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Tommaso Venturini, Anders Kristian Munk

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Controversy analysis has been around since the 1970s as a technique to investigate the role of science and technology in society as well as the role of politics and economy in technoscience – and in fact the impossibility to separate the two. In the last two decades, this established STS approach has been revived by the encounter with digital methods and the way in which electronic media and online platforms increase the visibility of controversies and facilitate their traceability.

In a recent field guide ([Controversy Mapping. A Field Guide. Polity, 2021](#)), we inspect the roots of controversy mapping in actor-network theory and digital methods; explore its cast of actors and issues; introduce a series of quali-quantitative techniques for curating digital and non-digital records; discuss how to represent sociotechnical debates; and how to intervene in them. This short essay offers an *amuse-bouche* and a snappy introduction to our book. It summarizes some of its key ideas with an embellished metaphor, almost as a bed-time story.

The King under the Baobab

One day at dusk, when the animals gathered under the big Baobab by the watering hole, Rhino spoke up and asked Lion: “How did you get to be our king? Who decided that?” Lion smiled ceremoniously and replied: “No one *decided* it. I am king because I am the strongest and my strength offers protection. That is the Law of the Savanna”. The animals nodded, but the question took root in their minds and the next day at the Baobab, Rhino spoke again: “True, you have your claws and teeth, and your majestic mane, I grant you that, but who said that strength should be measured by these attributes? I have my horn, and a skin that is tougher than yours, why should I not be king instead?”

“You are not wrong, my friend,” replied Lion with a smirk, “and in fact, why should strength decide at all?” He paused and looked around at the other animals: “Rabbit has long ears and can hear danger coming. Monkey is cunning and can foil traps and snares. Maybe one of them should be king instead?” The animals pondered his words. “Maybe *we* should be kings”, said the Ants, “we are well organized, and that is what a community needs the most”. “Or maybe I should be king”, said Giraffe, “I have the longest neck and can spot food and water from far away”. “Or maybe I should”, said Elephant, “for I am the biggest”. “Or me”, said Cheetah, “for I am the fastest”.

“All excellent points”, grinned Lion, “and they all seem *equally* valid to me. Keep discussing and resolve your differences. The moment you agree on my successor (but not a moment before), he or she will have my crown. Take as long as you need!”.

It is in moments of controversy that the entanglement of knowledge and politics becomes most obvious. Lion has landed himself squarely in the middle of a sociotechnical debate, even if this is not necessarily to his disadvantage. Under normal circumstances, the simple reference to implicit conventions of the ‘Law of the Savanna’ would settle the claims to the throne. As long as no one questions how strength is measured, there is no need to resort to it. And even when someone does question the consensus, politics does not turn immediately into a fistfight. Instead, it becomes a contest of competing claims, in which Lion shrewdly applies his stalling tactics of perpetuating uncertainty.

This is a familiar dynamic and one that can be broken down in three main components, which we will discuss in some details below.

- First, it is easier to introduce or stop a vaccination program, an energy policy, or a set of privacy regulations if some form of scientific evidence can be fielded for or against them and disseminated through the media.
- Second, tussling in a controversy is not only a matter of rhetoric and evidence, but also of reconfiguring the material situation to gain the upper hand.
- Finally, and it’s a key tenet of controversy mapping, there is no easy way to decide beforehand which piece of knowledge or technology will legitimately sway the debate – no way of ruling out positions or arguments before investigating them, of junk news (Venturini, 2019) and infodemics (Simon & Camargo, 2021).

Navigating complexity

Starting from the last component listed above, the mapping controversies should always begin with resisting a commonplace impulse. In the sci-fi novel *Timescape*, Gregory Benford (1980) formulates his ‘law of controversy’, stating that “passion is inversely proportional to the amount of real information available” (see also MacCoun, 2001). It is a convenient idea, which allows us to bracket whatever positions we judge counterproductive. Indeed, controversies are easily construed as symptoms of the ‘post-truth era’ (Keyes, 2004), riddled with ‘fake news’ and hyperbole; anathema to anything that characterizes reasoned, democratic conversation. Surely, then, controversies should not be taken seriously. This is the impulse you will have to resist. Even if controversies can be difficult to love, you cannot write them off or brush past their unsavory facets if you accept to be their cartographer.

Fortunately, it is possible to adopt a more productive view of controversies. The animals’ debate under the Baobab provides a case in point. Here is a situation that is not fueled by hurt feelings or stirred emotions, but by the kind of knowledge politics that characterizes all substantial disagreements. No agreement can be reached on which are the important questions to ask, and no singular and authoritative expertise is available to reach settlement. It is hard to imagine a way in which more ‘real information’ would have quelled ‘passions’ and settled the claim to the throne. The rhino is not a victim of his feelings. On the contrary, he sensibly challenges the paradigm for how to value strength. If strength is measured in teeth and claws, then, of course, the lion should be king. But what is strength for? Why is it a relevant leadership quality in the savannah? The lion claims protection, but against what? Other animals could intrude from adjacent ecosystems, poachers could be on the prowl, or natural hazards could alter living conditions. It is not difficult to imagine a situation where the organizational talents of the ants, for example, would be more useful, or where the cheetahs could showcase the value of speed. The day may come when the attributes of other animals are more worthy of the throne than those of the lions.

If that is the situation, then controversy is both inevitable and necessary. It is *inevitable* because more information is bound to stir more discussion than it settles. If the question was as simple as who has the biggest teeth, then we might reasonably expect more information to settle the debate. But the question is not that simple – it is rather about a range of claims to strength and the degrees to which they may or may not be valuable in a variety of scenarios. More information will surely produce more questioning and draw more scrutiny. Let us say that news of a flood in a nearby valley reaches the gathering under the baobab and that the story is how brilliantly a group of ants has organized the relief effort. The news will strengthen the ants' case, through a scenario that is no longer hypothetical. In turn, this will attract the scrutiny of other animals. They might question to what extent the neighboring valley is comparable to their savannah? Does flooding even pose a risk to them? If not, where is the evidence that ant skills are useful beyond flood relief? And, by the way, have you heard how their so-called 'effectiveness' involved a brutal prioritization where the least useful animals (as defined by ant logic) were left behind? Are we sure this is the kind of organizational talent we want to value?

Controversy is also *necessary*, and in fact desirable, for it offers the animals an opportunity to consider the pros and cons of their collective organization. Sure, the lion will try to play it to his advantage, gambling that the other animals will get bogged down in endless discussions, but there are few alternatives. Life on the savannah is precarious and conditions are liable to change. It makes sense for the animals under the baobab to keep an open mind and keep the conversation going about the skills and talents that they need to hone – a conversation which is difficult to maintain if the *status quo* becomes unquestionable or taken for granted. Controversies play a crucial role in collective life. Unlike what is often believed, conflict is not an unfortunate accident in human history and certainly not one that will be solved by any progressive accumulation of knowledge or technological prowess. Controversies are not calamities to avoid at all costs; they represent normal stages of social existence. Not only are they unavoidable, they can also be helpful.

So, we ask you to embrace controversy, but you should expect something in return. Controversy mapping as a research method is about unfolding the complexity of sociotechnical debates without getting lost in it. As a method for political intervention, it is supposed to produce clarity and navigational aids. The lion encourages debate not for the sake of democracy, but because he expects the other animals to remain indecisive. He is looking for a smokescreen: he wants us to get lost, and he is probably not the only one. Horn- or tooth-deniers might show up contending that rhinos or lions have no claim to strength at all. Fudged data might be circulated, smear campaigns undertaken, secret alliances forged, and brute force applied. We can imagine how the debate under the baobab could take all sorts of less than productive turns. Accusations of speciesism could be thrown around, monkeys and giraffes refusing to hear anything but a feline bias in arguments of cheetahs. The question is not whether such situations can be avoided – they most likely cannot – the question is how we can learn to navigate them.

An entanglement of knowledge and power

If we were to complete the anthropomorphic image of the baobab gathering, it will not be long before the animals begin citing the latest research or calling for an independent investigation to support their claims. This would allow us to chart what evidence and resources they mobilize in support of their positions, rather than simply survey their attitudes. As Sergio Sismondo puts it:

Embracing epistemic democratization does not mean a wholesale cheapening of technoscientific knowledge in the process. (...) detailed accounts of the construction of scientific knowledge show that it requires infrastructure, effort, ingenuity and validation structures (2017, p.3).

The giraffes might propose that their ability to spot food and water at a distance is an essential leadership skill, but they are unable to cite a study that corroborates this argument. All available reports suggest that the savanna will remain a place of abundance for years to come and that risks of droughts and famines are negligible. The poachers encroaching on the habitat, on the other hand, have been on the rise and this gives a moment of glory to rabbits and their long ears. Their sensitivity, however, is soon obscured by the fact that the monkeys have kept meticulous records on the types of snares they have removed over the years. Many animals find that argument convincing and start circulating the monkey research as fact. The ‘poachers’ threat’ goes viral on social media and is soon picked up by broadcasting channels.

A landscape is emerging in which the monkeys hold the high ground, and the giraffes stand isolated. As Steven Shapin and Simon Schaffer explain in their book on the birth of modern science: “solutions to the problem of knowledge are embedded within practical solutions to the problem of social order, and different practical solutions to the problem of social order encapsulate contrasting practical solutions to the problem of knowledge” (Shapin & Schaffer, 1985, p. 15). Sheila Jasanoff calls this entanglement the *co-construction of science and social order* (2004).

While the entanglement of knowledge and politics may be obvious for everyone with the slightest training in science and technology studies, there is nothing obvious about the specific forms that it takes. Simply acquiring an overview of who is acting, by what means and in relation to which questions can be a monumental task – and even more so as all these elements evolve with the situation. Let us say that news of a flood in an upstream valley reaches the baobab gathering and that the story is how brilliantly a group of ants has organized the relief efforts. The news will strengthen the ants’ case, but also attract the scrutiny of other animals. They might question to what extent conditions in the neighboring valley are comparable to theirs. Does flooding even pose a risk to them? If not, where is the evidence that ant skills are useful beyond flood relief? And, by the way, have you heard how their so-called ‘effectiveness’ involved a brutal prioritization where the least useful animals (in ant logic) were left behind?

The material configuration of the debate

It is not just natural events that affect the animals’ fortune, but also technical innovations. While the monkeys have been able to define the problem of poaching to their advantage, there is no guarantee that their skills will remain essential. Technological developments could level the field, for example by enabling animals without opposable thumbs to dismantle snares, thus eroding the strength of the monkeys’ position.

Some controversies are engendered by technological innovations in direct ways (e.g., when a new surveillance technology appears on the market threatening individual privacy, or when debates about public health are fueled by the introduction of a new drug). Yet, in many other cases, the influence of technoscience runs deeper and has to do with the way in which science and technology allow (but also oblige) us to share our collective existence with new actors. Remember how the nearby river entered the controversy and became ant’s most powerful ally and consider how other animals could rally this actor to their cause, with all sorts of wanted and unwanted consequences. A group of beavers may step in and erect a system of dikes in the upstream valley. This diminishes the risk of floods, but creates a shortage of water downstream, which unexpectedly bumps up the fortune of the giraffes and their long neck. It is an inescapable consequence of technoscientific progress that, by extending our control of natural and collective life, it also connects us to an ever larger and more diverse cast of actors (Beck, 1992; Latour, 1993).

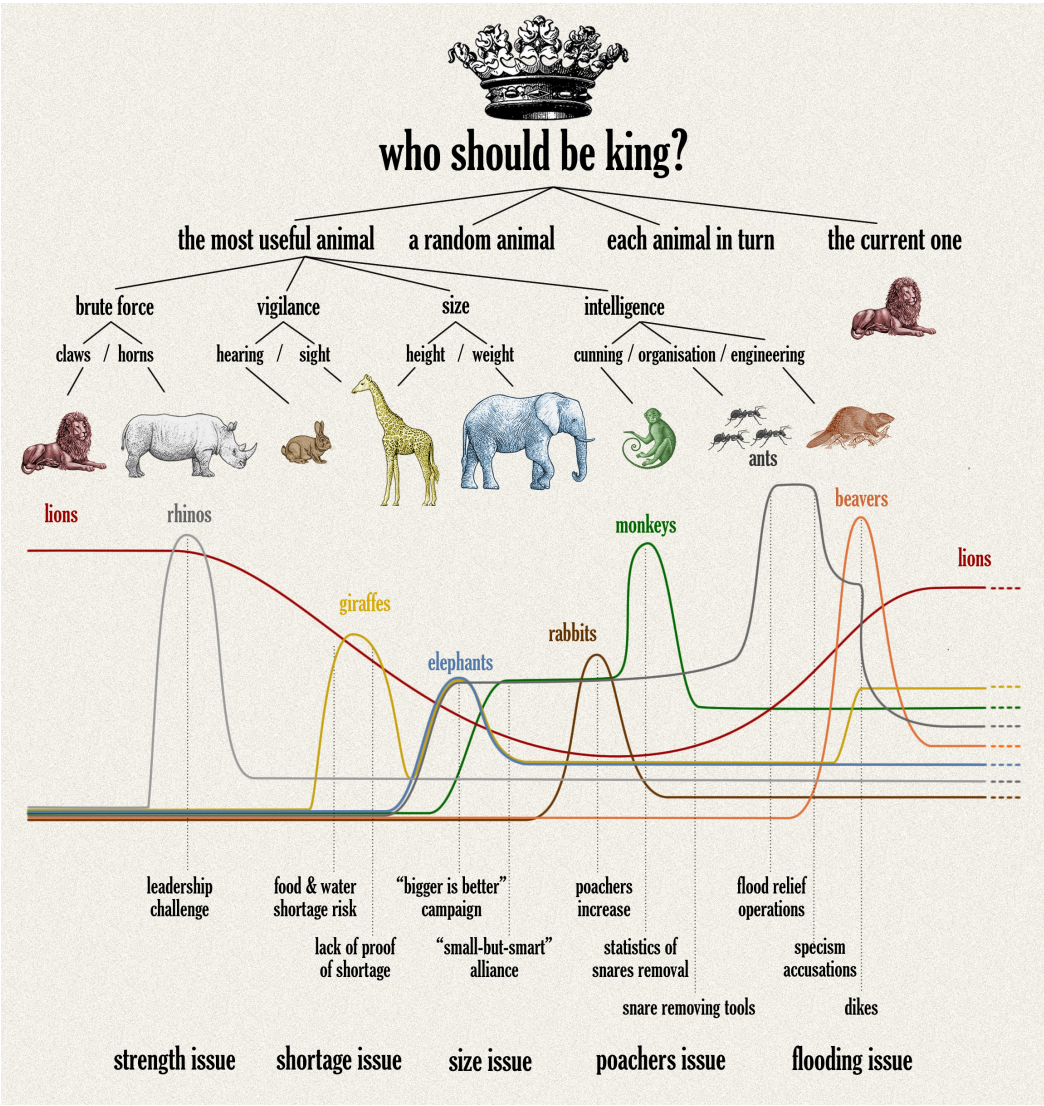
Such shifts in the material configuration of the debate are integral to understanding controversies. While there are many tried-and-tested methods to assess public opinions (e.g.,

polls, referendums, elections, etc.), what controversy mapping brings to the table is the ability to gauge changes to the sociotechnical fabric in relation to which opinions are formed, and from which knowledge claims acquire their strength.

As the controversy develops, some actors will rise and others will fall, and the cartographer’s gallery of actors should change accordingly. Indeed, it is not only the names in the gallery that will have to change, but also the entities they represent. The ants before and after the flood are not the same for their talents are differently salient. Likewise, actors change when their alliances and oppositions change. The difficulty to push their cause encourages the giraffes to team up with the elephants and advance arguments about the intrinsic value of size. Gathered under the slogan “bigger is better”, the two animals merge provisionally into a single coalition, which in turn inspires negotiations between the ‘small-but-smart’ monkeys and ants.

Something similar applies to the cartographer’s gallery of issues, which should be equally amenable to change. If the question is how to measure physical strength, that entails opportunities for certain types of evidence and expertise, but if the question concerns organizational talents, then that evidence and those experts lose relevance. And so, keeping track of which actors are able to make a difference to which issue, how and at which points in time sums up the work of the controversy mapper. In the case of the Baobab controversy, here is an example of the cartographic representation that can result from such work.

Figure 1. A simple mapping of the Baobab controversy. Credits: The authors.



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