

# Which protocol for the new collective experiments?\*

Bruno Latour

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We are all familiar with the notion of rules of methods which have been devised for *scientific* experiments. Since the time of Bacon and Descartes, there is hardly a famous scientist who has not written down a set of rules to direct one's mind or, nowadays, to enhance the creativity of one's own laboratory, to organise one's discipline, or promote a new science policy. Even though these rules might not be enough to certify that interesting results will be obtained, they have been found useful nonetheless in establishing the state of the art. Equipped with those rules, it is possible, according to their promoters, to say why some argument, behaviour, discipline, or colleague is or is not scientific enough.

Now the question before us today is certainly not to propose yet another set of rules to determine what is a scientific experiment or to offer advises on how to become even more scientific. For this task, anyway, I would be wholly incompetent. What I have chosen to explore is a rather new question who has only recently come to the foreground of public consciousness : namely, *collective experiments*. What are those collective or what could be called 'socio-technical' experiments? Are they run in a totally wild manner with no rules at all? Would it be desirable to elaborate some definitive rules to conduct them? What does it mean to possess such rules for the ancient definition of rationality and rational conduct? And, I will add, what does it mean for a European conception of democracy? Such are the questions that I intend to briefly sketch summarizing in a few pages what is becoming now a large field of enquiries.

## Laboratories inside out

That we are all engaged into a set of collective experiments that have spilled over the strict confines of the laboratories does not need more proof than the reading of the newspapers or the watching of the night TV news.

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\* An earlier version of this paper was given as a plenary lecture for the Darmstadt Colloquium 30<sup>th</sup> March 2001 under the title "Regeln für die neuen wissenschaftlichen und sozialen Experimente". For stylistic reasons some of the oratory tone has been maintained.

At the time I am revising this paper, thousand of volunteers and specialists are trying to fight against yet another oil spill from the 'Prestige's sunken hull while, when I was drafting this talk, a few years ago, thousand of officials, policemen, veterinarians, farmers, custom officers, firemen, were fighting all over Europe against the foot and mouth virus that was devastating so many countryside. This example remains as good as any. Nothing new in this, of course, since public health has been invented two centuries ago to prevent the spread of infectious diseases through quarantine and, later, disinfection and vaccination. What is new, what is troubling, what requires our attention is that this recent epizooty was due precisely to the collective decision *not* to vaccinate the animals. In this crisis, we were not faced, like our predecessors, with a deadly disease that we should have fought with the weapons concocted inside the laboratory of Robert Koch or Louis Pasteur and their descendants : we found ourselves entangled in the unwanted —but wholly predictable— consequences of a decision to experiment, at the scale of Europe, on how long non-vaccinated livestock could survive without a new bout of this deadly disease. A nice case of what Ulrich Beck has called « manufactured risks ».<sup>1</sup>

By mentioning this case, I am not being indignant ; I am not claiming that 'naturally' we 'should' have vaccinated livestock ; I am not saying it is a scandal because economic interests had taken precedence over public health and farmers' welfare. There existed, I am well aware, many good reasons for the decision not to vaccinate. My point is different : a collective experiment had been tried out where farmers, consumers, cows, sheep, pigs, veterinarians, virologists had been engaged together. The question then is the following: has it been a well or a badly designed experiment?

In the time past, when a scientist or a philosopher of science was thinking of writing down rules of method, he (more rarely she) was thinking of a closed site, the laboratory, where a small group of specialised experts were scaling down (or scaling up) phenomena which they could repeat at will through simulations or modelling, before presenting, much later, their results, which could then, and only then, be scaled up, diffused, applied, or tried out. We recognise here the 'trickling down' theory of scientific influence : from a confined centre of rational enlightenment, knowledge would emerge and then slowly diffuse out to the rest of society. The public could chose to learn the results of the laboratory sciences or remain indifferent to them, but it could certainly not *add* to them, dispute them, and even less contribute to their elaboration. Science was this activity carried out inside the walls where white coats were at work. Experiments were undergone by animals, materials, figures and softwares. Outside the laboratory borders began the realm of mere experience —not

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<sup>1</sup> Beck, Ulrich. (1992). Risk Society. Towards a New Modernity. London, Sage.

experiment.<sup>2</sup>

It would be an understatement to say that nothing, absolutely nothing, has been left of this picture, of this trickling down model of scientific production.

First, the laboratory has extended its walls to the whole planet. Instruments are everywhere. Houses, factories, hospitals have become so many subsidiaries of the labs. Think, for instance, of global positioning system : thanks to this satellite network geologists, naturalists, can now take measurements with the same range of precision outside and inside their laboratories. Think of the monitoring systems for fish quotas, for volcanoes, for glaciers: everywhere, instruments crisscross the 'outside world' as if it was made out of log paper. Think of the new requirements for tracability, quality control, standardisation which are as stringent outside factories as those for inside production sites. The difference between natural history —outdoor science— and lab science, has slowly been eroded, so much so that it is now possible, through 3-D equipment to organize 'field trips' inside datascares projected onto the screen of conference rooms inside a lab...

Second, it is well known from the development, for example, of patient organisations that many more people are formulating research questions, insisting on research agendas, than those who hold a PhD or wear a white coat. My colleague, Michel Callon, has been following for several years now a patient organisation in France, the AFM, which fights against 'orphan' genetic diseases : they have not waited for results of molecular biology to trickle down to patients in wheel chairs : they have raised the money, hired the researchers, pushed for controversial avenues like genetic therapy, fired researchers, built an industry and in so doing they have been producing at once a new social identity for those handicapped children and a new set of research priorities.<sup>3</sup> The same can be said of many other groups, the best example being provided by the AIDS activists so well analysed by Steven Epstein.<sup>4</sup> And you would find the same situation throughout the whole ecological activism : if a crucial part of doing science is in formulating the questions to be solved, it is clear that scientists are not alone in this. If in doubt on this point, ask the anti-nuclear militants about what type of research on energy they think laboratory scientists should be

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<sup>2</sup> Dear, Peter (1990). "Experiment As Metaphor In The Seventeenth Century." : 1-26. ; Dear, P. (1995). Discipline and Experience: The Mathematical Way in the Scientific Revolution. Chicago, University of Chicago Press; Licoppe, Christian (1996). La formation de la pratique scientifique. Le discours de l'expérience en France et en Angleterre (1630-1820). Paris, La Découverte..

<sup>3</sup> Callon, M. and V. Rabearisoa (1999). Le pouvoir des malades. Paris, Presses de l'Ecole nationale des mines de Paris.

<sup>4</sup> Epstein, S. (1996). Impure Science. Aids, Activism and the Politics of Knowledge. Berkeley, University of California Press.

doing.

Third, the question of scale. Experiments are now happening at scale one and in real time, as it has now become clear to all with the key question of global warming. To be sure, many simulations are being run ; complex models are being tried out on huge computers, but the real experiment is happening on us, with us, through the action of each of us, on all of us, with all the oceans, high atmosphere and even the Gulf Stream —as some oceanographers argue<sup>5</sup>— participating in it. The only way to know if global warming is indeed due to anthropic activity is to try out and stop our noxious emissions to see later, and collectively, what has happened. This is indeed an experiment but at scale one in which we are all embarked.

But then, what is now the difference with what used to be called a political situation : namely, what interests everyone concerns everyone but cannot be easily privatised nor speedily mastered ? None. That's precisely the point. The sharp distinction between, on the one hand, scientific laboratories experimenting on theories and phenomena *inside* their walls, and, on the other, a political *outside* where non-experts were getting by with human values, opinions and passions, is simply evaporating under our eyes. We are now all embarked in the same collective experiments mixing humans and non-humans together —and no one is in charge. Those experiments made on us, by us, for us have no protocol. No one is explicitly given the responsibility of monitoring them. Who has the power of saying the last word, of deciding for all of us? This is why a new definition of sovereignty is being called for.

When I am saying that the distinction between the inside and the outside of the laboratory has disappeared, I am not saying that from now on 'all is political'. I am simply reminding you that contemporary scientific controversies are designing what Arie Rip and Michel Callon have called 'hybrid forums'.<sup>6</sup> We used to have two types of representations and two types of forums : one that was in charge of *representing* things of nature — and here the word 'representation' meant accuracy, precision and reference— and another one which was in charge of *representing* people in society —and here the word 'representation' meant faithfulness, election, confidence, obedience. One simple way to characterise our times is to say that the two meanings of representation have now merged into one around the key notion of *spokespersons* offering clearly staged *demonstrations* for proving the existence of some new entity that becomes the object of collective *concern*.

The global warming controversy is just one of those many new hybrid forums : around the table, some of those spokespersons represents high

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<sup>5</sup> Broecker, W.S, *Science*, **278**, 1582-1588

<sup>6</sup> Callon, M. and A. Rip (1991). "Forums hybrides et négociations des normes socio-techniques dans le domaine de l'environnement." *Environnement, Science et Politique, Cahiers du GERMES* **13**: 227-238;

atmosphere, others the many lobbies of oil and gas, still others non-governmental organisations, still others represents, in the classical sense, their electors. The sharp difference that seemed so important between those who represented things and those who represented people has simply vanished. What counts is that all those spokesperson are in the same room, engaged in the same collective experiment, talking at once about imbrolios of people and things. It does not mean that everything is political, but that a new politics certainly has to be devised, as Peter Sloterdijk has so forcefully argued in his vertiginous text *Regeln für den Menschenpark*.<sup>7</sup>

One way to summarize this argument is to remind oneself that the old word for ‘thing’ does not mean what is outside the human realm, but a *case*, a controversy, a cause to be collectively decided in the ‘Thing’, the ancient word for assembly or forum in Old Icelandic as well as in Old German. One can say, that things have become ‘things’ again : *Ein Ding ist Ein Thing*.<sup>8</sup> Have a look at the scientific as well as in the lay press, there is hardly a thing, a state of affair, which is not also, through litigation, protestation, also a case, *une affaire* as we would say in French, *res* in Latin, *aitia* in Greek. Hence the expression I have chosen for this new politic : how to assemble the Parliament of Things.<sup>9</sup> Rules of method have become now rules, not to manage the Human Park, but to elaborate together the protocol of those collective experiments.

## **Matters of concerns are not matters of fact**

Let us pause a moment on this major transformation : it is for me one of the most tragic intellectual failures of our age that the best minds, the highest moral authorities we possess, dream only of one thing : « If only, they say, we could control science, separate it entirely from the realm of human values, keep humanity safely protected from the encroachment of instrumental rationality, then, and only then we would live a better life ». They want to keep science and technology as distinct as possible from the search for values, meaning and ultimate goals! Is this not a tragedy if, as I have argued, the present trend leads precisely in the *opposite* direction and that the most urgent concern for us today is to see how to fuse together humans and non-humans in the same hybrid forums and open, as fast as possible, this Parliament of things? When all our energy should be

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<sup>7</sup> Sloterdijk, P. (2000). *Règles pour le parc humain*. Paris, Mille et une nuits.

<sup>8</sup> Thomas, Y. (1980). “Res, chose et patrimoine (note sur le rapport sujet-objet en droit romain).” *Archives de philosophie du droit* **25**: 413-426.

<sup>9</sup> Latour, B. (1993). *We Have Never Been Modern*. Cambridge, Mass, Harvard University Press and its elaboration in *Politics of Nature* (to appear in English at Harvard University Press, spring 2004 translation Cathy Porter).

directed to this task, our best minds are dreaming, on the contrary, of an even sharper cut that would render us, if they could succeed, even more *inhuman* than we now are, deprived of our very conditions of humanness : the things, the controversial matters of concerns to which we are attached and without whom we would die on the spot. Humanists of many hues and shades are scoring against their own team, shooting themselves in the foot, expecting as a wish what would be, if realised, the darkest of all nightmares.

Alas, the tragedy is compounded, when we see, on the other hand, many mad scientists who are still imagining the possibility of ‘naturalising’ the whole social life, the whole collective existence, by taking it not as a controversial collective but as a concatenation of incontrovertible causalities known by them, and by them only, without discussion. In their hands, those interesting cases, those beautiful controversies in search for a forum, are no longer what I would like to call *matters of concern*, but the old, boring, cold, *matters of fact* stripped of every one of the ingredients that are necessary to make them scientific : researchers, instruments, theories, hesitations, history, and collective experiments in which they play a role.<sup>10</sup> Although the expression has not much precision in English, I want to give it a technical meaning and use it, from now on, to contrast the modernist ‘matter of fact’ —invented for political reasons somewhere in the 17<sup>th</sup> century— and the non-modern ‘matters of concern’ in which we are now entangled.<sup>11</sup>

Take the ‘discourse of gene action’, for instance, as Evelyn Fox-Keller calls it : how ridiculous would it be to try to keep a genetic interpretation of human behaviour as remote as possible from a moral, symbolic or phenomenological one, since, genetics itself, as a science, is one of those hybrid forums torn apart by many fascinating controversies.<sup>12</sup> The distance between Richard Dawkins’s gene and those of Richard Lewontin<sup>13</sup> (or those of Jean-Jacques Kupiec and Pierre Sonigo, two

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<sup>10</sup> See Fleck, Ludwig (1935). Genesis and Development of a Scientific Fact. Chicago, The University of Chicago Press for a very early example and Rheinberger, Hans-Jorg (1997). Toward a History of Epistemic Thing. Synthetizing Proteins in the Test Tube. Stanford, Stanford University Press, for a very recent case. State of affairs are what matters of fact become once you add to ‘factuality’ all what these authors deem necessary for the existence and sustainance of facts.

<sup>11</sup> This difference is also a way of reminding us that the question is not to be anti-empiricist but to respect in the empirical setting a much more complex situation that the one staged by the 17<sup>th</sup> century philosophers. Poovey, Mary (1999). History of the Modern Fact. Problems of Knowledge in the Sciences of Wealth and Society. Chicago, Chicago University Press.

<sup>12</sup> Fox-Keller, E. (2000). The Century of the Gene. Cambridge, Harvard University Press.

<sup>13</sup> Lewontin, Richard (2000). The Triple Helix. Gene, Organism and

biologists who have published in French a fabulous book with the fiery title “Neither God nor gene !”<sup>14</sup>), this distance is much greater than between the whole of genetics and, let’s say, Jurgen Habermas’ or Paul Ricoeur’s view of humanity. This is what has changed so much : there are still people who oppose the ‘two culture’ of science and humanity, but the strives have now moved *inside* the sciences themselves which, in the mean time, have *expanded* to cover the whole of culture and politics. The new political, moral, ethical, artistic fault lines are now inside the sciences and technology, but to say ‘inside’ means nothing any more since it is also *everywhere* in the collective experiments in which we are all embarked. If nothing is left of the trickling down model of science production, nothing is left of the two-culture argument, even though our best minds still dream of keeping apart scientific facts and human values —or, which is even stranger, expect to ‘build a bridge’ in between the two domains as if they were not both totally entangled... Yes, it is a tragedy —or rather a farce.

However, that we cannot count on the help of moralists, does not mean that we have to shun away from our task or that we have to become immoral or cynical. It just means that there exist also a controversy on the interpretation of the present time —and we know from history how difficult it is for thinkers to interpret what the *present* signifies. There is no worse intellectual crime than to be mistaken on where and when one is forced to inhabit. This is why we have to be careful here and devise a *test* to take our bearings for sure.

Those who dream of separating facts and values even better are what I called ‘modernists’. For them, there exist an arrow of time, a thrust forward, that clearly distinguish the past from the future : « Yesterday, they say, we were still mixing things up, ends and means, science and ideology, things and people, but tomorrow for sure we will separate facts and values even more sharply ; we won’t confuse any more the way the world is really and the way it should be ; others did this confusion in the ancient past, we won’t do that in the future ». Pass the test, make the experiment, ask yourself, if you feel that the arrow of time flows in this way for you. If so, you are a modernist. Nothing wrong with that ! You are in good company. If you hesitate, even a tiny bit, you are for sure a ‘postmodernist’. But if, in the depth of your heart, you are convinced that, whereas yesterday things were a bit confused and entangled, tomorrow facts and values, humans and non-humans, will be even *more* entangled than yesterday, then you have stopped being modern. You have entered a different world or, more exactly, you have stopped believing that you were in a different world from the rest of humanity. You have come full circle at the end of European experience and finally rediscovered that when you were mocking other people because they ‘naively believed’ that the sky could fall on their head,

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Environment. Cambridge, Mass, harvard Unviersity Press.

<sup>14</sup> Kupiec, J.-J. and P. Sonigo (2000). Ni Dieu ni gène. Paris, Le Seuil-Collection Science ouverte.

you are now realising that they meant something else, since *you too* are convinced that the sky might fall on your head, —under the form, for instance, of the controversial global warming. And if it is not a ‘belief’ for you, it means it was not a belief for ‘them’ either.<sup>15</sup> Thus, there is no ‘them’ left. You have shifted out of the old state of anthropology as well as out of the former state of history.

Yes, ancient people might have been entangled, but we are even more so and on a much wider scale and with many more entities and agencies to take into account. If there is one thing you don’t believe in any more it is in the possibility of being emancipated, freed from all attachments, blissfully unaware of the consequences of your actions. End of the modernist parenthesis. Beginning (or return) to what ? What would be the word if ‘we have never been modern’ ? Second modernity ? reflexive modernisation as Ulrich Beck has proposed ?<sup>16</sup> non modern ? Why not ‘ordinary’, ‘terrian’, ‘mortal’, ‘anthropological’, yes, ‘ordinary’ that’s the word I prefer. By stopping being modern, we have become ordinary humans again.

But in what way having stopped being modern could possibly help us for carrying out our politics of controversial matters of concern, for this politics of things the rules of which have to be written, the protocol book kept? Why would it be easier now to define the new Sovereign.

Let me try out by using a simple but telling example, that of Monsieur Chirac, my President, decided, two years ago, to put an end to the violent controversy over mad cow disease and the use of powder made out of crushed bones to feed livestock, stating that, from now on: « Herbivores are herbivores ». This statement is not as stupidly tautological as it sounds : although, at first sight, it seems a truism, a fact of nature, it is, in effect, a strongly political statement, since it means that Monsieur Chirac takes a stand in the controversial matter of the mad-cow disease and decides, yes *decides*, about what would have been considered before as a mere matter of fact : « Herbivores are herbivores and should remain so ».

Let us be careful here : when uttering this sentence, the President is not invoking Mother Nature’s wisdom forbidding man to break Her limits. Chirac, believe me, is a fully modernist mind (one of the few left), a famous beef-eater, and I am sure he does not give a hoot for the sacred limits of Nature (and, anyway, on which moral ground could we refuse to the cows the chance of becoming carnivores, like some of us ?) No, Monsieur Chirac is drawing what I will call, after John Tresch, a *cosmogram* :<sup>17</sup> he is deciding

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<sup>15</sup> The ‘belief in belief’ has been the object of a systematic inventory in Latour, Bruno et Peter Weibel, Eds. (2002). *Iconoclasm. Beyond the Image Wars in Science, Religion and Art*. Cambridge, Mass, MIT Press.

<sup>16</sup> Beck, U., A. Giddens, et al. (1994). *Reflexive Modernization. Politics, Tradition and Aesthetics in the Modern Social Order*. Stanford, Stanford University Press.

<sup>17</sup> Tresch, J. *Mechanical Romanticism: Engineers of the Artificial Paradise* PhD Thesis, Department of History and Philosophy of Science. University

in which world he wishes French to live : after the catastrophic collective experiment of the mad-cow disease, a cosmos is redesigned in which herbivores become, yes *become*, herbivores again and for good —or, at least as long as another cosmogram has not been redesigned.

What is a cosmos ? As we know from the Greek and from the word ‘cosmetic’ it means a beautiful arrangement, the opposite of which being a *kakosmos*, a horrible shamble as Plato calls it. Politics, if I am right in my interpretation of the present, no longer resides in defining what humans values should be, given that there exist only one cosmos known by a unified science and simplified as one nature (I will come back to this in a minute), but in drawing, deciding, proposing a cosmogram, a certain distribution of roles, functions, agencies to humans and non-humans. When uttering his sentence that looks like a factual statement —and a tautological one at that— Monsieur Chirac is defining at once a type of landscape for the Corrèze region in which he lives, a role model for cattle-raisers, a type of industry, an agro industrial model, a pattern of consumer taste, probably also a European Union subsidy policy.

But is this not the way political claims always have been formulated ? There is nothing new in those cosmograms since politics has never been simply about human values, but always also about infrastructure, city planning, boundaries, landscape, ways of life, industry, economy and so on. One telling proof of that is the beautiful fresco by Ambrogio Lorenzetti in Sienna: the famous Allegory of the Good and Bad government in City Hall does not only contrast good and wicked people but, above all, harmonious and destroyed landscapes, handsome and ugly housings, affluent and destitute economies. Things are everywhere mixed with people; they always have.

There is however a huge difference in the way political claims can now be articulated around cosmograms and the way they were authorised before : *nature has disappeared*, « the Great Pan is dead », and so have the ‘experts’ mediating between the production of science and the desire or wishes of society. By ‘Nature’ I mean this unified cosmos which could shortcut political due process by defining once and for all which world we all have to live in. Nature, contrary to superficial impression, is a political animal : it is what used to define the world we have in common, the obvious existence we share, the sphere to which we all equally pertain. In addition to Nature, there exist what divides us, what makes us enemy of one another, what scatters us around in a maelstrom of controversies : namely passions, subjectivities, cultures, religions, tastes... Nature unifies in advance and without any discussion nor negotiations ; cultures divides. « If only, so the modernist dreams, if only we could all be children of nature, forget about our cultural, subjective, ideological, religion divisions, we will all be unified again, we would all zoom on the one same solution. » More nature, hence more unity. More cultures, hence more divisions.

We all know from our reading of the Bible that the Tower of Babel has been destroyed by God and that, from then on, people have been scattered around the world, prisoners of their differing dialects and of their incommensurable cultural biases. Yes, but who has told the terrifying story of the fall of the *second* Tower of Babel, when Nature, yes Nature Herself, as a united endeavour which should have reached to the Heaven and made all of the people of the world agree again, has been destroyed under the weight of its own ambition and lie everywhere in ruins? To *multiculturalism* born in the aftermath of the first Babel, one should now add the many tribes of *multinaturalism* born in the wreck of the second Babel. The whole political energy of nature was depending on its being one and unified, and indisputably so: « herbivores are herbivores ». But what can you do with multiple natures? How to defend it, to invoke it? Such is the trap in which political ecology has fallen into: Nature cannot be used to renew politics, since it is the oldest mean devised to block politics and to make it impossible to compose the cosmos since the job is *already* done. The weakness of ecological movements everywhere has no other cause, in my view, than this use of nature that poisons their good will and thwart their activism. It is their *mono*-naturalism that render them unable to be those who monitors the collective experiments about the many natures which have to be progressively assembled. They might expand to renew politics, only when they are ready to swallow not only multiculturalism but also multinaturalism.

In case the first trial has remained inconclusive, here is another test to decide for yourselves if you are modernist, post-modern or ordinary mortals! Do you believe that the second Tower of Babel can reach Heaven and that the whole planet, having been fully naturalised, will then agree rationally on all the important issues —the little divisions that will remain being only due to subjective opinions and leftover passions? A simple, sharp, but, believe me, very discriminating test: do you associate Nature with an unification already completed, or with even *more* divisions in great need of an unification to be completed in the future?

It is my sentiment that we now live in the ruins of Nature —in all the meanings of this expression— and also more and more in the ruins of those sciences, for which the last century has been so prolific, which dreamed of prematurely unifying the cosmos, without taking the pain of doing what Isabelle Stengers has called *cosmopolitics*.<sup>18</sup> By reusing this venerable word from the Stoics, she does not mean that we should be attuned to the many qualities of multiculturalism and internationalism, but to the many worries of multinaturalism as well. The whole civilisation that has been devised under the heading of cosmopolitanism, because it was obvious we all shared one nature, and especially one human nature, has to be reinvented, this time, with the added terrible difficulties that there are

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<sup>18</sup> Stengers, I. (1996). *Cosmopolitiques - Tome 1: la guerre des sciences*. Paris, La découverte & Les Empêcheurs de penser en rond.

many competing natures and that they have to be unified through due process —an agonizingly slow endeavour. The common world is not behind us as a solid and indisputable ground for agreement, but before us, as a risky and highly disputable goal, that remains very far in the future.

Some people, especially some scientists and philosophers of science, have of late been terrified when they heard the first crumbling of the second Tower of Babel. Irritated by the realisation that nature could no longer unify nor reconcile, that new sciences were not putting down the fires of passion but fuelling them, they turned against other philosophers, ‘postmodern’ thinkers, science students and other anthropologists of various hues and colours. Such is the meaning, for me, of the Sokal affair and of what has been called by journalists ‘the science wars’.<sup>19</sup> Even people like me have been accused of being responsible for the breaking of the Second Tower, as if we were strong enough to do like Samson and destroy the pillars of established nature under our own heads! No, no, no, you can be assured: we are not that strong, we don’t have this power, and we have no taste for heroic suicide; as to the Tower, never was it that strong either; if it has crumbled it is under its own weight, under its own ambition: by expanding everywhere to cover the whole of human experience it has lost its immunity, its unity, its privilege. It has become the common cause, and thus, entered fully the realm of politics as usual. Here again, matters of fact have become matters of concern.

When pacing among those ruins, there is nothing to be sad, or nostalgic, since one of the many reasons that made politics so weak in the past —in the European tradition at least— has been this absolute distinction between, on the one hand, the sovereignty of nature (known by science) and, on the other hand, the pathetic efforts of naked humans to put an end to their passions and divisive opinions. As long as the two Towers had not been smashed to the ground together, it remained difficult to begin again and to define politics as what I now call the *progressive composition of the common world*.<sup>20</sup> As long as one of them remained standing, it was impossible to secularise politics at last. You always had to defend hybrid forums against people, coming from the ranks of the social or natural sciences, who claimed that elsewhere, outside, in another place, in their discipline, existed a pure and perfect assembly in the midst of which agreement could be obtained by simply behaving rationally and by gathering people, in a reasonable manner, around indisputable matters of fact. This miraculous recipe was enough to disqualify by contrast all the other attempts to reach an agreement over matters of concern. As long as this phantom forum existed, all the others were deemed inefficient,

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<sup>19</sup> Jurdant, B., Ed. (1998). *Impostures intellectuelles. Les malentendus de l'affaire Sokal*. Paris, La Découverte.

<sup>20</sup> Latour, B. (1999). *Politiques de la nature. Comment faire entrer les sciences en démocratie*. Paris, La Découverte.

irrational and impure.<sup>21</sup>

Although, at first, it sounds like a negative progress only, it is for the monitoring of collective experiment a huge advantage *not* to be threatened again by the promise of any salvation by any science —neither physics, nor biology, nor sociology, nor economics, nor even procedural rationality. Now at least, there is no other alternative. We are embarked. We cannot hope for the transcendence of nature, for the transcendence of rationality to come and save us. If we don't discover the ways through which the world can be made common, there will be no common world to share, it is as simple as that —and nature will no longer be sufficient to unify us, in spite of ourselves. To sum up this part, I could say that when Galileo modified the classical trope of 'the Book of Nature', adding that it 'was written in mathematical characters', little could he anticipate that now we should have to say that the 'Book of Nature' is in fact a *protocol book*, a huge and complex ledger, that should be written in a mixture of legal, moral, political and mathematical hieroglyphs... It is still a Book, but how different it reads...

## **From Dewey's public to the precautionary principle**

It sounds as if we had witnessed not the War of the two Roses, but the War of the two Johns. Everything happens as if, on the long run, John Dewey had triumphed over John Locke. The second John's state of affairs have swamped the first John's matters of fact. Instead of a politics established as far as possible on Nature, it should now be carefully balanced on matters of concern on the perilous notion of what Dewey has called the 'public'.<sup>22</sup>

However, Dewey's definition of the 'public' is as far as possible from what, in Europe, we call the State, especially the Hegelian State or the French Cartesian State. As long as we see the consequences of our own action, this is what Dewey calls the 'private', which does not need to be individual or subjective, but is simply made up of what is well known, predictable, routinized, fully internalised. By opposition, the public begins with what we cannot see nor predict, with the unintended, unwanted, invisible consequences of our collective actions, what overflows the boundaries of standardization and mastery. Contrary to all the dreams of rational politics which have devastated this continent over the centuries, Dewey equates the public not with the superior knowledge of the authorities, but with blindness. The public is made when we are entangled without knowing why and by what, when the Sovereign is a blind one.

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<sup>21</sup> See the two chapters on Plato's *Gorgias* in Latour, B. (1999). *Pandora's Hope. Essays on the reality of science studies.* Cambridge, Mass, Harvard University Press.

<sup>22</sup> Dewey, J. (1927 1954). *The Public and Its Problems.* Athens, Ohio University Press.

Instead of confiding the fate of the Republic to the benevolent oversight of experts who take on themselves everything having to do with the general will, as his friend and adversary Walter Lippman proposed,<sup>23</sup> Dewey traces the building of the public when there is no expert able to determine the consequences of collective action. So what defines the elite if it is not their superior knowledge? Only their specialised skills in making sure that the public, what ties all of us together, is being represented and constantly refreshed, through the common fuzzy fumbling of the social and natural sciences, the arts, the media and the ceaseless vigilance of activists. ‘Representation’ here does not mean either election nor epistemological accuracy, but the reflexive production of a plausible and revisable *version* of what risks we take by experimenting collectively. Dewey invented reflexive modernisation before the expression was coined. The elite, the former State, are not defined by knowledge or foresight, but by their abilities to monitor the strive and sorting out of what I have called the competing cosmograms.

When you read it now, this book is even fresher than it was in 1927, because Dewey, for seventy years, had clearly lost against the appeal to experts made by Walter Lippman, and thus his book had remained rather hidden..<sup>24</sup> Never was the belief in the possibility of eradicating politics stronger than in the period going from, let’s say, the New Deal to the fall of the Berlin Wall and its immediate aftermath. And yet, while the second Tower of Babel was being built even higher by the invention of even more ‘expertocracy’, Dewey quietly explained why it will never work out, why it will crumble in the end, why the State, as he says, «has always to be reinvented», why Nature, and especially the so-called ‘natural laws’ of economics, could not possibly be used to frame collective action. Only us, now, from the vantage point of the end of Nature, after the closure of the modernist parenthesis, can read with profit this book written for us so much in advance.

There exist a striking similarity between what Dewey calls the public and this now famous *precautionary principle* which has become the catch word of the new European politics.<sup>25</sup> At first sight, the precautionary principle (of which there exist as many definitions as there are bureaucrats, eurocrats, lawyers and scientists) seems a poor candidate for our rules of method. This is because, in my view, it is wrongly assumed to be a rule of abstention in situations of uncertainty —or as Pierre Lascoumes has

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<sup>23</sup> Lippmann, Walter (1922). Public Opinion. New York, Simon & Schuster.

<sup>24</sup> Ryan, A. (1995). John Dewey and the High Tide of American Liberalism. New York, Norton. I rehearse here arguments learned from the ongoing PhD thesis of Noortje Marres.

<sup>25</sup> For a full presentation, see Jim Dratwa Taking Risks with the Precautionary Principle, Phd thesis, xx

argued, a rule of *prevention* in case of ascertained risks.<sup>26</sup> But reading it this way, would be fully to remain in the old mould of science-based rational action, in the trickling down model of science production : action, in this view, follows knowledge without adding much to it, except that its final application and realisation. Experts have assembled; they have agreed on the one best way; action is nothing more than the implementation of knowledge into the real world outside. That's the modernist way of imagining rational decision. But there is a little hitch with this view: when no decisive knowledge is produced, when no consensus of experts is insured, then no action can be taken... As long as we know for sure, we act ; when we are not sure, we don't act! In both cases, action is thought of being subservient to the acquisition of previous rational knowledge, but in the latter case it is simply paralyzed by the absence of the transcendence guide of absolute certainty...

That this is a ridiculous and totally implausible model of action was hidden, during the modernist period, by the fiction of agreement between experts and the confined nature of laboratory sciences. The proliferation of public scientific controversies has now revealed, for all to see how bad a model for action it has always been: action is never the realisation, nor the implementation of a plan, but the exploration of the unintended consequences of a provisional and revisable version of a project, as the whole pragmatist philosophy has been so keen on exploring.<sup>27</sup> We have moved from science to research, from objects to projects, from implementation to experimentation. The dream of rational action has become a nightmare now that consensus and certainty is so hard to obtain : everything would be stalled if we had to wait for experts to agree again. Multinaturalism has rendered the division of labour between experts and politics totally moot. If the precautionary principle meant this absurd idea that we should abstain to move until absolute certainty is reached, then that would be the end of technical creativity, the end of science and technology, the end of all collective experiments —and of course, we would not have moved an inch away from the dream of absolute rationality.

But according to me, the precautionary principle means exactly the opposite of this abstention. It is a *call for experimentation*, invention, exploration, and of course risk taking. More than that, it means that all of the topics dealing with scientific and technical state of affairs (that is, if I am right, literally *all* of our issues and topics today) are now framed back into the normal, ordinary model of decision taking with which we deal with for our daily concerns. Who would be so silly as to say : « I apply the

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<sup>26</sup> Callon, M., P. Lascoumes, et al. (2001). De la démocratie technique. Paris, Le Seuil.

<sup>27</sup> James, William (1907 [1975]). Pragmatism. A New Name for Some Old Ways of Thinking followed by The Meaning of Truth. Cambridge Mass, Harvard University Press.

precautionary principle on the question of marriage and thus abstain from getting into wedlock until I am absolutely sure there is no risk ? ». No one of course, and the same for planting trees, giving birth, banking, borrowing, arming against potential enemies, and so on.<sup>28</sup> For all such decisions, we consider risk taking and precaution taking as *synonymous* : the more risk we take, the more careful we have to be, the more alert and vigilant. This is what is called an ‘experience’ and what an ‘experienced’ man or woman is. Well, the development of the precautionary principle signifies nothing more than the fact that what has always been true of daily experience, becomes now true of the specific domain of science and technology, domain which had been set apart from the ordinary forms of action for no good reasons. Far from waiting for absolute certainty before moving the little finger, we know we have to experiment and distribute equally the audacity and what in German is called, so beautifully, *Sorge* and what we call in French *le souci*. Care and caution go together with risk taking.

Nothing surprising in that, nothing out of the ordinary. What is really extraordinary, what is really baffling, is that modernist experts could have imagined for a few centuries the totally implausible idea that, once knowledge had determined plans and objects, then realisation would ensue *without* care and caution being necessary any more —except for mopping out eventual unwanted after effects! This is what is odd, not the emergence of the precautionary principle. Fancy that : modernist could innovate at the scale of the planet, modify all the ecosystems, bring together in huge assemblages masses of humans and non humans, let the human race increase to several billions, and all of that without taking infinite care and caution, without *Sorge*, without *souci* ? How implausible ! How monstrous in retrospect appear this model of action, now that we are slowly extirpating ourselves from the modernist exceptionalism, and are falling back on ordinary humanity...

We can measure up how fast times are changing, if we read, for instance, Hans Jonas’s appeal for a ‘heuristic of fear’. Although his book is much more recent than John Dewey’s argument, it looks much more dated, since he too relied exclusively on experts to oversee the new general will and play the role of the new Sovereign.<sup>29</sup> But the ‘public’ for

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<sup>28</sup> As Jim Dratwa has shown, it is amusing to notice that the same people who refuse to apply the precautionary principle against global warming (“we should, they say, be absolutely sure before doing anything”), apply it with any qualms against the Irakian threats (“Even though we don’t know for sure, we should take action fast”).

<sup>29</sup> “What we are talking of so far are the governmental advantages of any tyranny, which in our context one must hope to be a well-intentioned, well-informed tyranny possessed of the right insights . . . If, as we believe, only an elite can assume, ethically and intellectually, responsibility for the future . . .” Jonas 1984, p. 147 (edition xx).

Dewey is not in the hands of enlightened specialists. In this new configuration I am sketching so clumsily, it is actually the very role of the expert which is disappearing from view. Never was the expert a coherent figure : neither a researcher, nor a political representative, nor an activist, nor an administrator in charge of the protocol of the experiment, but playing a bit of all those roles at once without being able to fulfil any one satisfactorily. The idea of an expert is a remnant from the tricking down model of scientific production in charge of mediating between the knowledge producers isolated in their lab, on the one hand, and the rest of the society in charge of values and goals, on the other. But in the collective experiments in which we are engaged, it is this very division of labour that has disappeared : the position of the expert has been washed out with it.

So what does the new division of labour looks like ? In their new book Michel Callon, Pierre Lascoumes and Yannick Barthe, propose to replace the defunct notion of expert by the wider notion of *co-researchers*. As I have said at the beginning, we are all engaged, at one title or another, into the collective experiments on matters as different as climate, food, landscape, health, urban design, technical communication and so on. As consumers, militants, citizens, we are all now co-researchers. To be sure, there is a difference between all our trades, but not *the* difference between knowledge producers and those who are bombarded by their applications. The idea of an ‘impact’ of science and technology ‘on society’ has been shipwrecked exactly as much as the weak notion of a ‘participation of citizens into technical decisions’. Now we have been made (most of the time unwillingly) all co-researchers and we are all led to formulate research problems — those who are ‘confined’ in their laboratories as well as those that Callon and his colleagues call ‘outdoor’ researchers, that is, all of us.

In other words, science policy, which used to be a specialised bureaucratic domain interesting a few hundreds of people, has now become an essential right of the new citizenry. The sovereignty over research agendas is much too important to be left to the specialists — especially when it is not in the hands of the scientists either, but in those of industry that no one has elected and that no one controls. Yes, we might be willing to participate in the collective experiments, but on the condition that we give our *informed consent*. Don’t play on us any more the dirty tricks of considering all of us as the mere play ground for the applications of innovations concocted elsewhere. Look at what happened to those who believed genetically modified organisms could be made to ‘impact’ European countryside. It does not mean people believe it is dangerous, nor does it mean that GMO are not safe —they might, as far as I am concerned, be totally safe and even indispensable for third world countries. But the question is not in their safety anymore, as if we should accept anything as long as it is innocuous and can be concluded from the inevitable march of scientific progress : the question has become again that of will and Sovereignty : do we wish to live in *this* world ? do we wish to draw *that* cosmogram ? And if experts and modernists replies that there is

“one world” only and that we have “no choice” to live in it or not, if they try to shame us because we are “risk averse”, then let them conclude as well that there is *no politics* left any more. Once there is no choice or alternative, there is no Sovereign. It is as simple as that. The reason why the sort of ‘world war’ around GMO is so interesting, has nothing to do with the dangers of this form of agriculture but with the re-emergence of the question of Sovereignty straight in the middle of genes. The conflicting question of the Sovereign has shifted from the geography of bounded nation states, to our conflicting and dangerously entangled cosmograms.

All of the rules of method for the collective experiment can be summarised by taking up again this magnificent slogan that our forefathers have chanted, and chanted again, in building, through so many revolutions, their representative democracy: «No taxation without representation». Except that now, for the new technical democracies to be invented, it should read: «No *innovation* without representation». In the same way as the benevolent monarchies of the past imagined that they could tax us for our own good without us having a say on their budget because they alone were enlightened enough to know what was good for us, in the same way, the new enlightened elite have been telling us for too long that there is only one best way for the innovation they have devised, and that we should simply follow them for our own safety. Well, we might not be as enlightened as they are, but if the first Parliaments of the emerging nation-states were built to vote on budgets, the new Parliament of things have to be constructed to represent us so that we have a say on the innovations and decide for ourselves what is good for us. «No innovation, without representation».

## **A European task?**

I want to bring this long and may be too hesitant paper to a close, by offering a last proposition that has to do, this time, with Europe and its identity. As we are all too painfully aware, there seems no clear idea of what is specific to our sub-continent in those times of so called ‘globalisation’. I have always found this uneasiness pretty puzzling, since Europe, it is fair to say, has invented and developed in many ways the modernist regime of scientific and technical innovations —others of course had developed many sciences and techniques, but never did they engage in the mad experiment of building also their politics with science and technology. But Europe is also a real life experiment, at an incredible scale, in multiculturalism, multinationalism, and in spite of that, it is trying to see how a common good can be slowly and carefully built. Nowhere else have so many fighting nation-states existed, so many provinces, regions, dialects, folklores and cultures. Nowhere else have world wars be waged to the bitter and deadly end. And yet, nowhere else have so many people engaged simultaneously into the cosmopolitic task —in the ordinary sense of the word— of living side by side in the same shared space, with the

same Parliament, now the same currency, and germane definitions of democracy.

Now, I am asking, why what is true of multiculturalism would not be true of *multinaturalism* as well. After all, if we have invented modernism, who else is better placed to, so to speak, *disinvent* modernity? No one else would do it, certainly not the United States which are too powerful, too sure of themselves, too deeply steeped in the modernity they have inherited without paying the costs —since others are bearing the cost for them.<sup>30</sup> Certainly not the many cultures who dream only, from Africa to the shores of Asia and Latin America, of being at last fully, utterly, and completely modernised —no wonder, alas, they took us up at our own words! No, it is Europe's chance, Europe's duty, Europe's responsibility to tackle first the perilous project of adding technical democracy to its old and venerable tradition of representative democracy. If we, Europeans, have learned the hard way how difficult it is to build a common good out of so many warring nation-states, we have a unique competence to learn, the hard way also, how to build a common world out of competing cosmograms. Only those who have invented the premature unification of the whole world under the aegis of an imperialist Nature, are well placed, now that Nature has ended its role as a short cut of political due process, to finally pay the price of the progressive, cautious, modest, slow composition of the common world, this new name for politics. The building of this Third Tower might succeed where the two others have failed because, this time at least, there is no longer any jealous God left to bring it to the ground. Politics, at last, has been fully secularised.

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<sup>30</sup> Todd, Emmanuel (2002). Après l'Empire, essai sur la décomposition du système américain. Paris, Gallimard.