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OUTLINE OF A PARLIAMENT OF THINGS

Bruno Latour

SUMMARY. *Ecology requires us to rethink both science and politics. We have coined the phrase "the Parliament of things" to express this twofold rethinking. The Parliament of Things is not some visionary's invention to be imposed by iron and fire against the existing state of things; it 'merely' takes into account what already exists among us (the* hybrids*, which have become too numerous to be accommodated by the purifying bodies: science and politics). It's a question of officially manifesting what already exists unofficially, within an enclosure where all the spokespersons are brought together, whatever the origin of their constituents.*

KEYWORDS. *Science, politics, administration, nature, society, hybrids, Parliament.*

Ecology obliges us to rethink science and politics. We express this double reworking by the expression "the Parliament of things." The Parliament of things is not the invention of a visionary to be imposed by iron and fire against the existing state of things, it "only" takes into account what already exist among us (the hybrids*, now too numerous to be accommodated by the authorities of purification: science, politics). It's about expressing officially what already exist informally, within an arena where all the representatives are gathered, whatever the origin of their mandators.*

KEYWORDS. *Science, politics, administration, nature, society, hybrids, Parliament.*

Over the last twenty years or so[1] , we have been experiencing an upheaval in the philosophy of science, in addition to the many political upheavals that are more closely linked to it than we might think. We are gradually moving from a philosophy of science, dominant until the work of Bachelard in France and Popper in America, to a philosophy of research. But, astonishingly, the latter bears no resemblance to the former. None of the intellectual traits that distinguish science from other activities apply to research. In particular, the links to politics, strategy and culture that are so difficult to establish with the sciences are easily forged with research.

The transition from science to research

To understand this transformation, let's go back twenty years. At the time, there were two main schools of thought concerned with understanding science. The first, externalist, was concerned with understanding scientists, their training, their careers, the rewards they received, the institutions they created and the professions they organised,

1. Editor's note: This article was written in 1994.

the ideologies to which they subscribe, the number of publications they accumulate in their curriculum vitae. However interesting this sociology or social history of scientists may be, in the eyes of epistemologists, researchers and the general public it suffers from one major flaw: we never know what scientists actually do. Facts, ideas, theories - in short, scientific content - remain out of reach. We will know all about the generational conflicts in which Einstein found himself, but nothing about the theory of relativity. We'll know all about soil scientists, but nothing about soil.

This is why the second school of thought is never threatened by the first. As an internalist, it seeks to reconstruct scientific ideas rationally, or to retrace their often winding course through time. In tracing the course of ideas or theories, it never comes across the objects of the first school. Neither institutions, nor professions, nor publications, nor political issues disrupt the arrangement of facts or ideas. Plate tectonics developed, but without Wegener and without geologists. Ideologies are the only way of linking science and politics, because ideologies are not really, or not yet, or not totally scientific.

When, in spite of everything, the sciences offer objects that are too uncertain, too mixed up, epistemologists do not hesitate to purge them of their political or social attachments. From a set of practices, they obtain principles and facts that can only evolve in a homogenous, closed world. Hence the astonishing construction of epistemology - French epistemology in particular - which limits scientific content to ideas, theories and concepts.

Thus, both schools of thought ignored the content of science. The first was interested only in scientists, ignoring their main activity and the objective facts to which they attached their lives; the second was interested only in concepts, ignoring the countless ties that bound them to practice. To do justice to scholarly intelligence, it was necessary to reconsider the question of content and shift the focus towards practice. To speak only of scientific careers or ideas was to understand nothing of the sciences[2] .

The five horizons of research

Let's take the example of a typical controversy in the Amazon forest. The question is whether the forest is advancing on the savannah or the savannah on the forest. Two groups of scientists, some botanists, others soil scientists,

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2. For a pedagogical presentation of the new sociology of science, *see* B. Latour, *La science en action. Introduction à la sociologie des sciences*, La Découverte, Paris, 1989.

oppose each other on this point[3] . A brief overview of the new sociology of science reveals five different horizons, all necessary to the work of scholarly intelligence.

The holes in the auger, the colour code, the comparator, the know-how of the 'tastesols', the notebook - this is the first direction, that of the instruments. The buried, mingled, confused world of Boa Vista comes to light. An opaque phenomenon - the dynamics of soils under forest and savannah - emerges in this laboratory scattered throughout the forest. Without the know-how and the instruments, no phenomenon would have been extracted from the profusion of things. Without the expedition we are leading today, the analysis laboratories far from here, in Manaus, Marseille or Paris, would have nothing to go on. They would be blind.

Soil scientist and botanist colleagues, that's the second direction. No matter how deep we are in the hot forest, we never for a moment leave the equally warm or icy world of polemics, quarrels or, more generally, agonistics with flesh-and-blood colleagues thousands of kilometres away who form an invisible college whose wooden tiers blend into the foliage of the trees. Each piece of know-how, each piece of data, is inserted into a fragment of discussion within this imaginary enclosure that has to be reconstructed or nothing will be understood.

Alliances with agencies, international institutions and private or public interests are just as important as the other two. The primary forest where we are working is on loan from an enlightened landowner who wants to know how to manage his savannah pasture. The Land Rover, the driver and the auger are financed by Orstom, a French research organisation that had to be accepted by the Brazilian state, which is very sensitive about its sovereignty.

The huge sounding board of the Amazon dreamt up by the military, the militants, the defenders of human rights, the rights of things, the rights of the Indians - this is the fourth horizon in which our researchers are working. Without the international staging of the Amazon, they wouldn't be there, sweating under the vertical sun. Without the incendiary editorials by the Amazon governor against the internationalisation of the forest, they would not be giving such weight to this vital question: is the forest retreating or advancing like Birnam's on Dunsinane Castle?

But there is a fifth direction, a fifth horizon of practice, just as important as the others - the story, the theory, the concept, the idea - which would make it possible to link the first four together. How can we summarise the data extracted by the instruments? How can we convince

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3. On this microcontroversy, *see* my account in *La clef de Berlin et aux autres leçons d'un amateur de sciences*, La Découverte, Paris, 1993, pp. 171-225.

How can we ensure that our colleagues' analysis is accurate? How can we sustain the interest of financiers, sponsors and bosses? How can we play an active part in the Amazon's international policy? The researchers use a technical term, 'structural analysis', to describe their originality, the competitive advantage that would enable them, and them alone, to hold the disparate set of four horizons together. According to them, this analysis could explain the dynamics of soils, a very curious dynamic since it presupposes the constitution of a rich soil from a poor soil by the active tru- chement of vegetation in search of its homeostasis[4] . Here's an original idea that has the data extracted by auger, colleagues, allies and politicians.

Ah, scientific concepts! How many crimes have been committed in their name! The proponents of the externalist school and those of the internationalist school could not do them justice. The former because they denied their existence, the latter because they failed to specify what they were concepts of. A concept has no existence in itself; it has to bite, clutch, hook onto things that it holds and that bear little resemblance to concepts. This famous content of the sciences becomes accessible only on condition that it is deployed between the five horizons, the sum total of which alone forms scholarly intelligence. Either our soil scientists are capable of producing a concept - i.e. a narrative, a proto-theory, an arrangement, a calculation - that will engage with the four sets that need to be tied together, and they will hold the Amazon in the palm of their hand; or they will lose certain threads and a greater or lesser number of their data, their colleagues, their allies or their acquaintances will scatter like a flock of sparrows. The paradox is complete: if science were truly autonomous, then it would no longer bring anything together and would become ideal, non-existent and false; if, on the contrary, it clings to an ever-increasing number of heterogeneous elements, then it becomes real, robust and accurate. Its degree of truth is directly linked to its lack of autonomy! It's easy to see why the philosophy of science gave us such an impoverished picture of the sciences, and why rationalism is too narrow to absorb scientific research.

To put it simply, there has always been a philosophy of science, but no philosophy of research. Let's cross-reference the differences. The content of science is as far removed as possible from the socio-political context that surrounds it but does not influence it. The content of research is as closely linked as possible to all the contexts - the four horizons I mentioned - which it holds together by means of narratives, objects, theories, practices and forms of life that are as robust as possible. Science is certain and stable,

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4. *Cf.* the excellent manual by A. Ruellan and M. Dosso, *Regards sur le sol*, Foucher, Paris, 1993.

uncertain and unstable research. Science relies on confident experts, research on anxious researchers. Science is constantly threatened by the surreptitious invasion of material, polemical, political and cultural concerns. Research feeds on all these resources, which it strives to integrate and which it greatly appreciates. Science is as risk-averse as it is risk-taking. Research takes risky bets on the variable and unpredictable state of things. The scientist can be uneducated without any harm done, since the objective facts he preserves differ absolutely from subjectivity. The more cultured the researcher, the better and faster he will find what he is looking for, since he has to go through as many forms as possible of heterogeneous assemblages of objects and subjects.

Beyond science and politics

The very idea of clearing the Amazon rainforest for pasture is a scientific one. It was a soil scientist who, in a pioneering book in the 1950s, tried to convince the political world that poor land under forest could be transformed into sustainable pastureland. The favourable experiments he had carried out enabled him, by a process of induction, to generalise to the entire Amazon basin. Right from the start of the devastation of the forest, we find the grandiose plans of the Brazilian military, scientific generalisations and economic interests - which would never have been manoeuvred without the appeal or lure of subsidies[5] . Unfortunately, in- duction is risky everywhere, but even more so in Amazonia, the sheer size of which defies generalisation. It so happens that, whether by luck or misfortune, this pioneering soil scientist found very favourable soil conditions that no developer has found since. Today, the Amazon is mired by dreams of development, none of which has been able to preserve the soil and the profits in the long term.

Does this mean we should protect the Amazon in the name of some vague notion of the common heritage of mankind? This is where things get complicated and interesting for our purposes. Mechanical clearing is not bad in itself, but mechanical clearing by bulldozers that compact the soil, which is then compacted by cattle (the rule of *bulls and bulls are bad for soil*), is what leads to the rapid degradation of the soil, according to other soil scientists who have been working in the Amazon for many years. The dynamics of clay make it possible to understand sustainable development, but only if other alliances are made within the groups of developers, politicians, scientists and international organisations. Such as

5. R. Uztarroz and J.-J. Sévilla, *Amazonie. La foire d'empoigne*, Autrement, Paris, 1991.

A soil science associated with a particular policy associated with a particular form of sociology associated with a particular international organisation will design a type of land use and economy that is profoundly different from another association that believes more in a particular type of soil science, a particular political party, that will put its faith in a different definition of economic or social laws and that will gain recognition in other sectors of international aid. In other words, the debates are taking place within the scientific, political and administrative spheres, rather than between them. This forces politicians to shy away from the sciences or to sort them out in detail, while on the other hand it forces scientists to forge alliances and to think about the political world in which their work is embedded. As for the administration, it has to practise a generalised form of doubt about the state of things and people, a form to which it is not accustomed. All these new forms of behaviour make collective work experimental.

The general problem of a 'scientific politics of nature', as we have defined it, is as follows: until recent years, the modern world has allowed hybrids to proliferate because it has made hybrids unrepresentable. Unlike pre-modern practices, which did everything in their power to make the relationship between natures and human beings thinkable, and could not modify the one without upsetting the order of the other, modern practices have become twofold: on the one hand, there is a ban on mixing purified natures and societies in scientific truth; on the other, there is political freedom and human rights; and in the space thus emptied of all obstacles, permission is given to experiment, on an ever larger scale, with ever more numerous combinations of 'monsters'. Purification on the one hand, mediation on the other. The ecological crisis stems from the fact that the hybrids, now too numerous, can no longer be accommodated by the purification bodies. It's becoming impossible to rush forward. We are forced to rethink the explicit and fine-tuned link between nature and society. At the same time, we are coming to the worrying realisation that we have never been modern, that we can no longer be modern in the "old way". Sustainable development is no longer possible within a theory of modernisation. To become sustainable, we have to stop being, and above all having been, modern[6] .

The political issue of sustainable development and the scientific policy of nature immediately follows: if it is true that purification has enabled the proliferation of hybrids, then abandoning purification practices will slow down, bend or modify this proliferation. By ceasing to be clan- destined, the networks become more complicated. The ancient practices of purification, which transformed into science, politics and administration the

6. On all these points, *see* B. Latour, *Nous n'avons jamais été modernes. Essai d'anthropologie symétrique*, La Découverte, Paris, 1991.

the work of mediation, made the imbroglios incomprehensible. In the scientific sphere, a multitude of mixed knowledges, secret policies, frank ideologies, decisions and preferences were placed in a black box in the form of expertise, with no way of sorting them out. In the political sphere, there is a mixture of opinions, knowledge, sciences, values, world views, preferences, ideologies and tastes, without it being possible to keep track of the exact channels of representation. In the administrative sphere, the confusion is even greater, since entire regulations are justified by both science and policy, without either being specified. Paradoxically, purification according to these three authorities leads to total confusion. Conversely, destroying these instances, sharing them out or redistributing them along the lines of network as- sociation, makes it possible to clarify the translation operations that produce hybrids.

Abstractly defined, the new political question becomes: can those excluded from science, politics and administration be transformed into a minority? There is a big difference between the excluded and the minority within any forum of speech. The excluded are absent. The minority is put in the minority by voting, by negotiation or by relationships of power that are assignable and for- malised. If such and such a segment of Amazonian soil science, such and such a version of extractivism, such and such a union of seringueiros, such and such an employers' federation, such and such an ecological spokesperson, such and such an international bank, are excluded from the enclosure, translations become impossible because the parties to the experience are not represented. But if they are in a minority in an assembly of representative spokespersons, then the negotiation can be carried through and, above all, its experimental progress can be followed, whatever its wanderings. The enormous advantage of a minority is that it can, through growth, conviction and the rebuilding of alliances, become a majority once again. But those who are excluded are always wrong.

Ecology therefore requires us to rethink both science and politics. We used the expression "the Parliament of things" to express this twofold rethink[7] . It is a question, we said, of summoning the Parliament of things, or rather of proposing official institutional forms to an invisible but already operational Parliament whose outlines should be discernible empirically. Our ambition therefore has two stages. The first is to define this Parliament, distinguishing it from other forms of political-scientific relations that may have been established in the past.

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7. *See* B. Latour, *Nous n'avons jamais été modernes*, *op. cit*, p. 5, and Isabelle Stengers' in-depth critique in *L'invention des sciences modernes*, La Découverte, Paris, 1993.

The second (and still largely to come) is to look for the unofficial prefiguration of this Parliament in the current political and scientific imbroglios. The second (and still largely unresolved) is to look to the current political-scientific imbroglios as an unofficial prefiguration of this Parliament[8] . In fact, the task is no longer to invent, through a utopia, an ideal policy that would miraculously be reconciled with the sciences, but to manifest officially what already exists unofficially. The joint tasks of the sociologist, the philosopher and the political scientist are to prepare, through words, concepts, fields and texts, the official recognition of these linea- ments that an institution will then come to reinforce, inflect or found. This transition from the unofficial to the official, from the clandestine to the formalised, is not a simple revelation of what already exists, as if it were enough to entrench current practices without changing them. Just as the modern constitution affected the world by causing hybrids to proliferate, so the non-modern constitution will act by completely transforming the conditions under which hybrids negotiate. To institute is not just to express, it is to do, it is to transform. And yet, the old revolutionary model of a clean slate and subversion of what exists is no longer relevant. The Parliament of Things is not some visionary invention to be imposed by iron and fire against the existing state of things, it 'merely' takes into account what already exists among us.

Two meanings of the word "representation

How is this Parliament different from previous Parliaments, which have long been the subject of political philosophy and social history[9] ? It extends to things the privilege of representation, democratic discussion and law. Things have long been represented, but in a different sense of the word 'representation', a different regime of representation, by the sciences. Instead of the political process of delegation, the sciences have defined themselves by reference, *adequatio rei et intellectus*, to use the old terms of philosophy.

This dual system of representation has long characterised the democratic definition of debate: inside Parliament, the representatives of human interests debate; outside, the experts who know what things really are advise. Inside parliament, values. Outside, the facts. The link between these two orders of things was made by a mediating institution, the bureaucracy.

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8. The work of the Centre de sociologie de l'innovation focuses on waste recycling policy, the introduction of SAGEs in the water sector, sustainable cities, Amazon science policy, high-voltage power lines, the end of the nuclear cycle, energy management (home automation), the search for a 'City' of ecology, and patents for 'green' industries.

9. *See* P. Lascoumes, *L'éco-pouvoir. Environnements et politiques*, La Découverte, Paris, 1994, for a political science approach to the same problem.

or the technocracy, which drew its legitimacy from its learned expertise but its authority from its appointment by the political power of elected representatives.

The drawbacks of this definition of democracy were raised long before the ecological crisis, but it is this definition that has rendered it obsolete. Experts must possess certainty and act in the name of a superior legitimacy of an epistemological nature that completely isolates them from dis- pute, interests and values. Politicians have to make decisions based on the same values and interests, but without any of the reasons or knowledge that enable experts to know. They decide without knowing, while the others know without being able to decide. Finally, the technocrats who participate in the two legitimacies of knowledge and election can in practice monopolise all the power by passing off political decisions as knowledge or, conversely, by passing off as political arbitration knowledge that the sciences alone could not have won. In the face of this monopolisation, political power is shrinking. Debates become too technical to be left to elected representatives. This reduction in political power leads to a disaffection with politics and a resurgence of arbitrariness. Efforts to counteract this disaffection by involving the public in technical choices, as was said in the 1970s, appear derisory[10] .

The situation becomes very different when we realise that the two meanings of the word representation are not as far apart as we think in the two orders of politics and science. In both cases, we have spokespeople who are different from their constituents. In both cases, the silence of the principals is replaced by the words of the mandated. In both cases, we have a dispute about the fidelity of the transcription and the legitimacy of the mandate. In both cases, the controversies are settled provisionally by a series of tests which determine the faithfulness of the mandated parties to what the principals might have said, the security of their authorisation to speak, and the legitimacy of the links they maintain with their bases. In both cases, finally, the provisitive result of the tests is itself stabilised by a shift towards other forms of institution, apparatus or device. The epistemological quarrel between realism and relativism forms the exact counterpart of the political quarrel between direct and indirect representation.

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10. *Cf.* the numerous criticisms of this situation in the work of Philippe Roqueplo, particularly in the field of ecology, on patents for 'green' industries: *Climats sous surveillance. Limites et conditions de l'expertise scientifique*, Economica, Paris, 1993. This book clearly shows the many aporias that arise when we wish to change science policy without touching the traditional definitions of either science or politics. The "Parliament of Knowledge" proposed by the author offers a new take on the Saint-Simonian dream of a government of scientists.

However, the similarity of the two systems of representation is not in itself sufficient to require their rapprochement. For the last three centuries, for the very reasons we have analysed under the heading of the 'modern world', their small differences have been transformed into a gigantic gulf. The difference between humans and non-humans, for example, the former gifted with speech and the latter silent, has for a long time made it possible to distinguish absolutely between the two systems.

A complete upheaval in the way science was conceived was needed before we could once again perceive the family resemblance between these two regimes. This upheaval can be summed up, as we have said, as a shift from science to research. Instead of an epistemology of science, we now have a sociology and even an anthropology of research. We have seen these differences above, but only the three most important will concern us here: science is based on certainty, research on uncertainty, the unknown, risk and gambling; science is based on ideas or micro-theories, research on practices; finally, science is autonomous, research is connected. Ultimately, there is little connection between the two, except that science is made up of what was once the research front.

Connecting science and policy has proved an almost impossible undertaking, despite the considerable number of attempts. On the other hand, connecting research and politics is much easier. They share the same uncertainty, the same need to take risks and gamble; they are subject to the same practical constraints of defining tests and managing their drift, through compromise and negotiation; they are intertwined by the need for a scientific policy on the one hand, and a political science on the other, with the social history of science taking on the task of showing the innumerable connections between the two. Where epistemology had deliberately failed for a century, the sociology of research and social history have succeeded, in less than fifteen years, in making scientific practice connectable in a thousand ways to general history[11] . The history of scien- ces is now so closely linked to history as a whole that it is no longer even worth mentioning the genitive.

However, in order to bring science and politics closer together and thus pose the problem of the Parliament of things, much more than a simple upheaval in our conceptions of science was needed. The very objects of politics had to incorporate an ever-increasing continuum of problems from the sciences, and human beings themselves had to be numerous enough to become, by their sheer mass, a set of phenomena that the physical and biological sciences had to take into account. The weight of human beings is beginning to count

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11. *Cf.* the seminal book by S. Shapin and S. Schaffer, *Le Leviathan et la pompe à air. Hobbes et Boyle entre science et politique*, La Découverte, Paris, 1994.

The same is true of more and more of the sciences, just as the weight of the scien- ces is counting, more and more every day, in human problems. Even if scientific and political representations did not wish to come closer together, the double drift of the very objects to which they both apply would have forced them to collide.

However, this continual clash, this multiplication of boundary problems and borderline cases, would not have led to science and politics being viewed in the same light, and to the constitutional difference that three centuries of modernism had helped to define being annulled. What was needed was a profound change in the spatial and temporal scales of mixed phenomena. First of all, ecology has gradually altered the relationship between the outside and the inside, nibbling away at the outside of our actions. As Michel Serres puts it in a beautiful phrase that reverses the age-old stoicism, "it no longer depends on us that not everything depends on us[12] ". Secondly, it has altered the duration of phenomena by committing political action to timeframes that are not only long but heterogeneous, all of which can lead to irreversibility: millennia, generations. Finally, it has completely subverted the problems of scale by involving billions of people and local decisions in short circuits that neither politicians nor scientists were prepared to consider. Relationships to time, space, size, hierarchy, the human being, knowledge, law and morality are all being reopened on the side of both the old politics and the old science.

Merging laboratories, practices and forums

Through this series of transformations, the two meanings of the word representation have come close enough for us to be able to make a first attempt at convening this Parliament of things, which we say already exists in lineament in the joint and controversial practice of politicians, technocrats and scientists.

The first difference compared with the old Parliament is the division of the discussion forums. Instead of having a parliamentary forum on the one hand, a series of scientific forums on the other, and a technocratic institution in between, preparing the decisions and summarising the facts, we have a single forum bringing together all the spokespersons, whatever the origin of their constituents. The scientific spokespersons are indistinguishable from the others, except in that they bring into the discussion non-human constituents whose capacities and degrees of resistance they define. As for the former technocrats, they too represent, but they speak on behalf of

12. *See* M. Serres, *Le contrat naturel*, François Bourin, Paris, 1990.

and legitimate interests of their administrations. The parliamentary administration is responsible for keeping track of the negotiations, transactions, translations and compromises made between all the spokespersons and for organising the tests that become necessary when there is controversy over the quality of the representation or the nature of the mandate.

The parliamentary system as a whole is a hybrid of politics, science and administration. From politics it borrows its fundamental model: uncertain representation and the relationship between spokespersons, thus ousting the old epistemological model of the sciences, which spoke of truth and *adequatio rei et intellectus*. From research he borrows what is probably his fundamental model, the systematic organisation of the experimental test and its recording. It thus eschews the model of political action in terms of denunciatory conflict, permanent value and moral certainty. Parliament manages an ongoing experiment in which the capacities, degrees of resistance and properties of all human beings, collective persons, rational beings and non-humans are tested through a series of trials. Parliament is therefore much more like a laboratory than a Chamber of Deputies, but this laboratory is much more like a forum or a stock exchange than a temple of truth. From technocracy, Parliament borrows its fundamental model of systematic management of archives and procedures, of evaluation and recording[13] . In so doing, it ousts from technocracy its ancient model of political decision dissipated under technical reasons and technical reasons dressed up by political decisions. Instead of blending science and politics by playing both sides, technocracy is more like politics - openness and discussion - and science - testing and experience. Instead of blurring the lines between the two, it strives to monitor, evaluate and archive them.

Neither political, scientific nor technocratic activity remains the same as it was.

The most astonishing thing about politics is that it no longer includes the denunciatory conflict that has hitherto been its mainspring. Conflicts remain, and on the contrary are multiplying as they extend to the whole class of beings hitherto dealt with by the sciences. It is not a question of extending the pacified administrative or scientific model to politics, as one might have imagined in the past with the epistemological version of the sciences - according to the model of Saint-Simon. And yet the denunciation disappears

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13. *See* the fascinating thesis by F. Charvolin, *L'invention de l'environnement en France (1960- 1971). Les pratiques documentaires d'agrégation à l'origine du ministère de la Protection de la nature et de l'Environnement*, doctoral thesis in political science, École nationale supérieure des mines de Paris / Université Pierre Mendès-France, Paris/Grenoble, 1993.

since the certainty of entities, their capacities and their limits has disappeared. How can we denounce with indignation when the configuration of beings can be modified in the ordeal? Part of the psycho-logical repertoire of the sciences can thus pass into politics, without pacifying it for all that, but by considerably modifying its tone.

Conversely, the most astonishing thing for the scientist is that he no longer finds in science the certainty detached from all stakes and all controversy which, until now, he believed to be its charm. While the politician abandons denunciation, the scientist abandons autonomy on the one hand and final, transcendent certainty on the other. He does not, however, extend the model of the denunciatory political conflict to the laboratories - despite the precedent of which the Lyssenko affair provides the most perfect model - but he does find there that astonishing form of relationship, long practised by politics, which attaches an agent to his principal. The impression of practising an activity detached from all the rest of society and culture, literally transcendent, disappears. Science goes on, of course, but its tone changes considerably, and the selection of its lines of research, its preferred forms of practice and its paradigms changes completely. Part of the culture, the psychological repertoire, the ways of speaking, the beauty of politics, can therefore be transferred to the sciences, while removing many of their shortcomings. The words compromise, negotiation, arrangement, conflict and controversy lose their uniquely negative connotations and take on some of the beautiful connotations of trial and experience.

The most astonishing thing for the technocrat is to find scientists and politicians in the same room, whose distance alone enabled him to exercise his power as mediator or scrambler. He is therefore obliged to abandon the double game - speaking scientific truth to politicians and political decision to scientists - and to practise another form of double game: translating political necessities into scientific necessities and translating scientific decisions into political decisions. There is no longer the double game of necessity and contingency, decision and truth, but the double game of arbitration. Here, too, the tone of technocracy changes considerably, since instead of reuniting the double arrogance of its double authority, it reunites the double humility of its double practice: uncertainty about the tests, uncertainty about the quality of representation, and finally uncertainty about the quality of tra- duction. The technocracy continues, indispensable, constitutive, but blending the psychological resources of several different professions. It becomes the guardian, the guarantor, the evaluator and the recorder of the multiple tra- ductions of scientists and politicians. The common task of this Parliament, created by the hybridisation of the three above-mentioned professions, is itself becoming very different.

The first surprise is that Parliament is managing or piloting an experiment that is exploring by trial and error. A considerable amount of time is therefore invested in analysing experiments, evaluating failures and finding ways of taming the change of scale. Policies have not been converted to science, but adjusted in part to research. Development projects, regulations and price comparisons are all becoming tests of action research to identify the relative resistance of players and to qualify their properties[14] . This is in stark contrast to the current system, in which failures are shamefully concealed and evaluation procedures are reduced to a bare minimum.

But these experiments are not just about the application of the
The results of science on humans or societies. They concern specific aggregations of knowledge, values and regulations. This is the second surprise in relation to the traditional system. A fine selection is made both on the side of the old sciences and on the side of the old policies. It is within each of these two groups that alliances are defined: certain scientific results chosen from within a controversy, associated with certain values selected from others within a moral or political controversy, linked to certain regulations or institutional forms, are tested in the experimental trial. It is therefore impossible to take a whole science - natural or social - and draw political conclusions from it. Each division of scientific disciplines and political organisations will define a different subject of experimentation. This transformation requires a kind of reciprocal right of pursuit on the part of scientists towards politicians and politicians towards scientists, which completely overturns the old confrontation between the expert and the decision-maker.

In order to keep up with these tests and rapidly draw the conclusions that will require profound changes to our knowledge, values and practices, we need a body of experience and an institution capable of following their progress and drawing conclusions. Instead of truncating the network that associates certain scientific elements, certain values and certain types of regulation, in order to test its solidity and use it to evaluate the nature of beings, institutions must follow the very lines of the networks. There is continuity between laboratories, forums and cabinets. But since we are dealing with experiments on states of affairs, the old model of conflict to the death is no longer applicable. There are degrees of resistance. We don't kill ourselves. Administration finds in the definition

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14. *Cf.* the fascinating example pursued by INRA's SAD department on the scientific-political imbro- glio of Vittel: J.-P. Deffontaines (ed.), *Agriculture et qualités des eaux*, INRA, Paris, 1993.

of these protocols, in the evaluation of results, an essential role, albeit one that is out of step with the old system whereby it transformed scientific laws into political laws or ruled in cases of uncertainty. It is becoming, no pun intended, the administration of proof.

The change of scale which enables us to move, by degrees, from a proto-type or a prefiguration to a real large-scale unit - a change of scale which is the subject of an extraordinary number of procedures and institutions in industry - is also squared off by the new institutional system. It's not necessarily that *small is beautiful,* but that it's better to err on the side of a small model than on the side of a large one, a common-sense piece of advice that is rarely followed if we look at the recent history of major development projects. The problem of induction, like the more general question of the transition from the local to the global level, is an essential issue which must be resolved in practice by putting in place a multitude of procedures for managing and controlling changes of scale. These procedures make it possible to manage the crucial issue of irreversibility. At each stage of the change of scale, a certain type of relationship with the future is defined. Preventing irreversible choices from being made at the wrong scale, and conversely preventing experimental decisions from being called into question at the wrong time, is the daunting task of this new political prudence.

New business differences

Transformation of the political application of scientific knowledge into experimentation to test the degree of resistance of aggregates of humans and non-humans; transformation of the distinction between science and politics into a meticulous selection of certain results or values from the two former spheres; establishment of experimental protocols that follow the lines of these new associations; definition of multiple bridges, airlocks, antennae, intermediaries, stages in order to manage the change of scale and avoid the irreversibility of decisions taken on states of affairs; these are the four qualities of this new profession that Parliament begins to acquire once it has succeeded in combining the three old professions of science, politics and administration.

However, this new situation does not mean that political, scientific and administrative forms of relationship are merged. The enormous difficulty in thinking about the new links between science and politics arises from the fact that it is necessary to merge the objects completely, while keeping distinct the forms of relationship from which they have both drawn inspiration. That the model of representation so masterfully defined by

Isabelle Stengers' formula of the three powers: "the power to confer on things the power to confer on the experimenter the power to speak on their behalf[15] ", which is common to both politics and science, does not prove that politics is identical to science. It only proves that scientists are the politicians charged with representing non-humans. Scientific work remains specific, committed as it is to the construction of reference, i.e. the establishment of stable relationships between inscriptions, instruments and valuimeters that are traversed by delegated observers, anthropomorphic or otherwise. The networks of references that ensure the authority of representation and mobilisation or action at a distance are just as necessary as the path of political representation, which means that translations between what constituents say or would like to say and what their representatives say or would like to say must always be repeated. But the same applies to the pragmatics of legal or administrative statements. They too form a network, but a very different one from the reference networks. They endeavour to link types of statements together through continuous procedures, and to link situations to forms authorised by signatures[16] . Journeys of representation, the deployment of networks of instruments, the attachment of forms - these are three distinct pragmatics, each involving completely different forms of authority, proof and conviction. Yet these differences do not overlap with the distinctions between administration, politics and science, since each of these three activities calls on all the pragmatics we have just described (and a few others that we need not mention here). This clarification is essential if we are to define the work of the Parliament of Things. The creation of a single body does not mean that all expertise will be mixed together in a huge melting pot open to unbridled negotiation. In the course of his work, the same scientist needs, like any politician, to circulate representations, to build up a network of references from one to the next, and to link up verification and standardisation procedures.

This is not a utopia. Utopian prose is, moreover, a form of political enthusiasm based on a belief in science that is no longer shared by the new situation. We are simply giving the players the words that describe their day-to-day practice of linking science, policy and government. Nor are we buying into the anti-modern ecology that would suspend scientific work or economic development. It is not a question of

15. I. Stengers, *op. cit.* p. 6.
16. F. Charvolin, *op. cit.* p. 12.

It's not a question of suspending, but of sorting, dividing up, bending and sometimes slowing down. The most surprising associations can emerge in the course of this sorting: cutting-edge technology, forest exploitation, a political alliance, a major project. The stable hierarchy between environmental protection, appropriate technology projects, direct democracy, good feelings, local roots, 'soft' social science and natural science cannot hold when we follow hybrid cases such as the creation of contraceptive pills for elephants and radio collars for whales, or when we realise that an open-cast mine destroys less of the Amazon rainforest than extractivism, even though it is reputed to be 'ecological'[17] .

To paraphrase Spinoza, "no one knows what an environment can do". If we do not give ourselves the means to sort things out by varying scales and genres, and by applying a triple right of pursuit within the sciences, politics and technocracies, we will not be able to extricate ourselves from this famous crisis of the modern conception of development. All we are saying is that these networks, the lineaments of which are visible everywhere, are poorly represented in the consciousness of researchers and politicians - who broadly share the same epistemological myths about the disconnect between science and society - and, above all, that the institutional forms currently in place prevent us from capitalising on the experience we have gained. For the moment, the failures are useless. Controversies within the sciences are not exploited. Sorting and selection operations cannot be carried out with the official degree of freedom that is required. The number of stakeholders is far too small to allow negotiations to take place under the right conditions. Evaluation is non-existent. Collectively, we are like scientists experimenting haphazardly, with no experimental protocol[18] . The politics of nature are being pursued, but in secret. To bring it out of the shadows requires real intellectual work by people who do not believe in science - or at least in the epistemological conception of science - who do not despise politics and who see administration and technocracy as the essential forms of mediation. It is only through this threefold respect for, and attention to, scientific, political and administrative practices that the social sciences can do their work of investigation and prefiguration, and become more than the gadflies of ecology.

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17. On these sortings, which are almost always counter-intuitive, *see* the dazzling book by A. Chase, *Playing God in Yellowstone. The Destruction of America's First National Park*, Harcourt Brace, New York, 1987, and the remarkable work by D. Western (ed.), *Conservation for the 21st Century*, Oxford University Press, Oxford, 1989.

18. *See* B. Latour, C. Schwartz and F. Charvolin, "Crises des environnements: défis aux sciences humaines", *Futur antérieur*, no. 6, 1991, pp. 28-56.

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