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From ‘cold’ science to ‘hot’ research – the texture of controversy

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> In the last century and a half, scientific development has been breathtaking, but the understanding of this progress has dramatically changed. It is characterized by the transition from the culture of ‘science’ to the culture of ‘research.’ Science is certainty; research is uncertainty. Science is supposed to be cold, straight, and detached; research is warm, involving, and risky. Science puts an end to the vagaries of human disputes; research creates controversies. Science produces objectivity by escaping as much as possible from the shackles of ideology, passions, and emotions; research feeds on all of those to render objects of inquiry familiar (Latour 1998, 208-209).

How did the transition from “science” to “research” described by sociologist and philosopher of science Bruno Latour materialise in the world of science museums and science exhibitions? This question lies at the heart of this paper. My aim is to examine the changing roles of science exhibitions from places of “cold” science, where secure, closed and fixed knowledge is communicated, to places that increasingly engage with “hot”, controversial research and open debates. The examples discussed are European ones (from the United Kingdom, France and, above all, Austria) and I will be focussing on the display of controversies, rather than on displays that cause controversy. In the first part of the paper, I discuss how controversies have been studied in the field of science studies. In the second I examine the recent evolution of (some) museums from “cold” to “hot”. Then, in the third part, I look at two recent exhibitions that dealt with the controversial nature of science.

I will argue that while the “cold” way to exhibit science is through stabilised objects, the “hot” way works through relationality, that is, through highlighting the multiple relationships between visitors and objects, and between the positions of the various contenders in the controversy. The paper develops the concept of a “texture of controversy” in trying to make sense of exhibition arrangements focused on positions, relationships and processes, rather than stabilised products and objects. In displays about controversies we encounter an object that is open in many ways: to be flexibly interpreted, to be engaged with, to be questioned, to be challenged. Such an object materialises a number of symmetries: between various actors, between art and science, and between right and wrong. Two examples from the city of Vienna – the *Gallery of Research* and the *true/wrong inc.* exhibition – will shed some light on how controversial science can be exhibited.

1. The study of controversies in science studies

One way to make sense of the shift from cold science to hot research comes from the field of science studies (often interchangeably referred to as ‘science, technology and society’ or ‘science and technology studies’ or

STS for short), a field that studies science within its wider social and cultural contexts. Those who study science from a social science perspective have observed that "science is at least as rich in discordance and uncertainty as it is in the settled harmony of consensus" (Thomas 2009, 131). Hence, the study of controversies has become a tradition in science studies, especially since the early 1980s onwards.

Science is becoming hotter

Certainly, evidence suggests that controversies are becoming more common. According to some, there has been a proliferation of controversies in recent years (Nelkin 1992, Brante 1993). What is more, by placing science in its social, cultural and political context, science appears much more open to conflicts and disagreement:

> Focusing on science in its relations with each of them (social realms) almost inevitably introduces elements of controversy. For it thus ceases to be simply a question of how the physical world works, and instead becomes a matter of how groups of people relate to each other – colleagues and rivals, sponsors and governors, reporters, critics and politicians, etc. (Arnold 1996, 74).

In the social studies of science, there has been an increased focus on "science in the making". In his book *Science in Action*, Latour (1987, 4) argued that controversies are "a way in" in order to study science in the making (rather than "ready-made" science). Since the late 1970s and the beginning of the 1980s, it has become common in science studies to examine controversies in science and technology, be it on food, global warming, nuclear energy, or biotechnology. A current research project looks, for instance, into the controversies around flooding (Understanding Environmental Knowledge Controversies 2009).

Besides this, STS, and the social sciences more generally, have witnessed a "participatory turn" in recent years (see Lengwiler 2008). In the realms of science this translates into rethinking the relationship between science and society and providing ways and forums for the public to engage and debate with science and scientists. One example of this from the United Kingdom is the House of Lords report (2000) that stresses the need for debate between science and the public. Across Europe, in the past decades a wide array of forums have emerged to cater for just these new debates. To cite but a few: the Cité des Sciences in Paris, which opened in 1986; the first consensus conferences in Denmark in 1989 (Andersen and Jaeger 1999, 334); the first scientific café in the UK in 1998 (Grand 2009, 210); the Science Museum's Dana Centre in London, opened in 2003; and the London Natural History Museum's Darwin Centre, which opens in 2009. Not only is science becoming "hotter" both in academic texts and in terms of the proliferation of controversies, we also see a proliferation and professionalization of institutionalised forums for dealing with this new "hotness".

Why study controversies?

Why should we study "hot topics", such as controversies? Controversies have the advantage that the contending disputants make social processes, which are usually not visible to outsiders, explicit. Processes normally hidden in laboratories or offices are brought into open and public view. In her preface to *Controversy*, Nelkin (1992, vii) writes: "in the course of disputes, the special interests, vital concerns, and hidden assumptions of various actors

are clearly revealed". By bringing these into public view, assumptions that are normally implicit are challenged, routine procedures are scrutinised, and arguments are attacked (Brante 1993, 186-7). It can therefore be rewarding to look at controversies for they are usually "data-rich" events. "Controversy studies make manifest the processes that lead to scientific knowledge and technological artifacts. In the midst of a controversy, participants often make claims about the stakes, strategies, weaknesses, and resources of their opponents" (Sismondo 2004, 100). A similar point is made by Vinck (1995, 116, emphasis removed) who argues that controversies are "privileged sites of observation for the sociologist" since they make "appear the different actors, as well as what they mobilise".

In academia, conflicts in and around science have been studied for various reasons, for example, to gain insight into the science policy making process; in order to learn more about the various roles of scientists and non-scientists in policy making; to identify the ways in which the public might participate in decision making; to understand how controversies arise, how they are contained within the scientific community or expand into the public domain, how they are brought to a close, or why they persist; or to analyze the social construction and negotiation of scientific knowledge claims by disputing scientists (Martin and Richards 1995, Scott et al. 1990). Controversies reveal, in other words, the politics and the social fabric of science. From both an epistemological and methodological point of view, controversies therefore have a lot to offer. With this paper I want to contribute to current debates by offering a more spatial reading of controversies in museum settings, thus further outlining a "geography of controversies" (Allgaier 2007, 44).

How to study controversies?

Various approaches have been developed to study controversies (see Callon 1981, Dascal 1998, Engelhardt and Caplan 1987, Markle and Peterson 1981).[1] A positivist approach towards investigating controversies accepts the dominant scientific view and takes it as a starting point. Analysing those who are deemed to be "wrong", finding out the reasons why and trying to locate truth – which is usually to be found in (the) nature (of things) - are the guiding principles of this perspective. Another approach, the so-called "group politics approach", looks at the various groups involved in controversies. Here, controversies are seen as a process of conflict and compromise involving various groups contending in a political marketplace (Martin and Richards 1995). Both of these approaches usually assume that science is a relatively neutral endeavour. This is contrary to the approach that has emerged from the sociology of scientific knowledge, of which the central tenet is that what becomes truth is not given by nature, but is rather the product of social processes and negotiations. The principle of symmetry (Bloor 1976) is the key principle for this perspective, suggesting that knowledge claims on both sides of the controversy need to be analysed. The analyst needs to treat the conflicting claims of the disputants symmetrically, or impartially. This means that the sociologist or historian of science must attempt to explain adherence to all beliefs about the natural world, whether they be perceived to be true or false, rational or irrational, successful or failed, in a symmetrical way. For this approach the "truth" or "falsity" of scientific

[1] Some universities even deliver courses on controversies in science: the Ecole Nationale Supérieure des Mines de Paris (now called MINES ParisTech) has since the early 1980s developed a course called "description of controversies" (http://controverses.ensmp.fr) and the University Louis Pasteur (Strasbourg) and the University Diderot (Paris) deliver a course called "staging scientific controversies". Since spring 2009, a course called "mapping controversies" is being taught at 5 institutions across the globe (Sciences Po and the Ecole des Mines in France, the University of Oxford in England, the Ecole Polytechnique Fédérale de Lausanne in Switzerland, and the MIT in the US. See: http://www.demoscience.org).

claims is considered as deriving from the interpretations, actions, and practices of scientists (see Raynaud 2003, 50). The benefit of the principle of symmetry is neutrality. But the problem with this principle – if taken to its full potential - is that it prohibits any evaluative or judgmental role of the analyst. More so, there are instances in which researchers can become a "captive" of a controversy and in which symmetry does not provide a special mechanism for avoiding partisanship (Scott et al. 1990). Furthermore, "[s]ymmetrical analysis is almost always more useful to the side with less scientific credibility and authority. Epistemological symmetry often leads to social asymmetery or nonneutrality" (Scott et al. 1990, 490).

Apart from the concept of symmetry, there are two other terms worth mentioning here, "interpretative flexibility" and "closure". The concept of "interpretative flexibility" pertains that facts are debated and interpreted in radically different ways by the parties in the controversy (Pinch and Bijker 1984). The closure of scientific controversies becomes an object of study as well. How do controversies come to an end and what are the processes through which this happens? Mol (2002, 93) argues that the closure of controversies is a social phenomenon, "[s]omething that depends on power, force, numbers. Whatever. Reason is never decisive, the reasonable it an outcome. The closure of a controversy means [...] that one truth wins and the arguments in its favour retrospectively become those that are reasonable".

2. Controversies in museums

Controversies are an increasing phenomenon in the museum world, both in terms of displays that cause controversies and in terms of displays about controversies (see, for instance Cameron 2005). It is not unusual for museums nowadays to display contentious themes. This, however, has not always been the case. Throughout their historical development, museums "came to figure more as graveyards of scientific history, or less morbidly, as its trophy chests" (Arnold 1996, 58). Museums became mausoleums, and the science therein became "frozen" (ibid, 60). The conservation and display of "cold" objects to the public, often in glass cases, was to be most closely associated to the common image of a museum. In recent years, however, there has been something of a (r)evolution, in some museums at least, towards displaying more hot topics. Since the mid 1980s, many museums have tried to move away from a rather old model of displaying science (Arnold 1996, 58, Hein 2000). Interactivity in the museum setting is therefore now a widespread trope – both as a discourse and as an architectural and material arrangement (see Barry 2001, Witcomb 2006). Consequently, what we have witnessed over the past decades is a change of what museums display, and *how* they do so (see also Macdonald 2009).

The shift comes in different guises. It comes in a material form, with calls to move from a "conference architecture" towards an "architecture of interaction" (Yaneva et al. 2009). The bodily encounter between visitor and museum changes: a shift from a passive look and a rather immobile encounter towards new forms of interaction and "hands-on" exhibits. We witness changing paradigms in learning with an increased focus put on interpretative communities (Hooper-Greenhill 2000). Visitors are positioned differently as they are encouraged to interact with displays and increasingly written into museum exhibits (Macdonald 2009, Macdonald and Silverstone 1990). At the same time, there is an ongoing shift from a public understanding of science towards a public understanding of research (Lewenstein and Bonney 2004); and a move towards debating and representing

unfinished science (Durant 2004). What is more, the museum object resonates differently: moving from an object of celebration towards a more ambiguous and "messy" object. Overall, therefore, the science museum has become a place increasingly concerned with displaying science in the making, rather than science already done. It has become a place that is not afraid of showing the uncertainties and ambiguities of science. To put it this way: if in the past, the museum displayed cold science, it now increasingly deals with hot research.

An enthusiasm for interactivity is not unique to the twenty first century, having arrived in Europe in the mid-1980s (Barry 2001, 137). Some often-quoted examples of interactive science museums or science centres in Europe are the Science Museum in London and the Cité des Sciences et de l'Industrie in Paris. Also worth mentioning are the Exploratory in Bristol, the Deutsches Museum in Munich, and the Zentrum für Kunst und Medientechnologie in Karlsruhe. Let me just give a little more detail about the most well known of these examples here: the Science Museum and the Cité des Sciences. The director of the Science Museum describes its Dana Centre (which opened in 2003) as "a working laboratory for science dialogue"; scientists and members of the public are supposed to meet in order to discuss "on equal terms" (quoted in Salkie 2003). Various, often unexpected, formats are used: puppet shows about genetically modified foods, talk shows, pub quizzes about science, as well as debates open to the general public. The main purpose of the Dana Centre lies in "generating dialogue" (McCallie et al. 2007). Importantly, this dialogue is to be *symmetrical* (Davies et al. 2009).

Another example is the Cité des Sciences in Paris. Here too, a wide array of formats deal with science in the making, for example colloquia to permit citizens to intervene in the debates about the place of the technosciences in society, a web blog on which people can debate about the controversies around global warming, and articles about controversial topics on its "Science Actualités" websites. One of the thinkers behind the Cité des Sciences describes it as a science museum of a "third generation" - the first generation displaying old objects, like a natural history museum, and the second generation having moved to the display of themes and scientific disciplines (Gsteiger 1994). The third generation of science museums, or so it is argued, brings together various disciplines and is concerned with the relationship between humans and technology and the environment (Gsteiger 1994).

There is a rise in efforts to engage the public in scientific controversies (Mazda 2004, 128). In a certain way, hot topics are about perspective, about vision. Put bluntly, there is simply *more to see*. The "Gläserne Forscherlabor" ("glass research laboratory") at the Deutsches Museum is an example where visitors can literally observe researchers in action and ask them questions. A similar example is the Darwin Centre to be opened at the Natural History Museum in London, where visitors can also, through glass windows, observe researchers at work in the museum. The museum's "greater epistemic transparency" reveals the urge to "create new performative and generative possibilities between experts and lay people" (Waterton, forthcoming). Exhibiting controversies also means that there are *different things to see*. "Topics of global importance that challenge, upset, intrigue and attract are now legitimate areas for museological investigation" (Cameron 2005, 213). Gone is the simplistic linear approach to scientific change; in comes a view that regards controversies as an essential part of science (Mazda 2004, 129-30).

Having discussed in the previous section the benefits of *studying* controversies in science, what are the benefits (and the problems) of *displaying* controversies? It has been argued that exhibiting controversies can make ordinary subjects more interesting (Mazda 2004, 130). Visitors allegedly enjoy hearing other visitors' point of view and hardly see exhibitions as neutral. Exhibiting controversies might thus lead to "a more interrogative spirit in which to approach exhibitions" (Macdonald 1998, 234). More so, by displaying controversies museums can "introduce social issues and raise visitors' awareness of the political, economic, and environmental angles to current scientific debates" (Mazda 2004, 130). Yet, despite these benefits, the display of controversies does not come without its difficulties. The display of "hot topics […] has made the business of science museums increasingly difficult and politicized", some argue (Stewart 2004, 43). Another difficulty for museums is that "[m]useum displays traditionally take a long time to put in place and then they themselves remain fixed for a long time: they are thus not well suited to the often rapid position changes of controversy" (Macdonald 2009). After all, museum displays are normally located in buildings, and "buildings, other than artworks and scientific objects, *occupy a stable location*, they are *singular* and they are *used*" making them "mutable immobiles" (Guggenheim 2009, 46, original emphasis).

Finally, communication between the museum and its visitors becomes an issue as well. In their study of an exhibition in London's Science Museum, Macdonald and Silverstone (1992, 82) argue that while the "exhibition strategy of single, unambiguous aims and questions may have been [useful] for aiding the clarity of communication, then, it was not necessarily well suited to dealing with controversy, which is essentially a matter of antagonistic or clashing information". More so, visitors might want or expect "hard facts" in a museum (Macdonald 2009), rather than opinions and insecure knowledge; they too can appear to be "immobile" in the sense of not being familiar with encountering controversies in a museum.

3. Displaying controversy – two examples from Vienna

The Gallery of Research

I now turn to two exhibitions that explicitly dealt with controversies in science – what we could call "exhibition experiments" (Basu and Macdonald 2007).[2] The first example I want to discuss is the *Gallery of Research*, a gallery that was due to open in 2006 in Vienna. The idea for a gallery of research was first proposed by the then-president of the Austrian Academy of Sciences. A listed building of the University of Vienna was to be renovated to accommodate the exhibition. But the original idea – to have a rather classical display about "great" achievements of Austrian science – was soon transformed into a more daring one that was "staged as an experimental event that aimed at testing different ways of communicating scientific controversies" (Yaneva et al.

[2] Bruno Latour himself has been involved in the making of two exhibitions at the Zentrum für Kunst und Medientechnologie in Karlsruhe that brought together science, art, and religion/politics ("Iconoclash" in 2002 and "Making Things Public" in 2005). The two examples discussed in this paper are relatively closely related to Latour and science studies: the first director of the *Gallery of Research* was a former PhD student of Latour at the Ecole des Mines in Paris; and the Xperiment! group, author of the *wahr/falsch inc.* exhibition, presented some of their work at the "Making Things Public" exhibition and one of the team members is currently writing her PhD thesis at the Department of Social Studies of Science at the University of Vienna.

2009, 81). Here is how the gallery was described on promotional material to advertise the first pilot event in the (unfinished) gallery:

> The Gallery brings together scientists and artists from Austria and abroad, and engages them in a reflection on alternative ways of communicating scientific results to a larger public of non-experts. The public debate on GM food is only an occasion to talk about new forms of science communication. A purpose-built installation will confront the visitor with the complex ethical, social and political dilemmas of the food controversies (The Gallery of Research 2005a, upd).

In a report issued after this first event we further read that the Gallery's purpose was:

> to tackle not only successful scientific findings, but also challenges, unpredictable turns, pitfalls, failures and aberrations in research; to make citizens consider the social, ethical, moral and political implications of these issues, and the ways they become the basis of technological and political decisions (The Gallery of Research 2005b, 2).

The project tried to experiment with a new architecture of display, drawing on art installation and science, in order to create a forum in which various groups could debate, and where art and science could be brought together (Yaneva et al. 2009, 81-2). The exhibition included, amongst other things, a slide show about an anti-GM demonstration, an art installation with empty tins with labels of GM crops, a wall with keywords (in different size and colour, depending on their significance in the controversy), a timeline of the GM history, and a souvenir card stand. The exhibition was described as a "blend of art installation, original scientific research and live performance aimed at positioning the visitor in a simulated public space, where the variety of protagonists in the debate was made present" (Yaneva et al. 2009, 83). However, one of the problems was that the invited scientists were not at ease with their new, more performative roles. In addition, the public, it was argued, "is not yet comfortable enough to explore new methods of science communication, based on art installation techniques, simulation and fair, i.e. to stroll, to ask questions to the presenters, to engage in communication, to question […] to look behind the scenes" (Yaneva et al. 2009, 86). The gallery was to open in October 2006, but eventually never did. The displays shown during the first pilot event caused some agitation: the press found the event "strange" and "elitist"; the Austrian Academy of Science wanted the concept to be rethought and did not approve of a reworked version; and, after 2 years of work, the director of the gallery eventually quit her job and took on a lectureship post at a university (Anonymous 2007). Paradoxically enough, the project to map and exhibit controversies did itself become part of a disagreement.

Die wahr/falsch inc.

A second, more successful example, also from the city of Vienna, is the "wahr/falsch inc." exhibition (true/wrong inc.), developed by a group called Xperiment!. One of the group's previous exhibitions was "Good bye tomato – good morning rice" an exhibition about "golden rice" which was displayed in Zürich and in Vienna (see Xperiment! 2007). For the "wahr/falsch inc." exhibition, which took place in summer 2006, the team selected 11 "hot spots" (Kröll 2009), that is, controversial topics (such as doping, the end of oil, life on mars, or

allergies). These topics were exhibited as 11 modules in 11 different locations in the city of Vienna, along the pathway of U-Bahn number 1. The exhibition was advertised as follows:

> Eleven small exhibitions [...] deal with sensitive issues on the relationship between science and society. What is true and what is wrong? “Die wahr/falsch inc.” raises questions in the form of images, installations, radio plays and discussions, that put science into question. [...] In doing so, “die wahr/falsch inc.” does not deliver answers, because science - like art - only ever asks new questions. [...] Essential is the role of the visitors who, with their knowledge and their questions, become part of the “wahr/falsch inc” (Die wahr/falsch inc. 2006a, upd) (My translation).

The exhibition makers used what they called an “expanded mix of methods” for the displays and wanted to make sure that “during the exhibition, things can happen”, i.e. that visitors did not encounter an already finished exhibition (Kröll 2009). The original catalogue produced after the exhibition, begins with a humorous and playful dialogue:

> TRUE: I am wondering if it was WRONG to do this exhibition. People are confused, and nothing but losses. Science can’t be told, not be criticised and not be understood.
>
> WRONG: Not at all, why, then, have we assembled the material here? Readers and viewers make their story in their head, the material is only ever suggestion and enticement.
>
> Thread: Or not. The line between incomprehensiveness and coherence is narrow. Someone has to hold the things together. Without narrator, without an element that connects, yes, without poetry, nothing goes. My life consists of nothing else: holding things together.
>
> TRUE: Don’t forget, we are dealing with science here. Which you can’t narrate; you have to understand it. If we don’t make this clear for people, then they will think that they are being told fairytales. […] (Die wahr/falsch inc. 2006b, 11) (My translation).

This passage nicely illustrates some of the characteristics of controversy from a sociology of science perspective: the multiplicity of voices and arguments; the attempt for symmetry between positions, such as right and wrong; the uncertainty and ambiguity of any scientific project. The passage also points to one of the inherent challenges when exhibiting controversy: to try to reveal the messiness and complexity of science without confusing visitors too much. The weekly Austrian newspaper *Falter* wrote the following comments about the exhibition, which to their mind was “partly more a research project than an exhibition: clever and creative on the level of content, deficient in terms of communication” in which they judged some elements of the exhibition “impressive” and an “eye-opener”, but “too demanding” overall (Anonymous 2007).

Through these two examples, of the *Gallery of Research* and the *wahr/falsch inc*., we can see how different exhibitions brought together a range of different actors, stressed the uncertain and unstable nature of science, and had to deal with some difficulties to communicate their message. This reminds us of what Basu and Macdonald

(2007, 6-7) call the second age of experimentalism and experimental ethnographic writing in its "presentation of multiple voices and positions, and as unfinished and contingent". While revealing the unfinished character of research and the multiplicity of positions in controversies, these exhibitions operate two kinds of shifts: from a display that answers to a display that questions and from an exhibition that represents existing matters to an exhibition that performs, creates, and experiments with new ones. These kinds of shifts turn exhibitions into "hot" situations. "In 'hot' situations", Callon argues,

> everything becomes controversial [...] These controversies, which indicate the absence of a stabilized knowledge base, usually involve a wide variety of actors. The actual list of actors, as well as their identities, will fluctuate in the course of the controversy itself [...] (Callon 1998, xx).

Not only did the two exhibitions represent "hot situations", they also, to a certain degree, became "hot situations" themselves, for they did not close or cool down the number and roles of the actors involved, the uncertainty and messiness of the science on display and since they even experimented with the very essence of exhibitions, communication with the public.

On the texture and politics of controversy

The examples discussed in this paper are by no means representative of museums in general, and I am not arguing that all science museums and science exhibitions are now displaying science in the making, rather than already finished science. Yet, it seems fair to say that over the past two decades there has been an increase in the display of controversial topics in science museums and science exhibitions. Furthermore, the examples considered here were temporary ones, which suggests further questioning the temporality of exhibitions about controversies. Are they, by their nature, to be short-lived? Or can we imagine more permanent settings? While the two Viennese exhibitions discussed here were of a short life span, the London Science Museum's Dana Centre is, for example, a more permanent structure. Those museums and exhibitions which do choose to focus on controversies, seem to have a few elements in common: they tend to use new representational strategies, in particular through borrowing and adapting strategies from the art world; there are different things to see and different ways these things are put on display; and they bring together a wider group of actors, thus distributing expertise and authority more widely and more symmetrically.

The display of controversy can be seen as a new way of assembling, as something that is "textured" differently. A controversy is not only something that brings together various actors and interests; it also takes place in a different kind of place and time than the display of "cold" science. So what can we say about the "texture of controversy"? First, that a controversy typically decentres the single object as the primary focus in an exhibition and concentrates instead on the positions and relationships between actors and objects. The move from cold science to hot research means that a process, rather than a product, is now on display (see Arnold 1996). We could argue that while the "cold" way to exhibit science is through stabilised objects, the "hot" way works through relationality: through highlighting the multiple relationships between visitors and objects and between the positions of the various contenders in the controversy. The display of controversy brings together various

kinds of methods, actors, materials, etc. Hence, symmetry comes in different guises: between art and science; between right and wrong; between various voices, views, interests, etc. The efforts deployed to make exhibitions more symmetrical create an object that is open in many ways: to be flexibly interpreted, to be engaged with, to be questioned, to be challenged, to be misunderstood.

However, there can be a tension between, on the one hand, a well-intended interpretative flexibility of exhibits and, on the other, the inherent authoritative message and durability that museums usually (are expected to) stand for.[3] The two examples from Vienna mentioned in this paper operated outside the confines of any museum. Yet, the problems that seem to arise with such exhibitions - the difficulty for some visitors to make sense of and engage with the displays - are relevant also for museums. Exhibition makers therefore have to negotiate a position between a politics of moderation and a politics of controversy. In their study about the controversy around food poisoning at the Science Museum in London, Macdonald and Silverstone observed that the museum took a "moderate line" (Macdonald and Silverstone 1992, 84). Perhaps, this holds true for museums in general. Museums, especially science museums, are significantly determined by such a politics of moderation. Conversely, there are many "cooling devices" in a scientific institution such as a museum that eventually frame displays and texts to be moderate and cold. Science and history museums are usually seen as "calm", "safe", "impartial", "civil", and "apolitical" places (Cameron 2005, Cameron 2007). These politics of moderation stand in stark contrast to a "politics of controversy", a way to exhibit more commonly found in contemporary art exhibitions.

A final thought. Heat, the common definition says, is a form of energy, not a substance contained in an object; it moves from one place to another in different ways (through conduction, convection, or radiation). A "hot" exhibition about controversy is all about movement: the bringing together of a mix of methods, of various actors, or different views, of colliding arguments, etc. How can a museum - an institution that is rather immobile, an institution that stabilises, orders, classifies, frames, freezes - display "hot" topics, that is, topics that radiate in so many directions? Is a museum well equipped to *contain* any kind of controversies? Or are there some topics that are "too hot to handle"? If so, where and how do we draw the line between hot and *too* hot? These are but some of the burning questions that need further exploration.

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[3] To put it this way: the interpretative flexibility of displays ends where the interpretative rigidity of institutions, or institutionalised practices, comes into play.

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