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The Whole World is Becoming Science Studies: Fadhila Mazanderani Talks with Bruno Latour

FADHILA MAZANDERANI[1]
UNIVERSITY OF EDINBURGH

BRUNO LATOUR[2]
ÉCOLE NATIONALE SUPÉRIEURE DES MINES

Abstract

How to survive in this forest? How to keep it alive? Latour poses these questions in relation to the current global ecological crisis; but they are equally apt when applied to the "forest"—or to use Latour's own metaphor, "biodiversity"—of STS. In his interview, Latour puts forward a particular vision for STS's survival; a vision of STS as neither critical of nor ancillary to science, but where a tacit STS sensibility becomes integrated into science through education and collaboration. While Latour acknowledges the many differences of attitude and approach within STS, he also glosses over them, foregrounding as the defining feature of all those "infected" with STS the shared commitment to transforming science with the big "S" into something that can be studied empirically. The picture he paints is, unsurprisingly, a constructivist one, in which social and natural scientists, engineers, artists and politicians, "build worlds" together. A reflection by Fadhila Mazanderani follows the interview.

Keywords

anthropocene; constructivism; composition; diplomacy

FM I wanted to start by talking about your personal history in relation to the field, how you became involved in what has become known as STS.

BL I heard about the Science Studies Unit in August 1976 at Berkeley where there was a meeting with David Edge, who I met there, and Steve Woolgar and Mike Mulkay. They were invited, I believe, in preparation for the first 4S meeting, which happened in October 1976, and which is celebrating its 40th anniversary next year at Cornell. So this is when I met David Edge with his very implausible way of speaking English, and I understood nothing of what he was saying and I never have actually, even though he

[1] Fadhila Mazanderani, Email: f.mazanderani@ed.ac.uk
[2] Bruno Latour, Email: bruno.latour@sciences-po.org

was very kind to me. I was a very young researcher at the time, it was my first years of *Laboratory Life*, and I discovered then, through Steve Woolgar, the existence of the English school and the Edinburgh school, and then I started reading. At the time it was really Steve Shapin and Barry Barnes, and already Don MacKenzie.

FM Before that how did you get interested in social studies of science or anthropology of science?

BL That is another story. I was one year into my fieldwork in California and I had ended up in the laboratory knowing nothing about the STS community, which was very small at the time. I was coming from a completely different entry point – from philosophy and comparative anthropology. I returned from Africa and went to California for reasons which had nothing to do with STS. It was once I met David Edge and Steve Woolgar and Mike Mulkay that I discovered it as a field, a few months after having discovered that there was an American field of the sociology of science with which it was in strong opposition. This was when the dispute between the English school of SSK and the Mertonian school of the sociology of science began to build. Nowadays this looks like a Paleolithic fight, but at the time it was very important. Out of this initial connection with Steve and others I discovered Harry Collins and Trevor Pinch. So, just by chance, by 1977 I had met the main participants of the budding STS field. Then there was another split, with the French school having a dispute with Barry Barnes and David Bloor, but that was a few years after I'd published *Laboratory Life* (Latour and Woolgar 1979).

FM Can you talk a bit more about that split?

BL STS is a domain that has been split into an endless number of sub-schools (the difference between which is completely absent from the eyes of others), but a domain that has simultaneously remained, incredibly enough, fairly well united over 40 years and has been extraordinarily productive. If you think that all of the participants I met at this time are still publishing, they are still referring to each others' papers, they are still working together, or at least quoting one another, and I have remained friends with all of them, Donald MacKenzie has come many times to my lab. In terms of productivity, of influence, this small field, which was really the creation of David Edge in Edinburgh, is an amazing success.

FM Do you have any thoughts why?

BL David came from a tradition of British Marxism, which was more open than any other Marxist tradition, and it immediately gave strong political relevance to lots of people. And, if I remember correctly, that is what attracted David Edge in the first place, basically the atomic scientists movement, which was then relayed by many others with left-leaning political interests, and which gained a lot of attention. In fact, retrospectively we realized how much it was linked to the politicization of science itself, which was, of course, part of the Vietnam War and all that. But now I would say we were forecasting (not directly, but we felt it) the rise of environmentalism, the *écologization* of the world. What happened was that a lot of fairly bright people came in. This is another advantage of the field—it was made by people coming from very different entry points, so it was

not a single school. The splits were exaggerated, but the rationales behind those people entering at that time, people of my age, were different in each case, so it enhanced the biodiversity, if one may call it that. But what is funny is that this field then became central to many different fields because the ideology of science, which was disseminating into psychology, politics, ecology, education, pedagogy, etcetera, was so weak that any challenge that we could make by describing scientific enquiry in any practical sense had to have an effect.

FM You mentioned the political impetus behind some of the people involved in early STS. Were you yourself concerned about the way science was being used in different ways?

BL No, but I recognized the importance of attacking the ideology of science in many other fields, not the political one, which was not really my direct interest. It is my interest now, but wasn't at that time. My interest has always been more philosophical and anthropological; my line was and still is anthropological—what science was *doing there*. This is the cause of my dispute with the Edinburgh school actually. Two of the Holberg prize winners are people from this field, myself and Ian Hacking, which is amazing because it covers all fields of social science. There's not a day when I don't get a paper or something that says science studies is very important for this or that completely unrelated field. And it's also true that speaking to a social scientist who is not in science studies, who has not been science studies infected, is completely useless; they think in terms that are completely outdated and they speak of a methodology of the social sciences. You cannot speak to people who have not been infected by science studies, they still live in trees and unfortunately there are plenty of them around here in France.

FM What do you think distinguishes STS or STS-infected approaches from other social sciences concerned with science and technology? For example, anthropology, sociology…

BL For me, STS, science studies as we say in France, has always been very broad, going from the history of science, sociology, bits and pieces of anthropology, anthropology came a bit later, health studies are now, of course, completely mixed in with STS, but that was not the case before. So everywhere where science is not the dominant language but that which is being studied—not the resource, but the topic—STS expanded. This is my definition of STS. So, it can be as important in theology—even though that is much less frequent, but it exists –, or psychology, or robotics; wherever there are people who understand that science is not the language used as a resource, but rather the topic itself. This can be through "reflexivity" in the Woolgar sense, or in some other way that science studies gets a handle. And that explains why it is in many places, because there are many places where the definition of science is key.

FM Even the humanities have a model of science.

BL The humanities are beginning, they were the most resistant because they love to hate science and it took them a long time to understand that science could actually be a fabulous resource. But it's really been the last four or five years and now there are plenty of papers in the humanities using science studies. So science studies has become a *shibboleth* for innovative people who are trying to break out of the scientistic mold in any

field. This is my extended version. In the orthodox Edinburgh school of SSK it has a much more limited sense and it gives its diploma of SSK much less generously than I do. For me, all of us are friends who study scientific practice and see why the main language they use is useless basically. For the SSK people—I don't know if they still exist really—the diploma is given less generously because what they are interested in is the *social* explanation, which I never believed in for a minute. But, for me, they are in the STS field exactly like all of the other schools because they did what was the important move, which was to transform science from the capital S into something that has to be studied empirically, which is what has united the whole thing.

FM What was the role that the Edinburgh school played in your thinking and for the field of STS more generally?

BL It was completely decisive and I called Edinburgh the Mecca of science studies because of the link with history. So from day one people who were interested in sociology could immediately see the link with history. I remember the Barnes and Shapin book on nature and society (Barnes and Shapin 1979). That was very important and it went both ways: it helped us to understand the history of science and it helped historians of science, Schaffer and others, to reinterpret their own data sets, archives basically, through the eyes of people who had done contemporary studies of scientific practices. So that was the first one. The second was that they had a journal, *Social Studies of Science*, created by David Edge. And since we are less naïve now about what makes a field, we know how important this is. The third one for me personally was that, in my reading, their work offered an anthropological view of science. I interpreted their early work, MacKenzie on statistics, Shapin on phrenology and so on, as a training in alternative anthropology. It was not just about science, it was about finding ways to understand what your brain is, what is subjectivity. This is why I never believed their explanation about the social. I think they got lost in this very narrow-minded English way of training sociologists. But this was not an issue for me because I just skipped the beginning and end of their papers and the content was fabulous. Their idea that it was a *social* explanation, that was not so interesting. But the fact that they studied things which were in hard science and in mathematics was vital—MacKenzie has been most important here because he went through all the different topics which we followed, including economics, with amazing persistence, absolute modesty and amazing quality. And I think something that is different, which is maybe a fourth factor, is that this was Scotland. It was not English, which is quite important. It was intellectually challenging, but not immediately bogged-down by the positivism of an English philosophy, it was quite independent from philosophy. Immediately when you opened the pages of the early *SSS* papers you had something that was intellectually stimulating and empirically grounded and which was not immediately simplified by positivism.

FM And David Bloor's work, the strong program?

BL Bloor was important, I had his book translated into French very early on. I invited him to Paris in '78, a year or two after it was published, But the book had, of course, absolutely

no success whatsoever, nor did any other thing I translated here. It took 20 years for the French to take it up and it's still not very advanced because the French were immensely against the strong program due to their rationalistic traditions. I'm still reading Bloor. I'm a great admirer of David's new book on the plane (Bloor 2011), it is an amazing work. That's an example: this guy is my age and he still publishes this amazing book, completely empirical, on why planes fly. Karin Knorr is still publishing, Harry Collins is still publishing, Steve is still publishing, Schaffer is slightly younger, Shapin has drifted a bit ~~into the wine column~~, but he has published an amazing number of books. So Bloor was very important. Now I've never believed one word of what he was saying about philosophy, but that's a small dispute in a way, which is largely a misunderstanding on what is the duty of the field. As mentioned, I'm more interested in anthropology and see the social explanation as a red herring. But all of our little differences have been wiped out by the fact that, with the ecological crisis and the Anthropocene, the whole world is becoming science studies. Forty years ago, it was not so obvious to say that the most important thing was to understand how and why science was produced. Their goal was to understand society, but my goal has always been to understand nature. Now everybody says nature and society are finally the same thing, which we still have trouble understanding, and that's the Anthropocene situation.

FM So would you say that your distinction from the Edinburgh school is this emphasis on the mutuality of nature and the social, the inseparability of the two, rather than a social explanation of science?

BL It's not inseparability because inseparability is still believing in the two. Anthropologically it's the same thing, the same couple, it's like man and woman, it's like gender, it's as "disentangleable" as gender. Again, this is now the situation because of the enormous impact of ecological degradation. In fact, the field was initially produced largely by the threat of an atomic holocaust and then later by the use of technology during the Vietnam war. It has now expanded enormously by a second threat of holocaust proportions, which is the ecological crisis. But I should go back to the influence of David Edge as an organizer of the field. It's not that what he wrote himself that was of great interest; nor what he said, because apart from a few people his way of speaking was not understandable to anybody. But he was organizing the field, he was editing papers (until the day he died, as I understand from his wife); and he was organizing things that I don't even know about, like funding bodies. Without him we would not have the field, that's absolutely clear.

FM One of the things we're interested in is how STS is changing. You've spoken about how STS has changed and how different people have played a role in the field; but how do you perceive the field as having changed over time, since the early days in the 1960s to today? You mentioned the shift from a focus on the threat of nuclear power towards concerns about the environmental, but are there any other things you think have shifted the field or changed it?

BL Maybe I'm going backward to an old man's view, but I think the field has weakened by extending to so many different topics. I would not even think of going to a 4S meeting any more, except the one I organized here in Paris, because we have become the sort of weak well-meaning critique of science and technology out of which we, when we were kids in the 70s, tried to extract ourselves. So, there was a critique of science and technology, a pseudo-Heideggerian critique of the dominance of technology plus the sort of ethical concern voiced by older scientists after they had retired. We tried to get out of this by studying carefully the hard sciences and instilling into the writing something like, not admiration, but a feeling for the dignity of science in its content, which I always feel when I read the sociology of science, but I have trouble finding nowadays in the 4S, which seems less tough. Now the field has spread very far, clearly into anthropology around notions of ontology and agency and all these things, then you find again, you find it in medicine, in psychology, the whole question of the body, that has been the extended, maybe now into the humanities as well, and of course into political theory, and now around the question of ecology. So the field is there and it is a great field with lots of people, but it has been weakened in my view. But that's the view of an old man, and the frontier so to speak is in other places where the question of science (capital S), is still absolutely central. But I'm just one player in that game.

FM Are you saying that at the center there's not been a loss of critical engagement, but the taking of science itself seriously?

BL It is to say that the more you describe in detail the content of a science, the more interesting the world turns out to be, compared to the critical apparatus used to study it. In a way, what we try to do is to say, the science is itself its own "social explanation"; don't explain science by using society; do the reverse, explain society by a redescription of science…and that is still the dispute with the Edinburgh school… the social explanation *baggage*, they have not renewed what society is made of. If you push the fact that science is not the resource but the topic and that your own description is a contribution to the way the others that you study are defining their world, it means that you are not studying them from the outside—you are offering a "diplomatic" proposal for the way they understand themselves. So the protocol of this "diplomatic" encounter is what in practice the social sciences have always been doing, but only now they are beginning to see that it's their duty to do it.

FM That sounds like a very engaged framing of the role of a social scientist, if you think of it as a "diplomat," almost as a bridge or a connector.

BL Yes, but that has always been the role of the social sciences. This is why I never believed the scientist ethos of David Bloor. There is an implausibility in the science of science project on which the Edinburgh school was hooked. But the Edinburgh school was saved by the quality of their recruitment and the quality of their fieldwork, but it was a transition, it was transitory. For me the transition lasted six months, but some still seem to be transiting. In England, the philosophical training of the social scientists is absolutely awful, so people were always stuck with a little bit of Wittgenstein or whatever. It was

difficult for them to admit that there was even something like the *French* way of doing science studies! There are still people like Harry Collins who think our presence in this field is not totally legitimate…This was a British or Scottish field—what are these silly French doing there with all their strange ideas, actor network theory and that sort of thing?

FM Can you talk a little bit about that? How actor network theory came into being in the sense of a French approach…

BL It was not French, for us it was a reading of the Edinburgh school pushed slightly further. Precisely the contradiction of a science of science, which couldn't last. If what they said about nature was true, it had to hold for society too. It was completely bizarre to not see this point. We made the point with Callon in a paper in 1981 (Callon and Latour 1981), a paper on Leviathan which was a sort of birthplace of actor network theory. It's not that I love actor network theory. I don't think it's that great, but the idea that we were—that of finding a common point on the two sides of this undivided concept which is nature/culture—struck us from day one. Attacking one side is very important and interesting, but it constantly blocks discussion if you fail to see that it goes both ways. Of course, this was before the anthropologists got into the game, and it was before the ecological question became so publicly obvious. But that's my completely biased reading. My view of the STS field was, I think, aligned with the next two transformations: anthropology and ecology, for which I was better prepared as this was what my training was in. And the obsession for maintaining the science, the social *science* of the question was in my view limiting. Now it makes no difference because our great master is MacKenzie and his work on economics. Unfortunately, it's not my own work, so I have not contributed to the anthropology of economics, but I think that it is most important.

FM Within your own work on ecology and the environment, what do you think the key contribution of adopting a science studies way of thinking has given to the understanding of environmental issues?

BL Now my problem is that I consider science studies so much in my blood that I forget even to talk about it when I teach. It was only after a year that I realized not one of my students had understood a thing of what I was saying, and the missing point was, of course, that you should read science studies first and then I went backwards and tried to do a crash class on it. For me it's difficult to imagine how the brains of people function when they have no science studies link, but they do exist these people! So, for the last quarter of a century, I've been doing controversy mapping[3] because it's a way to have people absorb all those skills that we learn, in part from the science studies unit and others, without pain. We still do it and we have a huge program and it has become a cottage industry. That's a direct descendent of science studies and it carries some of the essential messages of science studies. It is not that advanced, we have to make it common sense, and the only way to do it is to make a kit where you learn the skills, describing

[3] https://web.archive.org/web/20150310090045/http://www.mappingcontroversies.net:80/

controversies and instrumentation, professions and paradigms, all of these things, in as regular and easy a manner as possible. The way you teach biology 101. We are not there yet, but it is indispensable because we are constantly blocked by the fact that the science studies outlook has not spread enough. There are still people who believe in Science as something coming from out of space, especially in France, as if we were in the middle of the 19th century, so that's a big problem.

FM You mentioned that you have a particularly strong engagement with anthropology, that was your background, and you spoke of how science studies has spread into all kinds of different areas, do you think anthropology is a key field in which new forms of science studies are emerging?

BL Well as you know we have done a lot of science studies work on the notion of "the paradigm," and this notion has a strange feature in that nobody agrees on what it is. I don't think any one person has the same definition and every one of them has several definitions of a paradigm, including, of course, myself. What I mean is that the whole of the social and natural sciences are being redefined and we have to find ways of surviving basically and for that you need completely different alliances between social and natural sciences. I think that's where science studies in practice goes, this is why I mentioned controversy mapping. Just to give you an example, I direct a program called Politics of the Earth, I am the coordinator and all of these labs are natural sciences staff, they never ask me one thing about science studies, they never mention the Bloor disputes, they don't talk about relativism, but they ask me amazing things like: can you help us with the geopolitics of CO_2, because we are biochemists, we don't understand the different ways in which people all over the world use CO_2, and is it possible to do a study of it using scientometrics? This is where science studies is now, it's in the collaboration with the scientists. I'm doing work in biochemistry, I'm going to California now to work with scientists on "critical zones," and they don't even dream of reading anything in science studies. We collaborate because they have the problem of making themselves understood by the public. The thing is completely reversed: that's a big transformation from the old attack on science. Now we are to defend science against climate skeptics and others. Suddenly you see the scientists looking around saying: Can you help? Can you help? We are under attack! We are under attack!

FM Don't you find that a strange shift?

BL It is a strange shift. It's very funny because people say Latour has changed his mind—before he was attacking science and now he defends it. I say, no, I never attacked science, nor do I defend it now! It's you, scientists, who believed you were protected by epistemology and defended it against us, while we were just describing what you were doing. Now you see that this never provided you with any defense against the bad guys, such as climate deniers, and you suddenly realize that you need to make people understand what you do.

FM I want to step back; you mentioned you are working with scientists and students who don't necessarily even think about science studies, but yet in a very practical sense

they're engaging with similar issues and concerns. Do you think losing the language that built up science studies is problematic for understanding the core concepts or epistemological underpinnings? How do you make the translation of working with these ideas but not necessarily having people who have engaged with the broader history and concepts?

BL This is a very interesting question. My idea has always been that science studies had to become common sense, tacit, there without needing to be expressed, because the core of science studies is just a critique of silly ideas about science. We were young and we were very happy to poke holes into all the stupidity that we were reading, but intellectually you could not feed on that for very long. Once you have taken out all the silly ideas—that's enough, don't overdo it. You don't have to endlessly criticize the old ways of understanding science. So now it has to become tacit—why; because the next task is the real intellectual difficulty, namely: what do you do with the institution of science? What do you do with the diplomacy of science? What do you do when you have the forest understood by the Indians and the forestry department and the biologists in completely incommensurable ways? Not because you want to criticize science, but because it's now the question of how to survive in this forest and how to keep it alive. I don't think anyone would have the same answer to this question. My answer has always been that critique is useful but only so far. We should not put aside all the big ontological questions, all the real core questions in order to fight against the idea of science with a capital S. This has already been done. I have just received a request from a journalist to speak against relativism, and I just threw it in the bin, I didn't even bother to reply. For why do you want to talk about relativism at the time of the Anthropocene? This is completely silly. But there are, of course, still people who want to fight that old game. That's another reason why I think the science studies field has been weakened. There are still lots of young people entering the field wanting to debunk this or that definition of realism, this or that definition of relativity. For me these battles are over, and what is really difficult is the next step which is, okay, what to do when you have to collaborate with biochemists on CO_2, which is what I am trying to do now.

FM You have written about moving post-critique. What models do you think are available for that kind of work?

BL We have none! That's why we don't know, that's why I call it diplomacy; we have none. The reinstitution of science, the redrawing of the institution of science, the redrawing of an institution of nature, of what we could now call nature and objectivity. All these questions are extremely difficult. Precisely because of the earlier critique actually. But this is the moment when critique becomes counterproductive, distracting from this task. The climate skeptics' debate is one typical case. It's useless to try to answer climate skeptics. You don't answer them, you need to do something else, something which needs world-building, so to speak. We do not have much experience at world-building. We recently did a simulation around environmental negotiation with 200 negotiators, some representing France, others representing forests, some representing indigenous people,

others representing Canada, and so forth. For me this is the frontier of science studies—geopolitics. Science studies is now about geopolitics. How we do this is tough, though, because we can't just use the earlier models—either a disinterested "science of science" or a critique of science.

FM Do you have any suggestions for ways to move beyond a science of science or a critique of science? Not definitive alternatives, but possible alternatives? You mentioned "diplomacy." What suggestions do you have for young scholars or people engaging with these questions?

BL One thing which remains true is that the number of descriptions of science is not that great. There are not that many people offering detailed alternative descriptions. A lot of it is commentaries on things, including my own and those of others, which I think is a complete waste of time. A student asked me, can you find a good description of software-making? A few, only a very small number of references about software-making, and not one single activity now is not based on software. When you ask, where are the people who do anthropology of software-making in a detailed way, in the way Shapin worked on phrenology, you are immediately stuck. That's the first primer, and the second primer is what I was saying about the frontier between the common sense tacit science studies practice, such as controversy mapping merging with science education. The complete overhaul of science education through science studies, then it will become tacit. Then the regaining of confidence in science would begin and the diplomatic encounter would be less rare. We do that a bit here, we have a double major in science and social sciences where we try that.[4] Every year we have a few who are keen to understand this and start a thesis on it. If we could arrive at conversations in which the idea of science is less simplified. If forestry engineers could arrive *vis-a-vis* the Bolivian Indians and could talk with the biologists and NGO administrators who do not necessarily share their view of science but do not have an "unshareable" view of science, the negotiation, what I call the middle ground, could be drawn at least. That requires very different skills from the ones which have been honed around the notion of epistemology of the social sciences, which is probably the emptiest field ever. If there are kids who want to enter science studies, the number of things to study is unlimited, it's still a completely open frontier but it doesn't have the same funding. In England is it well-funded, science studies?

FM It's complicated, some units have funding, but an STS center like we have at Edinburgh is unusual.

BL You even have a building.

FM Yes, we even have a building, a miracle! This question about funding is an interesting one more generally because one of the critiques that is sometimes leveraged against contemporary science studies or STS is that you end up becoming funded as a subsidiary to the sciences, an adjunct to. For example, the ethical component of a big science project.

[4] http://www.sciencespo.fr/admissions/fr/college-universite-pierre-et-marie-curie

That's quite a typical model and it sounds from what you're saying that you don't find that model as problematic as some people do—that science studies ends up becoming the handmaiden for the sciences?

BL No it has to be the Führer!

FM The other thing in the UK is that STS and other social sciences has to have an "impact"—make some kind of "positive" difference. But what you're talking about doesn't sound at all like a model with linear impact.

BL No. But it is true that the British have a difficulty here because of an obsession with an empiricist approach in the bad sense of the word, which is detrimental for any thought. But that is the general trend, thinking seems to be banned everywhere, which is a very rational way to handle the situation because the situation is fairly tragic, so *not thinking* is a perfectly reasonable way to handle the situation! But the subsidiary position inside scientific institutions is always what we acted against, especially when I was in my own science studies lab in the École des Mines which trains engineers. We were one laboratory on equal terms with all the others, and we were teaching compulsory classes to everybody. Here at Sciences Po it is different because it's all social sciences, but what I immediately did was to create a double major, a double bachelors and now a double masters, not a double PhD because that does not exist, in ecology and social sciences, but where the social sciences are not ancillary. We have to devise such situations, but this is limited to questions of ethics or pedagogy or public understandings of science. It's always there as a sort of plan B, but strangely enough France has never had any solid funding for STS *per se*, so in a way we have been freed from that. But there is a major tradition of epistemology and philosophy of science, which was always historically grounded. So we've never had this complete opposition that you have in England between philosophy, without any sort of vague relation with anything real, and history. The most important STS person in France is the historian of science Dominique Pestre. He has created probably 20-30 positions in the history of science which are effectively STS based. And Callon and myself, we had many students who went on to jobs, but that's because of the strange French academic ecosystem. But it's true that funding is of course, as usual, the key.

FM One of the things that has happened in the UK is that a concern with science has become more mainstream in disciplines like history or anthropology, whereas in the earlier days when STS was developing as a multidisciplinary field, these other fields weren't actually concerned with science in that way. I was wondering whether something similar has happened in France?

BL In France, disciplinary associations are much looser because we don't have professional organizations. And for me the key *shibboleth* is, are you STS? When people say in France "we are STS" it means we have been inoculated and we are free from the usual disease, so it's more like a vaccination card: I can talk to you and you're not going to feed me all these silly things about disinterested science and non-situated knowledge. Does this come from feminist studies? Does it come from history of science, which remains in

France the only major field in terms of STS proper? Is it philosophy of science, which sometimes in France can be STS because of Pestre and myself and others? I think most people who would call themselves STS would come from the group in anthropology at the College de France, because I think there are three or four of them who are doing an anthropology of laboratories in very original ways between what I am doing and what Pestre is doing. But France is a special case when it comes to disciplinary affiliations.

FM It's interesting to compare because we're also interviewing some people in the Netherlands, in America, to see how these differ.

BL They are very diverse. We have huge numbers of people in France who are doing STSy, the adjective "STSy" is actually used, type work on medicine and society. And in France they will be inside the main institutions of medicine, they would be in CNRS and that's a peculiarity of the French. So it's easier in France to have STS people or STSy people collaborating directly with the scientists; this is not unusual.

FM Do you think that played a role in the kind of ideas that have come out of French STS, from the work of people such as yourself and Michel Callon?

BL Well it played a role in that we were in an engineering school. We were in a center for training engineers. Yes, it did make a difference because it helped fight the ancillary view of STS. Medicine was much less successful in resisting ethics, but also because there is a much greater demand as you know of ethics in medicine and there are also jobs. In sociology it never worked because French sociologists remain completely immunized against STS. Anthropology, again a very prestigious science in France because of Levi Strauss, developed a lot of STSy studies because of Philippe Descola. Psychology not so much. But now you see when I am talking with *my* scientists, they don't even know that science studies exist, they just say, we are lost, we are lost in the content of what we do; the earth is not unified and what do we do with a non-unified earth; and we are attacked by people who say we are a lobby among other lobbies, and that we are dangerous. Can you help? For me it's fairly obvious, but what is funny is to have lived to be a relativist and to have been transformed into a support and a nanny of despairing scientists in the same 40 years, that's very funny.

FM And can you help?

BL Yes, I think I can help. I am starting this new work, so I will know in a year or two. At least I can bring a friendly voice coming from the humanities and social sciences they've never heard because they are deeply ignorant of anything which is not their field, but which tackles their critical questions. In that sense it is what the social sciences are made for. It is not critical, it is not ancillary, it is not secondary—it is *embedded in there*. This is similar to something which has completely escaped STS—the philosophy of biology, which is mostly an American phenomenon. The US journals devoted to the philosophy of biology are often very, very interesting in a way that you will not find so much in STS. It is how far you go with the content of a discipline that is the key thing really. The point is that all of those guys in STS in Edinburgh, they had a much better knowledge of and basic training in science than me. That's what gave them such a head start.

FM If you have to get to the heart of the science, to engage with it in the way you're saying, do you need to be a scientist?

BL No, but it helps to have a good training in the science. Now I'm revising a textbook of chemistry to understand what happens in the carbon cycle. I would not have had to do it if I was Simon Schaffer or someone like that. And it's a bit silly to be so ignorant, of course, but I have made other contributions.

FM One topic that we are interested in is the future of STS, where you see STS going. I know that acts of prophecy are dangerous, but from your perspective, where do you see the field going and where do you think it should go, or where would you like to see things go?

BL In this case it's very easy, and it's not forecasting, we are in the Anthropocene and we are the main discipline!! This is very simple. Not by chance and not by coincidence but let's say in a more grandiose way, which I'm sure my friends in Edinburgh would say a very French aggrandizing way, we in the field of science studies have been preparing ourselves exactly for the moment where we are. To be in the Anthropocene means that whenever we talk about geology, we talk about humans, which we knew before; and whenever we talk about humans, we talk about geology as well. Nobody is prepared for that, although we are slightly less unprepared than the others because we have been doing this for 40 years, so when we have to understand a thing like sedimentary plastic rocks found in Hawaii we see the hybrid that we have been studying all along. Do we have the numbers of people ready for this enterprise? No, because we are still a small field, but if you survey the social sciences and the way they are prepared for that, there are not that many disciplines which can handle the questions coming from a biochemist asking us to provide geopolitical maps of CO_2. If you are a meteorologist or climatologist trying to respond to climate skeptics, who would be the ones able to prepare them and say: well you have a politics too, don't try to hide it; but so have they, so build a field where these two politics can actually meet. Who is better prepared to give this sort of advice than the science studies people? Of course, it's interesting to see that those who are now working on the Anthropocene and who are coming from history of environment, they are all STS, or STSy, people—those who have done their inoculation by chance. It's like smallpox, you can get it through vaccination or just because you have met someone. For once I think it's fairly easy to see why it's so important to prepare kids in science studies. Even though in France we have never been able to have science studies, but I think it's an advantage, like feminist studies. Feminist studies also get bogged-down in feminist departments. Science studies failed at that, the one exception of a really existing department being the Edinburgh one.

FM And I think in the UK also Sussex.

BL Sussex never counted, it was science policy. It counted for us, we were doing policy with Callon and we always thought it was useful, but Edinburgh always poured scorn on Sussex from the beginning because they were policy-oriented, and this was a mistake. We never went anywhere trying to make a connection with policy and STS in England,

but we always did it at CSI. Callon's work was at first entirely on policy. The nice thing with STS people, whenever I go anywhere you see the same intensity of young, recently converted people, which is amazing. When I was 30, I always thought the guys who were 40 were old farts. Now I am 68 I keep receiving letters and mail from people who say, "I've discovered your work, and to find it I had to fight against all sorts of hassle because my supervisor didn't want to hear anything about science studies, I fought hard, it's difficult." Which is amazing. This field is still among the barbarians, so to speak, and it's very nice at 68 to still see young converted people instead of people who say "get away, we know all of that, get out."

FM Do you still think that's happening, that young excitement?

BL Certainly. Because science is so stupidly taught and people have to find their own way, and after that it doesn't matter if they might confuse Bloor and Callon. I don't ask them to make a fine distinction. But science studies remain for the reason which I said, which is the realization that neither nature nor society have the right resources, provide the same aha, which is very refreshing. Steve Woolgar and I receive exactly the same royalties as 30 years ago, the same number of copies of *Laboratory Life* being sold. You would have thought that at some point this thing would have had its day. But people are still discovering *Laboratory Life*, which is amazing. Exactly to the dollar the same amount.

FM Which of your books do people respond most strongly to? *Laboratory Life* was obviously a key text, but in terms of getting emails or questions from people?

BL *We Have Never Been Modern* (Latour 1993), which is not the most empirical. For some reason it has interested many people, even the French. My favorite book is *Aramis* (Latour 1996) but it's not the one which is most studied, it's the one which I think is the most interesting.

FM *Aramis* is interestingly written, it's very original in its style.

BL It is the one most loved by me.

FM Do you have any concerns? Things that you see happening in the field that you think are less positive?

BL There are many ways to fail. I think it's more important to say to science studies people that their time has come, not because they are finally drawing a map of what the world is like, but because they have been trained in a particular domain. We have the skills necessary to understand the Anthropocene. They are prepared less badly than the other scientific disciplines, let's say. But, of course, that doesn't solve any problem. I don't know—are there any historians of the STS field?

FM Not that I know. That was partly the idea behind doing these interviews. Vivian Walsh, from the University of Manchester, is currently doing a history of innovation studies. And I believe that Arie Rip is trying to start a project that would be a history of STS, so I think people are beginning to think about it.

BL Which is good because it means we are still not dead. I've forgotten what I was answering.

FM We were talking about this idea of preparation for the future and I asked you about avenues that we shouldn't go down.

BL No, we can fail in many ways. We are in the middle of the worst crisis of the universities, but that is not linked to science studies.

FM But it's relevant. We haven't really been talking about the institutional constraints and challenges that are faced across universities.

BL But that's not STS specific. It's the wiping out of any place where thinking is done in any systematic and long-term ways. When you think that the topics we have been working on in STS have begun to be graspable only after 40 years. Where can you now wait for 40 years to get a research program working? On controversy mapping we begin to be able to have something which is a sort of kit and I started that more than 25 years ago. This long-term work on diplomacy and ontology, comparative ontology, I started 40 years ago. Where can you get this long-term perspective? CSI strangely enough is still funded, but it's a small thing inside a very specific engineering school in France. But it's not STS, it's a general call for not thinking at the time where thinking is most useful. It's frightening.

"Diplomatic" Encounters in the Anthropocene

BY FADHILA MAZANDERANI

It is a pleasantly warm June day in Paris and I am preparing myself for the daunting task of interviewing Bruno Latour—arguably the most prolifically interviewed STS scholar. I arrive at the address early and am slightly bewildered to find myself in a courtyard overhung with vegetation bearing the plaque Société Nationale d'Horticulture de France. The directions I have been given state that I must press the 3rd button inside the left lift in the east entrance. I dully do as instructed, only to find that without a passcode I can press the 3rd button as often as I like, the lift goes nowhere. I try phoning, but have no reception. I write an email informing Latour's assistant that I have arrived. I press buttons one and two, to no avail. Standing there, inside the lift, mutably immobile, I am reminded vividly of Latour's now iconic "Sociology of a Door-Closer" (Latour 1988b). At that point, a human steps out of the right-hand lift. My hopes raised, I accost him in my broken French asking for help in getting to Latour's office. With a bewildered look and a Gallic (forgive the cultural stereotyping) shrug of his shoulders he walks away. What? He doesn't know who Bruno Latour is? And he's French! *Impossible*!

Eventually (I shall not bore you with the details), I find myself in Latour's small book-filled office. *Who are you?* He asks. Then, with some animation, he appears to recall who I am and

why I am there, only, a few minutes later, to realize that, no, I am not in fact the person he thinks I am—someone scheduled to interview him later in the day. The whole experience, finding the office, struggling to enter, being shrugged at, finally gaining access, but then being mistaken for someone else, feels remarkably Latourian—a contemporary parable of delegated agency, immutable mobiles, and socio-technical (dis)assembling. And it is precisely that—the tenacity of the prose, of the imagery and the metaphors, the anecdotes and the allegories—that makes Latour's work so difficult to set aside, even if you disagree with the ideas conveyed. For, once you have read them, they stay with you, make you look at the world anew, and invariably slightly askew.

Composing STS, Diplomatically

In our interview, Latour uses the metaphor of *infection* to describe how the core messages of science studies have spread across academic disciplines, as well as beyond the academy. According to Latour, in the era of the Anthropocene, in order to deal with the world's most pressing issues, such as the looming ecological catastrophe, getting infected with science studies is not an option, but a necessity. But what, to follow the metaphor, is this virus? What constitutes science and technology studies (STS) for Latour today?

The picture he paints is both definitive and nebulous. On the one hand, STS is understood very broadly as anywhere where science is not the dominant explanatory language, but rather that which is studied. It is where scientific practice is the prime focus of analysis, where scientism in all its forms is questioned, and where the analytical distinctions between science, nature, and society are neither reified nor dissolved, but non-existent to begin with. From this perspective, almost anything can be STS, from literature and politics, to art and engineering. Yet this vision is one in which, while free to travel, infect and mutate, STS is also cut loose from any disciplinary moorings, and the STS scholar emerges as a vagabond mediating between different contexts and concerns—in Latour's words, a "diplomat" (Latour 2013).

I feel somewhat uneasy with this characterizatioon, but then, as Latour himself has stated on various occasions, it is precisely because the "slippery" figure of the diplomat invokes negative connotations that he uses it (Latour 2002; Latour and Davis 2015). The diplomat, in Latour's configuration, does not subscribe to any higher ideals or arbitrators; s/he is thoroughly pragmatic, willing to negotiate and compromise in order to build new worlds not in opposition to, but alongside those once deemed the enemy. I do not feel comfortable with the introduction of military metaphors either, even ones of peace making. However, given that what we today call STS has from its inception been the site of conflict, whether in the form of heated debates internal to the field or as the subject of intense criticism from scientific realists, the agonistic undercurrents implicit here are understandable. Furthermore, Latour's advocacy of the diplomatic "encounter" as the model for a future STS is more than simply a proposal for an alternative intellectual endeavor; it is an impassioned response, in his words, to an ecological "holocaust." And it is this sense of urgency—the belief that his work and the work of others, be

they social scientists, artists, or computer programmers, can make a difference, not simply for how the world is studied, but how it is *composed*—that makes Latour's project so infectious.

Indeed, one of the hallmarks of Latour's current work has been a move away from traditional forms of academic "critique" to those of "composition," an orientation reflected in the creative or literary tendencies of his own writing. Closely aligned with the injunction to pay attention not only to "matters of fact" but also to those of "concern" (Latour 2004), the project of diplomacy is at its heart one of "composition," a constructivist project in every sense of the word.

On Constructing Futures Past

The analysis of how things—be they scientific facts, bicycles, or hormones—are (socially) constructed has long been a key focus of STS scholarship. Constructivism has remained the reigning ontology of STS, although there has been much work done to refine the understanding of (social) "construction" through alternative concepts, such as "performance," "enactment," or, indeed, "composition." However, Latour himself has not hesitated to resurrect the core question of "constructivist" ontology, and to rework it as part of his wider (ad)ventures in "diplomacy" (Latour 2003). Here, rather than place constructivism in opposition to realism, as two competing ontologies, he treats them as one and the same. In Latour's words: "the more constructed, the more real" (Latour 2003, 33). From this perspective, the salient question today is not how (or indeed whether) reality *is* constructed, but how *might* we construct new realities that are durable, beautiful, safe, and so on. Latour here collapses not only epistemology and ontology, but also ethics and aesthetics. Though not explicitly discussed in the interview, this orientation underpins it.

When Latour states that "we" (as in "STS scholars") are the "main discipline" in the Anthropocene, it is this very particular model of STS that he is referring to—a model in which STS scholars are actively collaborating with those they study (whether these are scientists, lawyers, engineers, doctors, architects, or others) in building better worlds. Latour is not unaware of the irony in play when he of all people adopts this position. He refers with humor to his metamorphosis from "arch-relativist" (a position conferred on him by others, rather than willingly assumed) into the "nanny" of despairing scientists. But, irony aside, where does this perspective on the role and future of an engaged STS leave us? It is certainly more rhetorically compelling than many of the alternatives—for example, the adoption of a narrowly and functionally construed "impact" agenda or confinement to restrictive social scientific disciplinary silos. And yet, this vision, like the diplomat at its heart, is slippery, Janus-faced. For as soon as you try to grasp hold of it, to pin down what is at stake, how one might actually go about doing such work, the frames of reference change. Moreover, as Latour himself alludes toward the end of the interview, his vision does not rest easily within the contemporary academic climate of funding cuts, short-termism, and ever-increasing competition for dwindling resources. Yet, the question of whether the possibilities of a future STS, as envisioned by Latour, can ever be actualized and whether, in the end, the diplomat will turn traitor, leaving you stranded in unfamiliar "enemy" territory, is not the message that I take away from this interview. As I

navigate my way out of the building via the left lift in the east entrance I contemplate Latour's vision of diplomatic encounters as emblematic of his work more generally: its agenda is never simply the articulation of the possible, but a much more the dangerous gamble with expanding the realms of possibility itself.

Author Biography

Bruno Latour first trained as a philosopher and then as an anthropologist. From 1982 to 2006, he has been professor at the Centre de Sociologie de l'Innovation at the École Nationale Supérieure des Mines, Paris and from 2006 to 2017 at Sciences Po, Paris where he also served as vice president for research from 2007 to 2013. For various periods, he has been visiting professor at the University of California, San Diego, the London School of Economics, Harvard University and is now professor-at-large at Cornell University. After field studies in Africa and California he specialized in the analysis of scientists and engineers at work. In addition to work in philosophy, history, sociology and anthropology of science, he has collaborated in many studies in science policy and research management. Some of his most well-known publications include the early monographs *Laboratory Life* (co-authored with Steve Woolgar 1976), *Science in Action* (1987), and *The Pasteurization of France* (1988a). He is also the author of the widely-cited work on symmetric anthropology entitled *We Have Never Been Modern* (1993), as well as a collection of essays in which he explores the consequences of the "science wars," *Pandora's Hope: Essays in the Reality of Science Studies* (1999). Among his more recent work is *Reassembling the Social: An Introduction to Actor Network Theory* (2005), which outlines the particular brand of social theory that he developed with his colleagues in Paris. Recently, he has been engaged in a European Research Council funded project to pursue an inquiry into modes of existence (AIME).

Author Biography

Fadhila Mazanderani is a Chancellor's Fellow in Science, Technology and Innovation Studies at the University of Edinburgh. Her research interests are in alternative forms of knowledge and ways of knowing in medicine (especially the epistemology of patient experience and expertise and how this interacts with ethics and aesthetics); the deployment and use of information technologies in healthcare and biomedicine (especially in relation to chronic illness); literature and medicine (especially patient autobiographies and storytelling). To date, much of her work has focused on the use of digital technologies in healthcare and biomedicine, especially in relation to chronic illness. Prior to joining the University of Edinburgh, Fadhila held posts at Durham University and the University of Warwick. She completed her DPhil at the University of Oxford, where her work explored the use of digital technologies in relation to contemporary HIV care in the UK.

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