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Bruno Latour

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When things strike back: a possible contribution of 'science studies' to the social sciences

ABSTRACT

The contribution of the "eld of science and technology studies (STS) to mainstream sociology has so far been slim because of a misunderstanding about what it means to provide a social explanation of a piece of science or of an artefact. The type of explanation possible for religion, art or popular culture no longer works in the case of hard science or technology. This does not mean, it is argued, that science and technology escapes sociological explanation, but that a deep redescription of what is a social explanation is in order. Once this misunderstanding has been clarified, it becomes interesting to measure up the challenge raised by STS to the usual epistemologies social sciences believed necessary for their undertakings. The social sciences imitate the natural sciences in a way that render them unable to profit from the type of objectivity found in the natural sciences. It is argued that by following the STS lead, social sciences may start to imitate the natural sciences in a very different fashion. Once the meanings of 'social' and of 'science' are reconfigured, the definition of what a 'social science' is and what it can do in the political arena is considered. Again it is not by imitating the philosophers of science's ideas of what is a natural science that sociology can be made politically relevant.

KEYWORDS: Epistemology; science and technology studies; method; natural sciences

INTRODUCTION

I forgot who the famous philosopher was who used to quip that all was well with the social sciences except for two tiny words: 'social' and 'sciences'. Although a change of millennium possesses no deep meaning, save for Christians for whom it is a telling event in the history of Salvation, and although thousands of years is much too vast for the juvenile social sciences who never had to celebrate any anniversary longer than a few centuries, the year 2000 might none the less be a good occasion to meditate, once again, about the claims of the social sciences to be just that: sciences of the social.

The time is all the more auspicious since a minuscule sub-field of sociology, called 'science and technology studies' (STS) has for the last

twenty-five years shed some light on what is a natural science and put into doubt what a 'society' is. Today, it might be possible to ask anew what are the social sciences in the light of the sociology of the natural and social sciences. What fecund areas of research could open up in the near future? The task is not that easy since STS have so far led the same sort of life as early mammals when dinosaurs were roaming the Earth. Hidden in peripheral niches, they were awaiting for better days to explode in many new locations. Although I do not expect (nor hope!) a comet to wipe out the Big Animals, I do think STS will have a more conspicuous place in the delicate ecology of the social sciences, once the demise of a few traditional Big Problems will have left some space for its proliferation. The difficulty is that because of its very invisibility, STS's contribution to mainstream sociology is not easy to grasp (see Jasanoff, Markle, Peterson and Pinch 1995 for an introduction, Biagioli 1999 for a useful reader and Knorr-Cetina 1999 for a recent major contribution).

The official version would have it that STS has contributed to a 'social explanation' of phenomena judged until now irrelevant for sociology because they did not pertain to the social realm at all, namely matter, efficiency, and objectivity. According to tradition, the work of sociologists begins and ends with socially relevant topics. If a cyclist falls off his bicycle because it has hit a rock, social scientists confess, they have nothing to say. It is only if a policeman, a lover, an insurance agent or the Good Samaritan enter the scene that a social science becomes possible, because we are now faced, not only with a causal sequence of occurrences, but also with a string of socially meaningful events. Not so for STS practitioners, who deem sociologically interesting and empirically analysable, the very mechanisms of the bicycle (Bijker 1995), the paving of roads, the geology of rocks, the physiology of wounds and so on, without taking the boundary between matter and society as a division of labour between the natural and the social sciences. Although this equanimity (or 'symmetry' as it is called in the jargon), is fiercely disputed in our subfield, there is complete agreement in STS on the importance of *extending* the research programmes of the social sciences *beyond* the former realm of what was considered until now as the 'social' (Bloor 1991[1976]; Law 1986).

The question I want to tackle here, at the occasion provided by the change of digits in the way that we (in the developed part of some of the richer societies) compute years, is how much of the usual business of the social sciences is to be modified by such an extension to natural phenomena.

NOTHING SUCCEEDS LIKE FAILURE

The first difficulty is to go beyond the boundary of the social in order to grasp natural and material objects. I would be tempted to phrase the situation in the following paradoxical way. If a social explanation of the natural

sciences and of technologies succeeds, then it fails and the rest of the social sciences disappears as well. While if it fails, it is interesting but so superficial that we cannot be safe in the hope of becoming real scientists because we have missed the thing under study. In both cases, STS appears as the *fatum* of the social sciences. I will defend this paradox first, before turning, in the next section, to the positive, although counter-intuitive, contribution of STS.

What could it mean, according to mainstream social sciences, to provide a social explanation of a natural phenomenon? It is to show, they believe, that a quark, a microbe, a law of thermodynamics, an inertial guidance system, and so on, are not what they seem to be – incontrovertible objective entities of nature out there – but the repository of something else, which they are hiding, reflecting, refracting or disguising. This ‘something else’, in the tradition of the social sciences, is necessarily some social functions or social factors. Providing a social explanation, thus, means that someone is able in the end to *replace* some object pertaining to nature by *another one* pertaining to society, which can be demonstrated to be its true substance (see Hacking 1999, for a remarkable feat of analytical clarity).

There are very good reasons for such a research strategy to be efficient since it worked, social scientists believe, in the paradigmatic case of religion during the founding moment of the disciplines in the nineteenth century. At the time, sociologists easily convinced themselves that to explain rituals, faiths, apparitions or miracles, that is, transcendent objects to which the actors attribute the origin of some action, it was perfectly possible (if not always simple) to *replace* the contents of these objects by the functions of society which they were both hiding and impersonating. Those types of objects were called fetishes, that is, place-holders for something else (see Pietz 1985 for a genealogy). Once the *substitution* of the false objects of beliefs with the true objects of society has been effected, there is nothing more to comprehend in religion other than the power of society it so efficiently hides and expresses. So when our colleagues hear that there exist a sub-field dedicated to science and technology, they cannot but imagine that this field has tried to do for materiality and objectivity what has been done first for religion, and later for many other topics such as popular culture, media studies, politics, art, law, gender and so on. What has to be done, it seems, is changing the object of attention wrongly assumed by the actors into the real object which derive from society.

Except of course, that such a substitution cannot be accepted so easily about a topic – science, objectivity, universality – which *alone* is not like *all* the other objects of study in the social sciences. This is because it is something to be looked down and explained, but also something that is to be looked *up* as the *ultimate* source of explanation.

Science, they say, (and this in itself is the most damning confession) cannot be treated as lightly as the rest (meaning that they would been ready to treat the rest lightly!) because it lies at the heart of what it is to

be a social scientist and is the only goal worth sacrificing one's life: knowledge of what the social is made up.

This is the reason why what could have been warmly welcomed as the expansion of the project of the social sciences to a new domain – STS added to those of religious studies, class studies, urban studies, gender studies and so on – has quickly become a poisoned chalice that decent social scientists would have much preferred not to have received or been offered.

The reason for this uneasiness is not hard to understand. In their hearts, social scientists deeply doubt the quality of their own explanations, so much so that they do not want to be submitted to a treatment they deem deleterious for all the other subjects! Hence the trap of reflexivity so well analysed by STS (Woolgar 1988). We can sociologize everything (including the social sciences) but only as long as we do not sociologize the natural sciences. Why? Because for many sociologists, to provide a social explanation of something means to destroy this object, to debunk the false beliefs that ordinary people entertain about them, and then to replace the idols by a true object of science; or to show that such a replacement is impossible since a certain degree of a not so naive *illusio*, of false consciousness, is necessary for the social order to work (Bourdieu and Wacquant 1992).

This taken for granted assumption about what is the normal *modus operandi* of a social scientist makes one very fidgety when approaching the STS literature. Since social scientists themselves believe that a social explanation destroys its object, what will happen if the natural sciences are undergoing this radical treatment? Are they not going to disappear in the way religion has? Worse: if the natural sciences are submitted to this substitution diet, how long will the objectivity of the social sciences resist? In the same ways as the Revolution kills its children, are we not going to see the whole edifice of science (natural or social) crumble? Even worse: since providing a social explanation means that one replaces an object of belief by a social function, it means that the ultimate source of enlightenment relies entirely on the fragile shoulders of social scientists requested to provide a watertight knowledge of society able to take the place, not only of God (a piece of cake?), but of the laws of nature as well. Are the social scientists really up to the challenge? And if they are not, if their knowledge is weak, will it still be possible to activate the modernist project that requires for the emancipation of the people an absolute bedrock of indisputable objectivity to spur the masses into action? These are the questions agitated in the so-called 'science wars'. If such is the can of worms that STS has opened up, it might be safer to close it, and fast! It seems that by extending the project of the social sciences to Reason itself, STS has gone *beyond* reason!

This is why STS's contribution to mainstream social sciences has been so limited: it has always been followed by an evil reputation. You cannot work in this domain without being immediately saddled with huge philosophical problems that are tied to your case-studies. 'Relativism',

'incommensurability', 'subjectivism', 'postmodernism', are shot at you even when you deal with such innocent topics as a mathematical proof, a neurotransmitter, a Monte Carlo calculation or an automated subway. Behind the most innocent field-work, always appear the forked hoof of the devil. Whereas there is no difficulty in showing that Rembrandt was the CEO of a cottage industry playing the speculative market, that cargo cults are the expression of deep colonial frustration, that class interests and product differentiation mark every instant in the carrier of *homo academicus*, it stirs a small scandal to deploy the British Empire in the physics of Lord Kelvin (Smith and Wise 1989), or the whole of imperialism in the setting up of primate visions (Haraway 1989). Somehow, for those topics, and only for those, society and sociality do not seem to be able to meet the bill.

Faced with such opposition, it is not even possible for the STS practitioners to play it safe, because of the second feature of what is a 'social explanation' as traditionally construed: either it destroys its object, or it ignores it altogether! Why, could the wary social scientist ask, not limit STS's claims about scientific practice to the narrow boundaries of the social, as the early founders of the 'sociology of scientists and engineers' (by opposition to that of science and engineering) had very reasonably done in the 1950s (Merton 1973)? All difficulties would evaporate. Yes, that is the point: everything would be vaporized, including the goal of social sciences as well. To be sure, there would be no scandal left if it was generally assumed that the social explanations limited themselves to those elements which, in technology surely and even in science, pertains to the social realm: 'power relations', legitimacy, ideology, biases, money, and some distribution of 'symbolic capital'. But, if only the most superficial aspects of physics, mathematics, neurology or ethology are being touched upon by STS, it means that, when dealing with a hard object, the social sciences have to *give up*. Yes, the problem of accepting STS as a *bona fide* domain of social science will have disappeared, but this neutering of science and technology studies will also have demonstrated that giving a social explanation of *any* object is a tantamount to limiting oneself to what is *not* objective, but *only* social. One can become accepted in the salons of social sciences, only on the condition of not providing an explanation of what one deals with. What was invisible for all the other sub-fields, because their social dimensions seemed to exhaust what there was to know in them, appears in a full light when dealing with the sociology of the facts of natural sciences.

The quandary with which I started this section, may now appear in all its force. If STS's claims are arrogant, they seem to destroy the foundation of what is a science, natural or social, but if they are modest, what they destroy is the very idea of a social explanation of something that escapes the social domain. If STS has succeeded in providing a social explanation, then it is bound to fail or at least to die like Samson under the stones of the temple it has so foolishly shaken. Social scientists may be right, after all, in wanting to have no dealings with a field that destroys the scientificity of all the sciences by explaining all of them socially. If the 'social explanation' fails,

however, it is perfectly welcomed inside the rest of the social sciences who, like STS, provide superficial explanations of phenomena whose true substance escape them for ever, be it religion, fashion, popular culture, art, classes or UFOs!

Because of the mere presence of STS, the rest of the social sciences has to confess its deep-seated conviction about its own scientificity. If you do to the natural sciences what we do so efficiently to other fields, then you explode it away, and it is so dangerous that it will backfire. Or, alternatively, if you do to the natural sciences what we do to some other areas, then it is innocuous enough since it does not touch on the important aspects which escape the social. And in this case it also backfires because it reveals that when social scientists claims to comprehend something they have left aside what the *thingness* of this thing actually is! Either they destroy what they study or ignore what it is (see the remarkable case of art history in Hennion 1993). No wonder that STS is rarely read amongst mainstream sociologists.

Fortunately, for the fate of the social sciences generally, and the STS field in particular, in spite of many claims by some of its proponents and most of its opponents, the project was *never* to provide a social explanation of the natural sciences. But by failing to do so on some new harder objects this has revealed what was amiss in the project of a social explanation in general (on the polemics around those points, see Pickering 1992). This is why I have often said, using an evangelical metaphor not out of tune with the millenium occasion, that the failure of STS to provide an explanation of the natural sciences was a *felix culpa*: this original sin that could lead the social sciences to another settlement by rejuvenating the very meaning of those two words, social and science.

HOW TO EMULATE THE NATURAL SCIENCES

Of the resistance of natural objects to social explanations two opposite conclusions can be drawn: the conservative one and the daring one. The conservative would say that the project of a 'social explanation' of nature was doomed to failure because facts escape the confines of the social order. This is the majority opinion of philosophers of science and most 'science warriors'. The other conclusion, held by myself and a few colleagues in philosophy, sociology and anthropology, is that this *felix culpa* has helped point out a general feature of *all* objects which is that they are so specific that they cannot be replaced by something else for which they are supposed to be a stand-in.

The 'unique adequacy' for which ethnomethodologists have fought so strenuously is a very general principle that strictly forbids using any other thing, for instance, a social function, to explain away the insistence, obstinacy or obduracy of a given site (Lynch 1994). We cannot emphasize enough the importance of this feature. If a sociologist abandons the idea of replacing, let us say, the second law of thermodynamics by a social factor

this law would be supposed to 'express', it means that the same is probably true of all the other objects for which we try to provide an explanation. They too resist being a stand-in, and that is no less true of miracles (Claverie 1990), fashion, gender, art, than it is of a rotor engine or of a chemical formula. Such is the contribution of STS to social sciences. Another definition of what is an object is called for (Thévenot 1996; Pickering 1995), once sociologists have passed the trial by fire of trying to explain in social terms the very substance of what is not social and have burned themselves out! This contribution would of course be lost immediately, if one was again separating out objects into two pots, one for the *fetishes* which can and should be accounted for as 'mere social constructions' because they are soft, and the other for *facts* which, by definition, escape all social explanations because they are hard (Latour 1996c). Hence, I devised the neologism 'factishes' to remind us of the uselessness of such a dichotomy (see Latour 1999b ch. 9, and for a caricature of the opposition Searle 1998).

This new respect for the unique adequacy of objects has two consequences for the social sciences, the first for the notion of society and the second for what it is that should be imitated when social scientists try to emulate the natural sciences.

I can go quickly on the first point, since several authors in this issue (see Urry, Beck, Castells) are also dealing with the demise of society as a source of explanation. It has become clear over the years that the existence of society is part of the problem and not of the solution. 'Society' has to be composed, made up, constructed, established, maintained, and assembled. It is no longer to be taken as the hidden source of causality which could be mobilized so as to account for the existence and stability of some other action or behaviour (this is at the heart of the systematic effort of actor-network theory, see Callon and Latour 1981; Law 1993). The diffusion of the terms, network (Callon 1992) and fluid (Mol and Law 1994), shows the growing doubts about the notion of an all-encompassing society. In one way, we are witnessing, a century later, the revenge of Gabriel Tarde over Emile Durkheim: society explains nothing but has to be explained (Tarde 1999a, 1999b). If it is to be accounted for, it will be, by definition, through the presence of many other little things that are not social by nature, but only social in the sense that they are *associated* with one another.

The adjective 'social' now codes, not a substance, nor a domain of reality (by opposition for instance to the natural, or the technical, or the economic), but a way of tying together heterogeneous bundles, of *translating* some type of entities into another (translation being the opposite of substitution: Callon 1986; Latour 1988). The great import of technology studies to the social sciences is to have shown, for instance, how many features of the former society, durability, expansion, scale, mobility, were actually due to the capacity of artefacts to construct, literally and not metaphorically, social order (Latour 1996a), including the infamous agent/structure dilemma (Latour 1996b). They are not 'reflecting' it, as if the 'reflected' society existed somewhere else and was made of some other

stuff. They are in large part the stuff out of which socialness is made (Latour and Lemonnier 1994). The same is true of the vast literature on the science studies of the social sciences. Here again demography, economics, accounting, politics and of course the various sociologies themselves, appear not as what study society but as what give it flesh, existence, and visibility (more on this below). The old tired theme of social construction has been turned on its head since scholars are now busy trying to show the ingredients with which some lasting order is being maintained. What was the cause is now the provisional consequence. Society is not made of social functions and factors. An interest in the 'social' does not lead to society as a source of explanation (Strum and Latour 1987).

The second aspect, the definition of science, is less well-known and since it might make clearer the definition of the social, I will dwell upon it longer (I follow here Stengers 1996; for an introduction in English, see Stengers 1997b). The imitation of the natural sciences by the social sciences has so far been a comedy of errors.

Having not applied their tools to natural objects and believing what philosophers of science and some scientists were saying about 'the scientific method', social scientists have been paralyzed by a 'physics envy'. They have imagined that the great superiority of natural scientists resided in their dealing with objects that they have fully mastered and dominated. Hence, when studying social entities, most of the enquirers tried to find situations resembling as much as possible this mythical posture of the natural sciences, namely, disinterested scientists gazing over objective entities that they could master at will and they could explain by strictly causal chains. Other social scientists, however, played the emulation game differently. They insisted that social topics requested *another* type of scientificity, a hermeneutic, interpretative nature, that was absolutely different from the one required for chemistry, physics or geology (I leave aside those who have abandoned any hope of providing a social science of anything at all). In brief, those who study social subjects should either try to follow natural scientists as closely, or as far away, as possible. However, both positions, the quantitative and the interpretative (to lump many nuances together), accept the official version of what could be called 'pre-STs' view of the natural sciences.

The model to be emulated by social scientists becomes quite different if one invests some energy in reading the STS literature on scientific practice, as it is going on in the laboratories and the many institutions which have now been subjected to detailed studies by historians, anthropologists or sociologists. Provided, that is, one accepts them as they are, as providing something other than a social explanation of the phenomena in question (although this is missed even by some sociologists of science, see Bloor 1999 and my response Latour 1999a).

Mastery, impartiality, community and disinterestedness are not the hallmarks of those laboratory set-ups. Not that natural scientists and engineers are partial, biased, selfish, agonistic and interested, although that too is part

of the process, but because the objectivity that they deal with is of an entirely different nature. Objectivity does not refer to a special quality of the mind, an inner state of justice and fairness, but to the presence of objects which have been rendered 'able' (the word is etymologically so powerful) to *object* to what is told about them (see the striking cases in Rheinberger 1997). A laboratory experiment is a rare, costly, local, artificial set up in which it becomes possible for objects to become relevant for statements made by scientists (this realist social philosophy of science is developed at length in Latour 1999b). Far from being the very example of a complete distinction between subjectivity and objectivity, it is, on the contrary, inside the laboratory (broadly conceived), and because (not in spite) of its artificial and local nature, that the greatest degree of intimacy between words and things can be achieved. Yes, things can be made relevant to language. Those situations are not easy to find, they are so unusual, not to say miraculous, that developing a new protocol, devising a new instrument, discovering a grasp, a trial, a trick, an experiment is often worth a Nobel Prize. Nothing is more difficult than to find a way to render objects able to object to the utterances that we make about them.

The paradox is that when quantitative social scientists imitate the natural sciences they avoid precisely those features that would render their discipline really objective. And the paradox deepens when one realizes that the interpretative schools curse the natural sciences for just the sort of sin that they do not commit, namely treating their objects as 'mere things'! If only, one could say, the social scientists could treat their subjects with the same respect as natural scientists treat theirs (see Strum and Fedigan 2000, for examples in the twilight zone of primate studies). As Stengers (1997a) and Despret (1999) have cogently shown in the case of psychology, the whole misunderstanding relies on the notion of an unknown structure. The argument seems counter-intuitive at first but makes a lot of good sense after one gets habituated to it.

In order to obtain objectivity as they understand it, social scientists try to find cases where their human subjects are as little prone as possible to influence the result. For this, the only solution is to render him or her unaware of what is manipulating his or her behaviour, as for instance in the famous Milgram experiment about the inner cruelty of American students. While the actor is held by forces unbeknownst to him or her, only the scientist is 'in the know', producing what is taken as solid knowledge since it is untainted by the subjective reaction of the participants. The scientist is disinterested and the subject *uninterested* in what is by definition unknown. The set up seems ideal for producing a science of humans as hard as that of natural objects, since human subjects have *no influence* whatsoever on what is said about them.

Unfortunately, although it tastes and smells like hard science, those all-terrain 'scientific methodologies' are a sham and a cheap imitation for a reason that becomes clear if we go back to the definition of objectivity as what allows one entity to object to what is said about it. If we lose the

influence of the object in what is said about it, as quantitativists are so proud of saying, we also lose objectivity! If microbes, electrons, rock seams, do not have to be protected against biasing the experiments, it is not because they are fully mastered by their scientists, but because they are utterly *uninterested* in what human scientists have to say about them. It does not mean that they are 'mere objects', but that, on the contrary, they will have no scruples whatsoever in objecting to the scientist's claim by behaving in the most undisciplined ways, blocking the experiments, disappearing from view, dying, refusing to replicate, or exploding the laboratory to pieces. Natural objects are naturally *recalcitrant*; the last thing that one scientist will say about them is that they are fully masterable. On the contrary, they always resist and make a shambles of our pretensions to control. If many more precautions have to be taken with human subjects, it is not because humans should not be treated like 'mere things' devoid of intentionality, consciousness and reflexivity, as interpretative schools would have it; nor is it, as the quantitative schools think, because they would influence the result, but, on the contrary, because they would quickly *lose* their recalcitrance by *complying* with what scientists expect of them. Contrary to microbes and electrons who never abandon their capacity to *object* since they are not easily influenced by the interest of experiments, too remote from their own *conatus* (not to say interest), humans are so easily subjected to influence that they play the role of an idiotic object perfectly well, as soon as white coats ask them to sacrifice their recalcitrance in the name of higher scientific goals (this is what happened in Milgram's lab whose experiment proves nothing more than that a psychologist can indeed be the torturer of his students!).

If social scientists wanted to become objective, they would have to find the very rare, costly, local, miraculous, situation where they can render their subject of study as much as possible able to object to what is said about them, to be as disobedient as possible to the protocol, and to be as capable to raise their own questions in their own terms and *not* in those of the scientists whose interests they do not have to share! Then, humans would start to behave in the hands of social scientists as *interestingly* as natural objects in the hands of natural scientists. One has just, for instance, to compare the pre-feminist sociological literature on housewives and gender-roles with the literature generated after feminism had rendered recalcitrant most of the potential interviewees, to see the difference between a pseudo-objective science which had only the appearance of scientificity, with a startling set of discoveries on gender, which might not always have the trappings of the natural sciences but certainly have its objectivity, its 'objectivity', that is, its ability to propel novel entities on the scene, to raise new questions in their own terms and to force the social and natural scientists to retool the whole of their intellectual equipment. Contrary to the worries of the 'science warriors', it is precisely when the objects of study are interested, active, disobedient, fully involved in what is said about themselves by others, that it sometimes happens that a field of a social science begins imitating for good the surprising novelties of some of the best natural sciences. (This is indeed,

what STS has done with *their* objects of study that have been made to object, and vociferously so!). As to the rest of the social sciences that just imitates science but lacks objectivity, it might more charitably remain silent.

Such an argument (which I call the Stengers-Despret shibboleth because it cuts across disciplines in a very different normative way) is not a vindication of the more interpretative or qualitative schools of the social sciences. This is because their energy would be better spent if, instead of fighting what they imagine to be the natural sciences way of handling 'mere objects', they were actually trying to discover those rare and sometimes dangerous situations where neither intentionality, nor consciousness, nor reflexivity defines humanity. By insisting so much on hermeneutic loops, social scientists have got too easily out of the loop – leaving in the dark the myriad of *non-human* actants, so essential to the very definition of humanity. The incredible amount of work done by hermeneutics to separate out humans and objects is not more ethical (in spite of the high moral stance they always take against natural scientists accused of objectifying humans) than the most blatant apartheid which claims: 'no non-humans in this science' (for the many other types of objectivities that happen in medical settings, see Berg and Mol 1998).

To sum up. As I see it, things are unfairly accused of being just 'things'. More exactly, it might be more rewarding to go back to the etymology of the word (in Anglo-Saxon as well as Roman languages) and to remind ourselves that all things (*res* and *causa* in Latin, see Thomas 1980) also means an *assembly* of a judicial nature gathered around a topic, *reus*, that creates both conflict and assent. After a few centuries of modernism, STS simply brings us back to the normal definition of things as *assemblies*, forcing us to see the divides between nature and society, necessity and freedom, between the relevant domain of the natural sciences and that of the social sciences, as a very peculiar anthropological and historical feature (Latour 1993; Descola and Palsson 1996). One has simply to look at any of the quasi-objects flowing nowadays through our newspapers from genetically modified organisms to global warming or internet commerce, and be convinced that it might be about time for social and natural scientists to forget what separates them and start looking jointly at those 'things' whose hybrid nature has, for many decades now, *already* unified them in practice.

It is to this new political situation, which might prove favourable to the social sciences, that I now turn.

A GOLDEN AGE FOR THE SOCIAL SCIENCES?

For what strange reason have the social sciences tried to imitate the natural sciences so wrong-headedly? Bauman provides an interesting answer when he describes the sociologist as 'legislator' (Bauman 1992). Most of the social sciences were invented, a century ago, to short-cut political process after many years of insufferable civil wars and revolutionary strife. If we have a

Society that is *already composed as one single whole* and which can be used to account for the behaviour of actors who do not know what they are doing, but whose unknown structure is visible to the keen eyes of the trained social scientist, it then becomes possible to embark on the huge task of social engineering in order to produce the common good, without having to go through the painstaking labour of composing this commonality through political means. We find here the genealogy of this famous Society whose demise is now everywhere visible, not so much because of the advent of networks and global markets, but because it has become politically and scientifically scandalous. From Comte to Bourdieu through Durkheim and Parsons, this dream of legislating in order to by-pass an impossibly fractious political arena by using the knowledge of what Society is – what manipulates the people in spite of themselves – has formed the core vocation of most social sciences (apart from the tiny schools of interpretative sociology, ethnomethodology and symbolic interactionism, that Bauman places in a different family).

In this strange political dream of short-cutting politics, we find not only the notion of the social we had to dispute above, but also this extravagant scientism we have also been criticizing throughout.

When social scientists try to find a hidden structure ‘manipulating’ agents in spite of themselves, they believe they have to imitate the natural sciences’ formidable invention of a divide between primary and secondary qualities, to use an old but convenient philosophical vocabulary. Primary qualities define the real stuff out of which nature is made, particles, strings, atoms, genes, depending on the discipline, while secondary qualities defines the way that people subjectively represent this same universe. For instance, this table looks brown, polished and quaint, whereas it is really made up of atoms and a vacuum. This computer is really made of bits and transistors, while I see only a user’s friendly interface. The point of this seemingly innocent divide is that it is a formidable political ploy. The common world (of what the universe is really made up) is known by the scientists, but invisible to the eyes of the common people. While what is visible, lived, felt, is, to be sure, subjectively essential but utterly inessential, since it is not how the universe is made up. This means that when the time comes to tackle the political work *par excellence*, namely the definition of what sort of world we have in common, scientists can say that the task is *already completed* since the primary qualities are all summed up in one Nature. There remains, of course, the secondary qualities, but they only divide us into multiple points of view which may be subjectively relevant but are objectively (in the traditional sense) irrelevant. Thus we appear to have one nature, multiple incommensurable cultures (for the complete argument, see Latour 1999c).

We can now understand the extraordinary temptation, for sociologists with a vocation to play the legislator role, to do for Society what natural scientists (they believe) have done for Nature. Instead of composing it bit by bit through some arduous political process, let us suppose instead that

there exist for Society too, primary qualities, such as economic infrastructures, power relations, *epistemes*, unconscious, structural constraints, invisible hands, it depends on the discipline, that are detected by the social scientists. And let us further assume that actors themselves are as unaware of the real stuff making up their social life as I am about the atomic composition of this table. When the time comes to compose the world we should have in common, the sociologist can say

Too late, you cultural dopes! We already have a common world, it is called Society. It has always been there and deployed beneath all your dealings, even if you do not see it. There is also, to be sure, your subjective feelings, but it adds not an iota to the harsh reality of Society. Or, to be more precise, it does add something, the veil of illusion necessary for you to survive without seeing the horrible truth we can see so clearly because we are social scientists.

But one can go even further, and obtain the ideal modernist dream – this dream which recent history, together with the small push of STS, has shattered to pieces. Why not simultaneously use the *two* traditional ways of composing the common world by short-cutting due political process, namely, Nature and Society? Natural scientists deal with the primary qualities of the natural world while social scientists deal with those of Society. The knowledge of what the universe is really like will allow the natural scientists to define all secondary qualities as irrational, private, subjective or culturally respectable (depending on his or her diminishing degree of militancy). While the knowledge of what Society is really like will allow the social scientist to reject all interjections of the actors themselves as so many irrational, subjective, private, distorted, perverse, irrelevant or culturally respectable illusions (depending again on the decreasing level of arrogance). So the quip I started with, comes from a rather sensible philosopher. Yes, the social sciences are excellent except for the words ‘sciences’ and ‘social’. If social means Society and if Sciences means the short-cutting of due process through the already made division of primary and secondary qualities authorizing social and natural scientists to ridicule the common people for their irrationality, then the social sciences are not worth a dime or maybe a Euro.

The social sciences could have, however, an entirely different role if, thanks in part to STS, they abandon this primary/secondary dichotomy (what Whitehead, so tellingly called the ‘bifurcation of nature’, 1920) and get back to ‘things’ in the sense defined above. Things (or quasi-objects or risk, the word does not matter) have the peculiar feature of *not* being divisible into primary and secondary qualities. They are much too real to be representations, and much too disputed, uncertain, collective, variegated, divisive to play the role of a stable, obdurate, boring primary qualities, furnishing the universe once and for all. What the social sciences, together with the natural, can do, is to *represent* those things in all of their consequences and uncertainties to the people themselves. This is what Dewey, in

one of his most important contributions, offered as a vocation to the social sciences seventy years ago (Dewey 1954[1927]). That is, not to define the unknown structure of our actions (as if the social scientist knew *more* than the actor) but in *re*-presenting the social to itself because neither the 'public', his word for what would be now called risk society, nor the social scientist knows for sure in what sort of experience we are engaged. The good social sciences, in this view, are not those who play the game of the (imagined) natural sciences in inventing infrastructures, but those who are able to modify the representation the public has of itself *fast enough* so that we can be sure that the greatest number of *objections* have been made to this representation. Then the social sciences will begin to imitate the natural ones. Nay, they might begin to bring the 'things' back to what they pertain: this assembly in charge of composing the common world that should rightly be called politics (Latour 1999b; 1999c).

To define the project of 'post-STs' social sciences in this way, could also alleviate the endless talk about fluidity, diversity, multiplicity, fragmentation, open-endedness which is so typical of contemporary discourse (Castells 1996). If we extirpate ourselves from the modernist 'science society' project, it is certainly not to fall back on the postmodern eulogy of networks, fluids and fragments. The 'new spirit of capitalism' to use the damning phrase (Boltanski and Chiapello 1999), might relish in this Nietzschean call for multiplicity, but it is as much of a shortcut of due political process as the former nature/society dichotomy. The first modernist project abandoned the *progressive* composition of the common world, because it possessed a Nature and a Society already made up. The second, postmodernist project of networks, abandons the quest for a *common* world. We would be falling from Charybdis to Scylla, if we were to debase the social sciences again in sounding the clarion call of even more fluid decentered markets. What would be the use of having left the shadow of totalitarianism, to fall into the 'globalonneys' of globalization, 'total' and 'global' being two words for the common world obtained without due process? 'Things', in the sense given to them by the shocking influence of STS on the natural and social sciences, do not have the unity the modernists believed they had, nor do they have the multiplicity postmodernists would like them to retain. They are lying there, in the new assemblies where they are waiting for the due process that will give them their unity, *at the end*, not at the beginning.

CONCLUSION

Throughout this article, I have used the term 'social science' rather than 'sociology'. This was not out of some imperialistic *hubris*, but simply because each social science has its natural science counterpart, *except* for sociology. More exactly, until the advent of STS, each social science was confronted within its own disciplinary boundaries by the issue of what a 'thing' is. Only sociology appeared to have escaped such a fate. There is a physical and a

human geography and a physical and a social (or cultural) anthropology. Psychology is divided in an infinite number of layers, from electric sparks in the brain to lacanisms on the couch, to rats running in circles. Linguistics travels in a single department, from computer modelling to speech acts through evolutionary scenarios, etymology and hard-core phonology. Demography, by definition, deals with the most intricate hybrids of genes, sex, statistics, mores and morals. Even economics is internally divided into a naturalization of markets and an economization of nature. It does not mean that life is harmonious in each of these disciplines. On the contrary, it means that each has to be confronted in the same corridor, the same meetings, the same reviews, the same hiring committees, by the scandal of having also to account for things in many different ways.

There is a *social* sociology but where is the *physical* sociology? Sociobiology, alas, does not fit the bill because it is too militantly opposed to the social sciences and too unreflective to produce politically meaningful 'things'. I propose rather that STS should be to sociology this other part which keeps the discipline 'on its toes', which forces colleagues immersed in the 'social' and the 'symbolic' to take seriously the enormous difficulty of accounting for objects, which oblige them to take up the radical hybridity of their topics and which helps makes sociology resemble more closely the rest of the social sciences. The social is not a domain, but only one voice in the assemblies that make up things in this new (very old) political forum: the progressive composition of the common world.

Bruno Latour

Centre de Sociologie de L'Innovation
Paris

BIBLIOGRAPHY

Bauman, Z. 1992 *Intimations of Postmodernity*, London: Routledge.

Berg, M. and Mol, A.-M. 1998 *Differences in Medicine: Unraveling Practices, Techniques and Bodies*, Durham: Duke University Press.

Biagioli, M. (ed.) 1999 *The Science Studies Reader*, London: Routledge.

Bijker, W. 1995 *Of Bicycles, Bakelites, and Bulbs: Towards a Theory of Sociotechnical Change*, Cambridge, Mass: MIT Press.

Bloor, D. 1991[1976] *Knowledge and Social Imagery (second edition with a new foreword)*, Chicago: University of Chicago Press.

— 1999 'Anti-Latour', *Studies in History and Philosophy of Science* 30(1): 81–112.

Boltanski, L. and Chiapello, E. 1999 *Le nouvel esprit du capitalisme*, Paris: Gallimard.

Bourdieu, P. and Wacquant, L. 1992 *An*

Invitation to Reflexive Sociology, Chicago: The University of Chicago Press.

Callon, M. 1986 'Some elements of a sociology of translation domestication of the scallops and the fishermen of St Brieux Bay' in J. Law (ed.) *Power, Action and Belief: A New Sociology of Knowledge?*, Keele: Sociological Review Monograph.

— 1992 'Techno-economic Networks and Irreversibility', in J. Law (ed.) *Sociological Review Monograph* (Vol. 38), London: Routledge Sociological Review Monograph.

Callon, M. and Latour, B. 1981 'Unscrewing the Big Leviathans How Do Actors Macrostructure Reality', in K. Knorr and A. Cicourel (eds) *Advances in Social Theory and Methodology. Toward an Integration of*

Micro and Macro Sociologies, London: Routledge.

Castells, M. 1996 *The Rise of the Network Society*, Oxford: Blackwell.

Claverie, E. 1990 'La Vierge, le désordre, la critique', *Terrain* 14: 60–75.

Descola, P., and Palsson, G. (eds) 1996 *Nature and Society. Anthropological Perspectives*, London: Routledge.

Despret, V. 1999 *Ces émotions qui nous fabriquent. Ethnopsychologie de l'authenticité*. Paris: Les empêcheurs de penser en rond.

Dewey, J. 1954[1927] *The Public and Its Problems*, Athens: Ohio University Press.

Hacking, I. 1999 *The Social Construction of What?* Cambridge, Mass: Harvard University Press.

Haraway, D. 1989 *Primate Visions: Gender, Race and Nature in the World of Modern Science*, Londres: Routledge and Kegan Paul.

Hennion, A. 1993 *La passion musicale. Une sociologie de la médiation*, Paris: A.-M. Métailié.

Jasanoff, S., Markle, G. E., Peterson, J. C. and Pinch, T. (eds) 1995 *Handbook of Science and Technology Studies*, London: Sage.

Knorr-Cetina, K. 1999 *Epistemic Cultures: How the Sciences Make Knowledge*, Cambridge, Mass: Harvard University Press.

Latour, B. 1988 *The Pasteurization of France*, Cambridge Mass.: Harvard University Press.

— 1993 *We Have Never Been Modern*, (Catherine Porter, trans.), Cambridge, Mass: Harvard University Press.

— 1996a *Aramis or the Love of Technology*, (Catherine Porter, trans.), Cambridge, Mass: Harvard University Press.

— 1996b 'On Interobjectivity – with discussion by Marc Berg, Michael Lynch and Yrjö Engelström', *Mind Culture and Activity* 3(4): 228–45.

— 1996c *Petite réflexion sur le culte moderne des dieux Faitiches*, Paris: Les Empêcheurs de Penser en Rond.

— 1999a 'For Bloor and beyond – a response to David Bloor', *Studies in History and Philosophy of Science* 30(1): 113–29.

— 1999b *Pandora's Hope. Essays On the Reality of Science Studies*, Cambridge, Mass: Harvard University Press.

— 1999c *Politiques de la nature. Comment faire entrer la science en démocratie*, Paris: La Découverte.

Latour, B. and Lemonnier, P. (eds) 1994 *De la préhistoire aux missiles balistiques – l'intelligence sociale des techniques*, Paris: La Découverte.

Law, J. (ed.) 1986 *Power, Action and Belief: A New Sociology of Knowledge?*, Keele: Sociological Review Monograph.

— 1993 *Organizing Modernities*, Cambridge: Blackwell.

Lynch, M. 1994 *Scientific Practice and Ordinary Action*, Cambridge: Cambridge University Press.

Merton, R. K. 1973 *The Sociology of Science: Theoretical and Empirical Investigations*, Chicago: The University of Chicago Press.

Mol, A. and Law, J. 1994 'Regions, Networks, and Fluids: Anaemia and Social Topology', *Social Studies of Science* 24(4): 641–72.

Pickering, A. (ed.) 1992 *Science as Practice and Culture*, Chicago: Chicago University Press.

— 1995 *The Mangle of Practice: Time, Agency and Science*, Chicago: The University of Chicago Press.

Pietz, W. 1985 'The Problem of the Fetish', *Res* 9: 5–17.

Rheinberger, H.-J. 1997 *Toward a History of Epistemic Things. Synthetizing Proteins in the Test Tube*, Stanford: Stanford University Press.

Searle, J. 1998 *La construction de la réalité sociale*, Paris: Gallimard.

Smith, C. and Wise, N. 1989 *Energy and Empire: A Biographical Study of Lord Kelvin*, Cambridge: Cambridge University Press.

Stengers, I. 1996 *Cosmopolitiques – Tome 1: la guerre des sciences*, Paris: La découverte-Les Empêcheurs de penser en rond.

— 1997a *Cosmopolitiques – Tome 7: pour en finir avec la tolérance*. Paris: La Découverte-Les Empêcheurs de penser en rond.

— 1997b *Power and Invention. With a foreword by Bruno Latour 'Stenger's Shibboleth'*, Minneapolis: University of Minnesota Press.

Strum, S. and Fedigan, L. (eds) 2000 *Primate Encounters*, Chicago: University of Chicago Press.

Strum, S. and Latour, B. 1987 'The Meanings of Social: from Baboons to Humans', *Information sur les Sciences Sociales/Social Science Information* 26: 783–802.

Tarde, G. 1999a ré-édition *Les lois sociales*, Paris: Les empêcheurs de penser en rond.

Tarde, G. 1999b *Monadologie et sociologie*, ré-édition Paris: Les empêcheurs de penser en rond.

Thévenot, L. 1996 *A Paved Road to Civilized Beings? Moral Treatments of the Human Attachments to Creatures of Nature and Artifice*. Paris: Ecole des hautes études en sciences sociales.

Thomas, Y. 1980 'Res, chose et patrimoine

(note sur le rapport sujet-objet en droit romain)', *Archives de philosophie du droit* 25: 413–26.

Whitehead, A. N. 1920 *Concept of Nature*, Cambridge: Cambridge University Press.

Woolgar, S. 1988 *Knowledge and Reflexivity: New Frontiers in the Sociology of Science*, London: Sage.