemblage. This approach is directly opposed to the functionalist view that the collected objects must be seen as *cultural products*, that is material expressions of an underlying culture *sui generis*. With Stoklund's distinction between cultural elements and cultural products, it becomes clear that the mapping projects in STS and ethnology are quite similar in their fundamental "monadological" strategies, and quite different from "functionalist" mapping projects that build their mapping projects from the assumption that a number of distinct underlying cultures exist and express themselves through material artifacts.

If the shared commitment to a monadological mapping strategy becomes a part of the ongoing dialogue between STS and ethnology, then one might ask what the two participants could learn from each other? We have no final answer to this question, but we have suggested that controversy mapping might provide some valuable resources that were not available to the cartography of material folk culture: The time stamps available in much online material could alleviate some of the problems of diacronicity. The scalability of digital maps could do away with

the insurmountable difference between micro- and macro-level analysis. Controversy mappers, on the other hand, might learn important lessons from the historical-geographical paradigm, in particular on how successfully the truly monadological atlas projects succeeded in putting the knowledge claims of their diffusionist, evolutionist and nationalist forefathers at risk.

Our conclusion then is that a combination of the productive experiences from the cartography of material folk culture and the cartography of controversies in material semiotic STS holds promises for the future. We will make more of the resources and flexibility of digital mapping if we constantly bear in mind that we are mapping cultural elements rather than cultural products. Mapping may then become an experimental device that will constantly refresh our ideas about what "a culture" or "a controversy" consists of. Our theoretical baggage makes it all too easy to claim that the things we observe are the expressions of "a cultural pattern", "a type of person" or "a dominating discourse". Resourceful, flexible and well-crafted monadological mapping projects might challenge such quick certainties in productive ways.

Notes

1 The neighbouring discipline of folkloristics also has a rich cartographic tradition, often referred to as the Finnish School (Tangherlini 2010). In this article, we specifically revisit the historical-geographical paradigm in the study of *material* folk culture. We have chosen this focus because the ethnologists that currently see themselves as descendants of the studies of material folk culture also are the ones that currently engage actively with science and technology studies.

2 We are grateful to Bjarne Stoklund, the late professor of Danish ethnology, who agreed to be interviewed as part of our research for this paper before he passed away. We want to thank Thomas Højrup, who kindly answered our questions and lent us some volumes from his father's archives (Ole Højrup worked on the Danish atlas project). We also want to thank Orvar Löfgren for his elaborate and encouraging comments on a previous draft of this paper, the editor of the special issue, and our two anonymous reviewers.

3 A collection of student projects can be found at http://controverses.sciences-po.fr/archiveindex/. In Denmark, where we have been involved in establishing the course,

controversy mapping is taught to designers at the Danish Technical University, to techno-anthropologists at the University of Aalborg and to sociologists, ethnologists and anthropologists at the University of Copenhagen.

4 See for example the E-Maps project (http://www.emapsproject.com/), the Digital Methods Initiative (https://digitalmethods.net/), or the Macospol project (http://www.mappingcontroversies.net/).

5 It is true that digital mapping projects require a lot of manpower and hard work as well, especially if one includes the time and resources spent writing the necessary code. What is encouraging, however, is the increasing availability of free and ready to use online applications that allow the researcher to harvest or analyse data with relative ease. The tools used to trace keywords in illustration 1 (the Google Scraper) and visualise scientometric data in illustration 4 (Sciencescape) are both freely accessible online.

6 It is an interesting story in itself how diffusionist Scandinavian ethnology forged ties with the remainders of Tardean French sociology and folkloristics. We know that Sigurd Erixon worked tirelessly to promote a dialogue between the different schools of thought separating ethnology and folkloristics in Germany, Scandinavia and the Slavic countries from France and the rest of Latin-speaking Europe. Erixon participated, among other things, in the founding of the Commission Internationale des Arts Populaire (CIAP), the Congrés Internationale de Folklore (CIFL) and the Société Internationale de l'Ethnologie et de Folklore (SIEF) and he befriended the French museologist Georges Henri Rivière as early as the 1930s (Rogan 2008). Rivière was an interesting character and a good friend of Arnold van Gennep (Zumwalt 1982), which places him right in the company of intellectual outcasts that had been effectively marginalised by the reigning Durkheimeans of interwar French sociology.

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