Scientific Objects and Legal Objectivity

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Portrait of the Conseil d'Etat as a laboratory

"Those are the facts, like it or not"; "we have reached our decision, whether it pleases you or not": the solidity of facts and the rigor of the law are two kinds of hardness to which one can only submit. What makes a comparison between the world of science and that of law all the more interesting is that both domains emphasise the virtues of a disinterested and unprejudiced approach, based on distance and precision; in both domains participants speak esoteric languages and they reason in carefully cultivated modes; both scientists and judges seem to attract a kind of respect that is unknown in other human activities. In this paper, I shall attempt to establish a relation, not between "science" and "law", but between two laboratories, that of my friend Jean Rossier at the Ecole de Physique-Chimie, and that of the Conseil d'Etat.[1]

Rather than base my comparison on what scientists and lawyers say about themselves, I shall, as has become my habit, rely on the results of ethnographic enquiries, which pay close attention to places, forms of life, conditions of speech, and to all those minor details which together, little by little, by minor brushstrokes, allow one to redefine science and law. In developing this approach, we shall see that epistemology has adopted a

[1] This paper is a revised version of chapter 5 of a much longer ethnography **La fabrique du droit – Une ethnographie du Conseil d'Etat**, La Découverte, Paris 2002. The Conseil plays the role of judge for administrative law —this is called the *Contentieux*— and

number of the features of its elder sister, justice, and that the law often clothes itself in powers that only science can provide. Far from confirming established clichés, a systematic comparison of practices allows us to make a more differentiated portrait by distinguishing scientific objects from legal objects. Perhaps the anthropologist of science, having spent so much time hanging around in laboratories, will find in the Conseil d'Etat those celebrated virtues of objectivity that he sought in vain in the laboratory.

Although the Conseil d'Etat is not a public place, while the court is in session the public is admitted to certain areas at certain times. Ushers and receptionists police the otherwise invisible distinction between those places which are open to the public and those (rather more numerous) places which are reserved for the work of the *conseillers*, for their offices, and for the absolutely secret process of deliberation. Here, at the Ecole de Physique-Chimie, no area is really a public place, but, once one has been granted admission by one of the neuroscientists, no area is out of bounds[2]. In each building, there is an entirely different distribution of space: anyone can attend the hearings of the Conseil, but only at certain times, in certain seats, and restricted areas; beyond that, no outsider has access to the work of the law – only trainees, government commissioners with the appropriate credentials, or a somewhat nosey ethnographer. The laboratories of my friend Rossier are open only to scientific personnel, but no area is barred to the authorized visitor. Whereas the presence of a stranger in judicial deliberations would corrupt the nature of the activity and vitiate the judgment on grounds of procedural impropriety, the presence of a visitor in the laboratory might get in the way of the researchers' work, but it would have no influence on the nature of their work on the brains of white mice, into which they have inserted fine glass tubes. The two laboratories therefore have a very different relation between public and private: although `ignorance of the law is no excuse', the last stages of its flowering remain completely secret; by contrast, although laboratories are closed to anyone who is not an employee, in principle anyone could understand what goes on inside, which is in no way mysterious: `we have nothing to hide'.

After many months at the Conseil, the ethology of our friends in the laboratory seems quite astonishing. Here, no-one is formally dressed, there

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[2] Ophir, Adi, Steven Shapin, et al. (1990). "The Place of Knowledge: The Spatial Setting and its Relation to the Production of Knowledge." ***Science in Context*** **4**(1).

are no serious tones of voice, no solemn gait, no refined and smoothly intoned turns of phrase, no elegant conversation; instead, one finds raised voices, incongruous laughter, casual dress in the `American' style, the occasional outburst, or tirades launched against oscilloscopes which do not describe their phosphorescent curves as they should, against guillotines which are too blunt to lop off the heads of laboratory rats, against micro-pipettes whose incisions do not allow the researcher to probe a neuron held under the microscope, or against some especially obtuse referee. Whereas in the Conseil speech flowed effortlessly from silver-tongued *conseillers*, here it is interrupted, hesitant, embarrassed – sometimes to the point of becoming gibberish. That is not to say that visitors are unable to understand what is being said, but rather that gestures can take the place of words, and that, at numerous points in their discourse, researchers replace speech with a finger pointed at the phenomenon produced by an instrument, a phenomenon that reveals itself only hesitantly because it is dependent on the visibility of an individually isolated neuron, and hence on a technical and scientific prowess that often misfires, and which constantly has to overcome obstacles such as blocked pipettes, inaccessible neurons, or unintelligible results. Whereas the *conseillers* sound like books because they move from the text of Lebon to the text of their *arrêt*, and thence to the text of the memoranda and responses that compose the stratified layer of the file, always remaining within the world of texts, laboratory researchers are forever crossing the deep chasm that separates a rat's neuron, pulsating under a micro-pipette, from the human phrases that are spoken in relation to that neuron[3]. It is hardly surprising that they should so often hesitate, begin again, or remain in suspense, dumb for several minutes, or that the homogeneity of their speech acts should be disrupted by exclamations such as: "I've got it!", "that's it!", "I've lost it!", or "silly bugger!".

The question of homogeneity or heterogeneity between texts and things marks a contrast which would strike even the most inattentive visitor. One

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[3] The Lebon is the yearly selection of the most important *arrêts* of the Conseil. English speaking readers have to realize that French administrative law is a *case* based corpus of law, much like common law, and is entirely different from the *code* based legal system which deals in France with private and criminal affairs (and that is called *le judiciaire*)? France, like many countries invaded by Napoleon, are endowed with two completely different and parallel branches of law. But England did not have this chance...although the Law Lords fulfill in part the same function as the Conseil.

can climb from the cellars of the Palais Royal, in which linear kilometers of archives lie in hibernation, to the attics which house the offices of the *commissaire du gouvernement* and the documentation service, without finding any real difference between the objects that are essential to each branch of the work of the Conseil: files, more files, nothing but files, to which one should add cupboards, tables and chairs - which differ in price, depending on the rank of the employee - varying numbers of books, and, last but not least, a profusion of elastic bands, paper clips, folders, and rubber stamps. Besides the telephones and staplers, all of these tools have an intimate connection with textual matter, and the computer database, which allows the *arrêts* of administrative law to be viewed online, cannot be considered as an instrument[4]. But in the laboratory, no room looks like any other, because the differentiation of space is effected by the distribution of the machines which allow the competences of the physiologist, the neurophysiologist, the molecular biologist, the peptide chemist, the radiographer, and the bio-informatics expert to be co-ordinated in the context of a single experiment. When the *conseillers* meet in debate, they all look like one another, the differences between them being made only in terms of how much experience each has ofadminsitrative law: no one voice carries more weight than another (if one overlooks the fine gradations of prestige). When experimenters get together, they might well have no understanding of the instruments, competences, or difficulties of a neighbor with whom they have worked for years, but they know precisely when he or she can take over from their own know-how, and to what extent they can trust this expertise implicitly. Whereas by definition *conseillers* only judge cases of which they have no knowledge, and to which they are being introduced for the first time, using no instruments other than their memory and a few notes, each researcher only deals with that part of a rat's "file" with which they are perfectly acquainted, thanks to the narrow window opened by an instrument, discipline, or speciality that it will have taken them years to master.

Therefore, the nature of the Conseil does not depend on its equipment, but on the homogeneity of the world of files that are kept, ordered, archived, and processed, and upon the homogeneity of a staff that is renewed,

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[4] On what is an instrument, see Latour, Bruno (1987). **Science In Action. How to Follow Scientists and Engineers through Society**. Cambridge Mass, Harvard University Press.

maintained, and disciplined. The Conseil can deal with a high turn over of cases precisely because its *conseillers* are largely interchangeable, and because there is only a limited division of labour[5]. The nature of the laboratory is crucially dependent upon the heterogeneity of its equipment, on their rapid renewal, and on the diversity of competences grouped together in one place. Whereas an inventory of the Conseil's furniture and files would yield no explanation of what it actually does, an inventory of the laboratory and its tools, noting their age and cost, their distribution in space, their sensitivity, and the academic qualifications of their operators, would tell you almost anything you wished to know about the nature of the place. `tell me what your instruments and specialities are, and I'll tell you who you are and where you are placed in the hierarchy of the sciences'. The same comparison can be summarized in the observation that the Conseil costs a lot in terms of brain-power, but almost nothing in terms of equipment other than paper; a laboratory costs a lot in terms of wetware, but even more in terms of equipment and software. If some new Commune were once again to raze the Palais Royal to the ground, but leave the *conseillers* a complete collection of Lebon, the following day they could render judgment almost exactly as they had done before; if the mob were to chase Rossier from his laboratory and pillage his equipment, he would be unable to say anything at all precise about rats' brains.

Let us pay closer attention to the shared bodily attitudes of the inhabitants of these two places. More often than not, laboratory researchers are found gathered in a concentric circle around an experiment, at the center of which lies the particular phenomenon which is being submitted to a kind of proof or ordeal (in the present case, the electrical stimulation of a particular neuron, which enables the neurotransmitters expressed by the neuron to be collected at the other end of the axon)[6]. They are constantly talking, somewhat enigmatically, about the stammering being which they have coaxed into a kind of hiccupping speech, or at least which they have

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[5] One of the many peculiarities of the French judges in administrative law is that they go back and forth between business, active admistration, elective function and their job at the Conseil. Thus at any given moment, about half of the members are actually out of the Conseil.

[6] Lynch, Michael (1988). "Sacrifice and The Transformation of The Animal Body Into A Scientific Object: Laboratory Culture and Ritual Practice in Neuroscience." ***Social Studies of Science*** **18**: 265-289.

coaxed into indicating, by means of oscillations and chemical outputs, what it thinks of the proof to which it has been submitted. They resemble a group of gamblers huddled around a cockfight on which each has staked his fortune; they may not be shouting or screaming like madmen, but there can be no question but that they are *passionately* interested in the fate of their neuron, and in what it might have to say for itself. …On the other hand, passion is the least appropriate term to describe the attitude of judges in the course of a hearing. There is no *libido sciendi*. No word is pronounced more loudly than another. Leaning back in their chairs, attentive or asleep, interested or indifferent, the judges always keep themselves *at a distance*. Only the claimant suffers to any degree. Although he is often (but not always) present, he understands no more of what is being said about his case that the rat understands of the clamoured observations made about the structure of its brain. In any event, the passion of the claimant is what is of least interest in the procedure of the case: it does not count; or rather, it no longer counts or does not yet count. Whereas in court judges are entirely unmoved by a case in which only the claimant is passionately engaged, the objects studied in a laboratory do not understand how their judges can be so passionately interested in matters to which they themselves are entirely indifferent. One thing is sure the *libido judicandi* is very specific.

This marked difference is even found in the writing activities to which scientists also devote themselves, although they spend less time writing than the *conseillers*. As we know very well, instruments, equipment, chemical reagents, or animals are not the end products of laboratory activity. A research team which was content to conduct research of the highest quality, but which never produced a scientific article, would soon lose its reputation, unless it gave up basic research in order to develop industrial applications. In terms of the production of writing, a scientific institution resembles the Conseil d'Etat, and in both cases one could compile a statistical inventory of the number of pages produced by each of the members of the institution, and even of the number of citations of their respective works. However, this resemblance is dispelled as soon as one looks at the nature of scientific articles, which are quite unlike a legal *arrêt*. Researchers write "*continus*" rather than "*arrêts*"; in fact, to borow a legal term, they produce *claims* in which the author figures more as a claimant than judge. That is, each scientific article functions as a judgment passed on claims made by colleagues, or as a "plaint" made to those same colleagues on behalf of a

phenomenon whose existence is claimed by the article. In other words, the objectors to whom a scientific article is addressed are not true judges because (a) they are of the same professional category as their author (b) they cannot bring discussion to an end (c) they themselves are judged (sometimes very harshly) by the claimant (d) with whom they share the same rights to extend, re-open, or close the discussion. Whatever the mechanisms which bring a scientific controversy to an end, they are necessarily very different from those which were invented by the Conseil to close cases[7].

However surprising it might seem, scientific articles are much more passionate than administrative law texts. That is because they push a claim as far as possible, by throwing everything into the pot in order to meet all possible objections, by ignoring some objections, or by highlighting those objections which allow them to emphasise a particular experiment or result. All of this passion, energy, all of these rhetorical flourishes, which make even the most theoretical or esoteric of scientific articles more beautiful than any opera, are absent from the *arrêts* of the Conseil, which have to reference all of the relevant texts (imagine a scientist being obliged to cite each of the sources he used), to answer each of the arguments invoked (imagine a researcher being forced to avoid none of his referee's objections), and *only* those arguments (imagine how horrified a scientist would be if he were asked to address only to those questions asked of him by others rather than the hundreds he has asked of himself), to add as few innovations as possible to the knowledge established by their predecessors (all scientific authors dream of trigger a scientific revolution) and to do all of this in such a way as to close the discussion once and for all (whereas researchers dream only of re-opening the discussion, or, if they are the ones who bring it to an end, to do so in their own terms and to their own advantage)[8]. The point is that researchers write for other researchers whose invisible but constraining presence informs everything they write, whereas judges, above all if they are judges in a court of last instance, write only for the claimant's lawyer, and, secondarily, for their colleagues and the writers of legal doctrine. They have different addressees.

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[7] Jasanoff, Sheila (1992). "What Judges Should Know About the Sociology of Science." ***Jurimetrics Journal***(32): 345-359.

[8] Myers, Greg (1990). **Writing Biology. Texts and the Social Construction of Scientific Knowledge**. University of WIsconsin Press.

There are of course situations in which science assumes the air of the courtroom. One example is given by the celebrated Commissions of the Académie des Sciences which were set up in the 19th century to settle (on behalf of scientists) disputes arising between those particularly irascible researchers who were impervious to any of the normal means of resolution (short of a duel!). Today, we have juries, public forums, or televised debates in which one researcher in the field of gene therapy is set against another, in the presence of an audience which is supposed to decide between them[9]. There are also large areas in which scientists cast as experts appear before judges in order to give evidence about matters within their area of expertise (the insanity of the defendant, the source of DNA taken from the scene of the crime, the validity of a patent application, the risks of a particular product, and so on). But each of these situations bears the imprint of law rather than that of science. In the 19th century the Académie was able to issue quasi-*arrêts* in respect of scientific controversies only because its authority was almost like that of the law, and because, even then, its decisions were only *quasi*-decisions which were not binding upon anyone, and which could not prevent disputes from resurfacing elsewhere, in other forums or in other laboratories. In science, there is no such thing as `the authority of the adjudicated case (*res judicata*)'. On the other hand, when an expert gives evidence in court, the judge and the law take all precautions to ensure that what the expert says should be neither a judgment nor a warrant for judgment, but that it should serve only as a form of testimony which does not usurp the role of the judge[10]. These hybrid situations show quite clearly that each activity, each form of writing, is as different as oil and water, remaining separate even when they have been mixed quite violently.

What should one call the very distinctive grouping of white coats gathered passionately around the ordeal to which some new entity (in this case an isolated neuron that has been made visible as a distinct individual) has been subjected, and which allows the scientists, by means of a chaos of hesitant observations and in a flourishing of partial (in both senses) texts which are published as quickly as possible, to generate claims that are fiercely defended, and which at the same time judge that claims previously published by themselves or by their colleagues are invalid, obscure, false,

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[9] Jasanoff, Sheila (1995). **Science at the Bar. Law, Science and Technology in America**. Cambridge, Mass, Harvard University Presss.

[10] This is the famous Daubert case, see http://laws.findlaw.com/us/509/579.html.

unfounded, or quite simply banal and uninteresting, all of this having been determined within a domain (laboratory, discipline, literature) that is both jealously guarded and yet open to all, and whose boundaries might be challenged by any outsider? Are they judges deciding claims made by other judges? That would be unthinkable. Might they then be some kind of gang or mafia? Scientific activity sometimes look suspiciously like these associations, especially in its blend of extreme rigour and complete lawlessness. And yet the answer again has to be `no', because there is a third party in all disputes, a judge who is mute but who nevertheless determines the issue, to whom all parties agree to defer without discussion (while discussing incessantly!) and of whose role one finds traces in the archaic legal practices of the ordeal and divine judgment: namely, the very objects that are subjected to the ordeal of proof in order that they might say something about that which is said of them – something at once inaudible and conclusive, the celebrated *aita*, *res*, *causa*, thing, or *chose* that the history of science in European languages borrowed from the world of law[11]. In order to understand the very special mode of enunciation that one finds in the core of the laboratory, one has to look to torture, to the history of interrogation, or the subtle arts of the Inquisition; that is, to the very practices that modern law now regards as shameful and archaic and from it is at once proud and ashamed to have escaped.

`We have ways [*moyens*] of making you talk' might say the physiologist, betraying the trace of sadism which is present in even the most innocent experiments. But the word "means" [*moyens*][12] doesn't have the meaning it has in law, because the neuron that is subjected to questioning makes no complaint, formulates no claim, and the process to which it is subjected is not regarded as an offence (expect by animal rights activists, who regard laboratory experiments as just as cruel as the ancient ordeals, and therefore worthy of vigorous prosecution before the courts). The non-human which is submitted to the ordeal – the rat, neuron, DNA or neuropeptide – occupies both the position of a judge of last instance, in the sense that it passes judgment on what it is said about it, and that of the plaintiff, because it is represented by an intermediary, the impassioned scientist who has taken on

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[11] Thomas, Yan (198O). "Res, chose et patrimoine (note sur le rapport sujet-objet en droit romain)." ***Archives de philosophie du droit* 25**: 413-426.

[12] "Moyen" in French legal parlance designates an argument which may be articulated in front of a court; *moyens* may 'prosper' or 'dry', 'thrive' or 'bear no fruit'.

its case, and who contributes article after article to the scientific literature arguing for the recognition of his own right of existence and that of his thing [*chose*], his object [*cause*], and its own particular causality, before a tribunal of judges composed of his own colleagues, who are never in a position to pass final judgment, unless they defer to the uncontestable (but always contested) evidence of matters of fact, which themselves speak clearly only if scientists have unfolded their properties in a more or less public display that they have collectively agreed to treat as final...

One can see that it is impossible, in depicting the way in which even the most banal experiments stage the scientific ordeal of truth, to base ourselves on the prevailing idea that the sciences are pure, objective, disinterested, distant, cold, and self-assured. It is also impossible to make a direct comparison between science and law, without first describing those aspects in which each bears features that seem to have come from its counterpart. In both practices one finds speech, facts, judgments, authorities, writing, inscriptions, all manner of recordings and archives, reference works, colleagues, and disputes, but their distribution is at once too similar to warrant a distinction between law and fact, and too different for them to be seen as a single function. In order to make sense of this overlap I shall, as ever, proceed cautiously, feeling my way forwards.

For now, the essential point is that the facts, contrary to the old adage, obviously do not `speak for themselves': to claim that they do would be to overlook scientists, their controversies, their laboratories, their instruments, their articles, and their hesitant, interrupted, and occasionally deictic speech, which is only audible and visible. On the other hand, nothing of what goes on in the laboratories of the Physique-Chimie would be comprehensible without noticing what the people in white coats say is constantly being observed, validated, understood, and interrupted, both by the omnipresent speech of even the most distant colleagues, and by those matters of fact whose centrality is acknowledged by all, and to whom all scientists defer as their sole appellate court. To say that scientists simply reach an agreement between themselves as to what the things they're talking about are saying, would be to understand nothing of the peculiar force of their activity, and even less of their motivating passion. Thirdly, the speech that circulates in the laboratory between scientists, their colleagues, and their objects, and in respect of which each is at once judge and party, speaking and mute, audible

and inaudible, beginning and end, doesn't only have the form of a legal action or case; it also has an intimate connection with the question of what things are, or rather what they do to claims that have already been lodged.

Propositions are transformed into a "case" that can be judged by the peculiar interaction of disciplines: "if the experiment is properly constructed, says researcher A, we should be able to get object B to transform the published claim C into medium D, yielding either a better-established certainty or a magnified doubt, at least from the point of view of colleagues from discipline E (as defined by us), to whom we have addressed our latest article F". Finally, we should notice that this intervention will further enlarge a corpus of documents and claims the future development of which will supply the criteria by which this whole procedure will be either validated or invalidated. Impassioned scientists, having promoted their object as much as possible in their articles, leave it to history, to the court of history, and thus to future scientists, to judge whether they were right or wrong in making a particular assumption. Strangely, as we shall see, judges – real judges – cannot place their faith in this Last Judgment of History. However slow or tardy they might be, they simply don't have the time to let others decide for them.

How to produce detachment

Let us return to the Right Bank, cross the courtyard of the Louvre, and return to the Palais-Royal, with its ornamental gold and marble, its grand staircase, its historical paintings, and its republican frescoes. After his stay in the laboratory, the ethnographer finds himself both more at ease and much more awkward. Amidst the men in white coats, he stood, arms dangling helplessly, not knowing quite what to do with himself, finding himself obliged to take notes in all sorts of uncomfortable postures, just as distanced from the researchers he was studying as the latter were from their headless rats. Nevertheless, he could at least talk to his scientific colleagues, with whom he shared a wish to know; now and then he could ask for explanations, even suggest hypotheses, and his own stammers hardly seemed out of place in the concert of hesitations, reprises, exclamations, and surprises which accompanied the spectacle of proof and demonstration. He too could point to the phenomena in question, cloaking them in the fragile web of his metaphors, allusions, and approximations. He was, of course, clumsy and incompetent. But having agreed to stand aside a little to let him see the

performance they had staged and which they were describing, his colleagues the researchers allowed him to share their passion and even, on occasion, grasped his own false, naïve, or badly formulated ideas, because even a child could speak aptly in the face of the phenomena undergoing interrogation. Back in the Conseil, the observer takes his invisible place without ruining the uniformity of the courtroom; he is seated writing at a table amidst people who have seated themselves at the same table to write. Yet he is no more their colleague than he is their companion at dinner. Not only do they not share his *libido sciendi*, but even the interested observer has to remain as dumb as a carp, incapable of uttering any well-turned phrases, valid judgments, or plausible hypotheses. He could of course stammer something or other, but the whole point is that the judges don't stammer: the moment he opened his mouth it would become obvious that he was not a member of this group.

We have left behind the amiable confusion of the laboratory, with its scattered journals, boxes of samples, its dripping pipes, purring centrifuges, overflowing dustbins, its raised voices, and the general agitation that precedes, accompanies, and follows the tension and emotion of an important experiment. There are indeed some signs of disorder in the Conseil, but they are strictly confined to the tables overladen with files, behind which one can barely make out the heads of the formally but elegantly dressed *conseillers*. In any case, this disorder is only temporary, because inside each file one finds a very precise order, prescribed by the *plan d'instruction*, which requires that each item be ordered, named, stamped, in accordance with a procedure which would be rendered invalid by any kind of modification. The impression of disorder is due only to the accumulation of pending cases; or, once a file has regurgitated its contents, to the abundance of legislative texts which have to be addressed, to the number of technical annexes, or to the weight of documentation and the intensity of the exchange which generated so many formal replies. Once the *dossier* has been replaced in its box file, once the case has been dealt with, order is immediately restored, and that is precisely how *conseillers* and lawyers deal with things. Once the file has been closed, they give it no more thought; they move on to another case, another file. A case is something that is opened and closed like a box file.

It might be said that even in the laboratory, disorder is more apparent than real, because each object, instrument, or experiment depends on an ordered document called the protocol book, which is more rigorous than any

plan d'instruction. It is a sort of general audit of scientific activity in the laboratory, in which researchers note down what they propose to do, the raw results they obtained, and provisional hypotheses suggested by those results. Indeed, this great book has recently been given a quasi-legal status as a result of the spread of cases of fraud and of patents. Nevertheless, there is a world of difference between these two kinds of accounting, because the protocol book doesn't contain the activity of the laboratory in the way that a file quite literally or physically *contains* cases referred to the Conseil. The laboratory could never be described by an unity that is as precise, as defined, as calibrated, and as homogenous as the number, nature, and placement of the Conseil's files. No claim has the closed, round, and polished form of a grey cardboard folder, which is easily transportable, in which everything is held and which forms the small world to which the judge has to restrict himself, on pain of a penalty. The work of the laboratory spills over at all points, depending as it does upon the future action of colleagues, the progress of technology, the complex play of inter-citation, industrial production, public reaction. Only the box of tricks of scientometrics has managed to describe laboratory work in more or less coherent and standardized terms[13]. By contrast, there must be something in the file itself, in its closure, that supplies an essential reason for law's difference from the sciences.

To understand this difference, the file has to be seen in the context of the attitude of the *conseillers* who analyse, supplement, or discuss it. Coming from the laboratory, the ethnographer is immediately struck by the *indifference* with which members of the Conseil treat the documents which they have in front of them. In Rossier's laboratory, the act of writing was always an intensely passionate moment, and the re-writing of articles prior to publication involved heated discussions about what could or could not be said, about how far one could go without going too far, or about what had to be concealed for tactical or political reasons. They seemed more like lawyers preparing a case on behalf of their client than judges drafting their *arrêts*. Rather, members are as a rule indifferent to their file, and this indifference is punctuated by pulled faces, sighs, lapses of memory, a whole *hexis* of disinterest which contrasts very sharply with the obligation that laboratory researchers should be deeply, bodily, and passionately engaged in their observations about a matter of fact. In science, as in religion, it is necessary

[13] Callon, Michel, Jean-Pierre Courtial, et al. (1993). **La scientométrie**. Paris, PUF Que sais-je? n°2727.

to display an attitude that declares a profound and sincere adherence to whatever one is saying, an adherence that will only be renounced when one is forced to do so by one's colleagues or (which amounts to more or less the same thing) by the facts. At the Conseil, on the other hand, it is essential to show, by means a subtle body language, that one is quite indifferent to the argument one is making: "If you don't accept my argument, you will accept to claim", might say a judge with Olympian calm, before embarking only a few minutes later on a line of reasoning that is diametrically opposed to the first. An observation made by a *conseiller* about a colleague who used to be a physicist reveals this difference quite nicely : "Like a true scientist, he adheres too closely to his solution, contrary to myself". For this particular *conseiller*, the *libido sciendi* displayed by his colleague was quite incompatible with the work of a judge.

In the procedures of the Conseil d'Etat, especially when they are contrasted with the scientific mode of attachment, one finds an accumulation of micro-procedures which manage to produce detachment and to keep doubt at bay.

The rapporteur

When in the course of a *instruction session* [*séance d'instruction*] the *rapporteur* is asked to re-read his notes, he will have no recollection of them, several months having gone by since his examination of the file[14]. Imagine how embarrassed a scientist would be if he were asked to present a research report which he had written six months or a year earlier, which he had not read again since then, and whose contents he had entirely forgotten. What is even more astonishing is that at the time of his initial examination of the file, the *rapporteur* would have prepared two contradictory drafts of decisions [*projets de jugement*], one arguing for a rejection of the request, the other for cancellation, should his colleagues not adopt his reasoning. So, not only does he have no recollection of the case, but he arrives at the hearing prepared for one course …and its opposite. For a scientist, this would be quite scandalous; it would be like deciding at the last moment, in the light of his colleagues' reactions, whether the phenomenon he was talking about existed or not, which would mean preparing two articles, two posters, two sets of

[14] The *séance d'instruction* precedes the deliberation properly speaking, it is a way to rehearse the arguments before submitting the case to colleagues.

transparencies, one for, and one against its existence. Worse still, once the discussion has come to an end, the president of the assembly can ask the *rapporteur* to draft a third project. And, far from taking umbrage at this expression of bad faith, the *rapporteur* politely gets on with job, immediately setting about writing a *projet* – which might even be contrary to that which he will vote for later. A scientific researcher would be made mincemeat of if he was required to write an article that went against his own beliefs, on the pretext that the colleagues in his research team had formed a consensus opinion that contradicted those beliefs; he would insist that his minority view was represented in the final report, and would slam the door behind him if it wasn't. In any case, for him it would be a matter of conscience. It is not that judges don't have consciences, but that they place their scruples elsewhere.

We should not assume that the *conseillers* are disinterested in the sense of being indifferent, blasé, or bored by the cases that they deal with, or that they are detached in the manner of an automaton. Quite the contrary, they have plenty of interests, otherwise no one would stay at the Conseil for more than a couple of weeks. There is the legal complexity of the case itself, the structure of administrative law, the social, political, economic, or governmental implications of cases, the peculiarity of certain claimants, the scale of the injustices that are sometimes committed, the prestige of the State, the intellectual pleasure taken in extracting simple arguments from an obscure case, the pleasure of standing out amidst colleagues of one's own intellectual level, to say nothing of the gentleman's club-like environment in which future careers are plotted and past failures repaired. There are many sources of interest, but every effort is made to ensure that they are not attached to the file, to the bodies of opinion-givers, or to solutions adopted in much the same way as they are in everyday life, because they are held apart from the matter at hand, the object itself, by a distance that progressively becomes almost infinite. It is at this point that one can best gauge the abyss that separates law from science: whereas in the laboratory every effort is made to make a connection between the particularities of the object in question and what is being said about it, in the Conseil, by contrast, everything is done to ensure that the final determination is distanced from the particularities of the case.

The réviseur

Nowhere clearer is this contrast clearer than in the procedural phase where *réviseur* re-presents the *rapporteur*'s note of the case. From the perspective of the scientist, this procedure is quite absurd. Having just spent half an hour listening to someone reading in a monotone voice a text which explains the whole case, the *réviseur*, who is more highly placed in the hierarchy of the Conseil, takes up the story again from the beginning, this time in oral form. The process of revision is nevertheless an essential moment in the process of judgment because the *réviseur* is the only person to have re-read the file the previous day, or the day before that, and who has retained all of the details of the case in his mind. None of the others is familiar with the case and none of them will read the file again, with the exception of the *commissaire* —see below— who will later become familiar with the case for the first time. This is another procedure that would seem out of place in science: the more the case progresses, lingers, or makes its way up the hierarchy of judgment, the more it is dealt with by people who are distanced from the file and who have no knowledge of it. In science, this would be like asking the advice of people who had fewer and fewer competences in the specific aspects of the subject to allocate claims about controversial discovery; or as though, in relation to a difficult question concerning invisible galaxies, one were to ask certain people, chosen precisely because they knew nothing whatsoever about galaxies, to determine the question, on the basis of no information other than an account of case given by people more competent than themselves.

But of course the procedure of revision is neither bizarre nor especially incongruous. As we shall see, what is in issue is not information; judges do not exactly determine the particularities of the case; there is more to the *réviseur*'s reprise than a simple process of repetition. In the guise of a simple process of repetition, the *réviseur* effectively transforms the case by altering the respective proportions of fact and law, placing more emphasis than did the note on strictly legal questions. The particular case is less important than the point of law into which it is subsumed or than the particular reform of administrative law prompted by the case. Therefore, the *réviseur* has less to say about the facts (less, that is, than the *rapporteur*, who in turn had less to say about them than the lawyer, who had less to say than the claimant, who, of course, talks *mainly* about the facts!) and more to say about the law. When the judgment is delivered, nothing will remain other than the celebrated *green*

slip, which summarises the whole case in a single sentence; such as, for example: `Where a prefectural authority refuses to take cognizance of the peremption of a licence to work a quarry, made pursuant to article 106 of the code of mines, can that order be reviewed on the grounds that it is *ultra vires*?' Nothing remains of the particular case, whose detailed facts can be discovered only by looking up the case on the computer database. There is no path relaying the *green slip* to the precise nature of the case, and yet, for the judges to whom this lapidary sentence is addressed, the essentials of the experience are indeed summarized in a single sentence.

The word "fact", which is used in both science and law, might well have led us astray in our comparison, because the same word is used so differently in each domain that it seems almost to be a homonym, or a faux-ami. The "facts" in a legal file constitute a closed set, which is soon made unquestionable by the sheer accumulation of items, and to which it soon becomes unnecessary to return. Facts are things that one tries to get rid of as quickly as possible, in order to move on to other things, namely the particular point of law that is of interest, and to which the judges will be entirely devoted from that point on. In the laboratory, on the other hand, a fact occupies two somewhat contradictory positions: it is simultaneously that which is spoken of, and that which will determine the truth of what is being said about it. Therefore, one can never really dispose of the facts in order to move on to something more important. Unless, that is, one confuses laboratory facts, as I have described them, with the "sense data" of the empiricist tradition which was invented by Locke and Hume for reasons that were more political than epistemological, "sense data" being the incontrovertible basis of our sensations, which the human mind combines in such a way as to develop more general ideas. But, as we shall see, the way in which this kind of fact distinguishes that which is debatable from that which is not has nothing to do with the mode of speech of researchers. It owes more to law than to science[15]. Rather than confuse the two, we should sharpen the contrast: when it is said that the facts are there, or that they're stubborn, that phrase doesn't have the same meaning in science as it does in law, where, however stubborn the facts are, they will never have any real hold on the case as such, whose solidity depends on the rules of law that are applicable to the case.

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[15] Poovey, Mary (1999). **History of the Modern Fact. Problems of Knowledge in the Sciences of Wealth and Society**. Chicago, Chicago University Press.

Nevertheless, it should not be assumed that there is a crisp distinction between the scientist's "respect for the facts" and the lawyer's emphasis on form or indifference to the claimant's demands. In the laboratory, the particular facts don't count either: the rat which gave its brain to the experiment thereby donates its body to science, and the body will be summarily incinerated; a particular neuron, having ceased to live, will be abandoned in much the same way; also, raw data will be very quickly forgotten. The phenomena put to the proof of an experiment are interesting only because they are the instantiation of a problem, the exemplification of a theory, the point of an argument, or the proof of a hypothesis. But how does this differ from the movement of law, because both regimes drop the substance they talk about in order to address that which it exemplifies. The difference consists entirely in the possibility that a theory, if it is a good one, has to be able to generate the fact by a process of retroaction: the theory includes all the important details of the fact, otherwise it would not be the theory *of* that particular fact and would be no more than an unfounded hypothesis, pure speculation, or a simple proposition which had never been put to an empirical test. This retrodictive path doesn't exist in law, where, in any case, it would be quite meaningless. What makes our friend Rossier such a good neuroscientist is that his theory of the expression of neurons is able to retrace the precise path of each of the neurons he has sacrificed throughout the experimental process, or of any other neuron included in his experimental protocol. In law, so long as you have grasped the point of law, you don't have in your grasp a fact which is liable to emerge unpredictably to surprise you at any moment; in science, if you have grasped the theory you should be able to return to the facts from which you began, and even anticipate new facts.

The commissaire du gouvernement

There are yet other minor procedures which compel even the most interested, passionate, or expeditious of *conseillers* to become indifferent, objective, fair, and dispassionate. Could one imagine anything in science resembling the *commissaire de gouvernement*[16], who remains silent throughout the

[16] The word 'commissaire' is even more confusing in English and in French. This government 'commissar' is exactly the opposite of a commissar sent by the government! since he is totally independent. The word has been kept for obscure reason of legal conservatism.

whole *séance d'instruction*, taking notes? Is this person the secretary to the meeting? Hardly, because his notes are made for his own use only, in that they help to prepare him for his reading of the file, which he will go over from beginning to end. Might he then be the ultimate expert to whom less skilled *conseillers* have entrusted the task of finding the right solution? No, because he is often younger than the president of the assembly, who will subsequently pass judgment on his commentary. Now, he keeps quiet, and they do the talking; tomorrow, or in a few days time, he will speak, and they will keep quiet[17]. In that case, why not get it over with, and ask him to give his opinion there and then? Because although the object is to get things over with, but to do so with all the appropriate forms, having once again explored the relationship between this particular case and the law, the case in its entirety and the law in its entirety. One might say that the *conseiller du gouvernment* has been entrusted with a particular task of quality control, in that he is asked to retrace the course taken by the claimant, the lawyers, the judges of first instance, the *rapporteur*, and the *réviseur*, before going on to review the vast accumulation of two centuries of administrative law, in order to ensure that the whole thing is properly and securely bound together. He is the person who tests connections and ensures coherence, and who reassures his colleagues that the daily process of stitching things together has not corrupted administrative law in any way. The silence of the *conseiller du gouvernement* throughout the *séance d'instruction*, the formal reading of his conclusions during the *audience*, his return to silence throughout the stage of the deliberation (in which, it should be remembered, the judges have no obligation to adopt his reasoning), then the separate publication of his conclusions, which might or might differ from those of the judgment, which is itself published, function as a set mechanisms invented entirely within the Conseil d'Etat so as to produce a mode of detachment which in science would seem incongruous, not to say comic.

In science, the role of the *conseiller du gouvernement* could be replicated only by entrusting a scientist with the overwhelming task of reviewing his entire discipline from the beginning, in order to test its coherence and to ensure its relation to the facts, before proposing the existence or non-existence of a

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[17] One feature of French adminsitrative law is that the whole procedure is written without any oral argument except the presentation read outloud and standing by the *commissaire* and which is called his *conclusions* for the reason that they do *not* conclude the judgment… law is really queer.

given phenomenon in a formal deposition, although the final decision would not be his, and although he would have to work alone, guided only by his own knowledge and his own conscience, being content to publish his conclusions quite independently. Although something like this role can be found in the form of scientific review articles[18], which are commissioned from experienced scientists in mid-career, who are expected to summarise the state of the art for their peers, review articles don't have this peculiar mixture of authority and absence of authority. Either the *conseiller du gouvernement* is like a scientific expert, in which case his greater authority should relieve his peers of their obligation to doubt – he knows more about the issue than they do – or he is simply not laying the role of the expert, in which case why place on his shoulders the crushing burden of having to review the whole case in order to enlighten the process of judgment? The role of the *conseiller du gouvernement* resembles that of a scientist only to the extent that he speaks and publishes in his own name; similarly, there is something of the *conseiller du gouvernement* in all scientists, who see themselves as enlightening the world. The *conseiller du gouvernement* is, then, a strange and complex hybrid, which has something of the sovereignty of *lex animata*, law embodied in a man, but whose pronouncements bind no-one but himself, whereas in the old world sovereigns always had the last word. In that case, what does he do? What is his function? He gives the whole team the occasion to doubt properly, thereby avoiding any precipitously-reached solution, or any cheaply-bought consensus. He is, in a sense, an airtight chamber for the avoidance of certainty, a kind of injunction to avoid agreement, an obstacle deliberately placed along the entire length of the path of judgment, a grain of sand, occasionally a scandal, but in all cases an irritant, or a resistance; the *conseiller du gouvernement* is the most peculiar example of a producer of objections, or of objectivity.

The importance and the ambiguity of his role are clearest in those cases in which he argues for the overruling of existing precedents, this being the legal equivalent of the process (which so excites researchers) by which scientific paradigms are overthrown. Because he, unlike is colleagues, is not bound to reach final judgment, he can allow himself - with one eye on the case itself, and another on the corpus of law - to suggest substantial alterations to this vast structure, whose coherence is produced by a kind of

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[18] Bastide, F., M. Callon, et al. (1989). "The Use Of Review Articles In The Analysis Of A Research Area." ***Scientometrics* 15-5-6**: 535-562.

an ongoing balancing act, similar to that which keeps a cyclist in the saddle. Precisely because he is not obliged to do anything but prompt the law in the moment, without himself having to pass judgment, he can allow himself to indulge in the sort of audacious developments or deepenings which would terrify the *conseillers*, who are always kept in harness, bearing on their shoulders the weight of administrative realities. There is always a certain freshness to *conseillers du gouvernement*, and they are in any case worn out after a few years[19]. But unlike scientists, who dream of overturning a paradigm, of putting their names to a radical change, a scientific revolution, or a major discovery, *conseillers du gouvernement* invariably present their innovations as the expression of a principle that was already in existence, so that even when it is transformed completely the corpus of administrative law is `even more' the same than it was before. This prowess is required by the essential notion of legal predictability [*sécurité juridique*], which would seem quite out of place to a researcher. Just imagine the effect of a notion of scientific certainty on research: what was discovered would have to be expressed as a simpler and more coherent reformulation of an established principle, so that no one could ever be surprised by the emergence of a new fact or a new theory.

The formation de jugement

Let's get it over with! We've had enough! We know enough to pass judgment! It is as plain as day that claimant A is in bad faith, drug dealer B a toad, and claimant C a fussy nit-picker, that minister D is plain incompetent, decree E a tissue of absurdities, and police prefect F a public menace, so why prolong the discussion? The facts are blindingly obvious. We have already read the open-ended note of the *rapporteur*, heard the *réviseur*, spent two hours in the *séance d'instruction* discussing the case, the president has consulted on the matter with the Président du Contentieux, we have heard the conclusions of the *conseiller du gouvernement*, and still you haven't finished? No sooner has the *conseiller du gouvernement* sat down that you resume your deliberations again, this time with a new set of discussants, that is, a fresh set of people who are ignorant about the case, who have heard neither the *rapporteur* nor the *réviseur*, who have heard nothing of the discussion, and ask the same old naïve questions. Isn't that all extremely disheartening? Why not give the file to the *conseiller du gouvernement* and close the case for good. Let's say no more about it. Enough prevarication. Yet, it is essential to hesitate and doubt, precisely

[19] There are about 20 commissaires for the 200 conseillers at work in the Conseil.

so as not to rush towards blindingly obvious truths. The tedious succession of reviews and revisions, the meticulous verifications of bureaucratic stamps, and the repetition of preambles ensures that blind, stumbling, justice can walk in a straight line and say exactly the right thing. All these procedures of detachment allow the law to ensure that it has doubted properly, whereas almost all the elements of a laboratory tend to the speediest possible acquisition of certainty. If Justice holds a balance in hand, it is not because she weighs exactly, but because the balance has shaked a bit.

Common sense finds the slowness of both law and science incomprehensible: why take so much trouble to judge? it asks. Why go to so much hassle to know? it asks, astonished. Do we really need all these distancing procedures in order to deal with a case about dustbins, pigeons, planning permissions, or appointment procedures? Is it really necessary to spend so much money, to mobilize the best and the brightest, and to spend years on claims which could easily be resolved with a bit of common sense and a measure of good faith[20]? Is it really necessary to sacrifice hundreds of rats, to mobilize an elite of men in white coats, or to invest in extremely expensive instruments in order to learn how our brains work or how many stars there are in the sky? What a waste of time! How slow! If the production of doubt in law and of knowledge in science were criticized in these terms by ordinary common sense, judges and scientists would immediately join forces to celebrate time, slowness, care, expense, elitism, quality, or respect for procedure. Both scientists and judges would exclaim that common sense, with its crude methods, could produce neither this effect of slowness of judgment nor confidence in certainty: it would reach a conclusion too quickly, too hastily and on the basis of superficial first impressions; we depend vitally on these costly and ponderous institutions, which require the complex elaboration of an esoteric vocabulary and the application of procedures that are exasperatingly meticulous, because these are the only means we have to avoid arbitrariness and superficiality.

And yet common sense is right: things have to be brought to an end. And here, once again, science and law, which seemed for a moment to be united in their defence of their procedures, rather than their privileges, are shown to be quite different. At the Conseil d'Etat, every effort is made to sustain doubt

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[20] In addition to political appointees, the bulk of the Conseil is formed by young graduates from the very prestigious Ecole nationale d'administration.

for as long as possible, but when a decision is reached it is made once and for all. In the laboratory, every effort is made to reach certainty, but in the end it is left to others, to colleagues, to a point in the future, to the dynamic of the scientific field, to decide on the truth value of what is said. This attitude is the completely opposed to what one finds in law: suddenly, after months or years of waiting, the case has to be concluded. And this is not just a possibility but an obligation, which is inscribed in the law: a judge has to decide, otherwise he abuses his authority. Although he has gone to all this trouble to slow things down, to observe formality, to collectivise, to become detached and indifferent, to distance himself, judgment must now be issued. That is the object of the process of deliberation. The only available escape route lies in deciding that the decision cannot be taken alone, that the case is too serious, so that one has to remove the case to a stage further up the hierarchy[21]. But this change of direction only puts off the inevitable. The Conseil d'Etat will have to make the decision. It is the ultimate tribunal. The only way to get judgment over with is to pass judgment.

A laboratory works in quite the opposite way: it has gone to considerable trouble to cover its back, to multiply its data, to verify its hypotheses, to anticipate objections, to choose the best equipment, to recruit the best specialists; it has drafted the most combative article, chosen the best journal, organized the most skillful leaks to the press, and then suddenly, at the last moment… except that there is no last moment! Quite unconcernedly, the researchers, having passionately pursued the truth, and now being unable to control the fate of their claims, leave it to others to take care of verifying them. "We'll soon see what they have to say; the future will say whether we were right or not". The tribunal of history is a strange sort of court because it lacks the most essential quality of a court: the absolute obligation to pass judgment now, without putting it off until later, and without delegating the task to someone in the future, who might be better qualified or superior in rank to oneself. Having accumulated their proofs of modesty and distance, the judges abruptly, and with the greatest arrogance, take on the wrath of sovereignty: they decide the issue. Scientists, having exercised all the passions

[21] There are five different levels inside the same Conseil d'Etat, to judge cases from the least to the most important case. Contrary to English speaking systems, the Conseil occupies the position of first and last instance depending on the topics. It is also at the top of a long chain of administrative tribunals for first instance and appeal courts.

of knowledge and every pretension to certainty, suddenly become modest and humbly defer to others.

Chains of references and chains of obligations

But to distinguish passion on one side, and detachment on the other, scientists' interest and lawyers' disinterest, modesty and authority, or closure and openness, is to make what is still only a surface comparison, lying in the indeterminate zone between psychology and ethology, between procedure and content. In order to deepen the analysis, which aims to distinguish scientific and legal activity, which are so often confused, we should now, at the risk of tiring the reader, trace out the workings of these two modes of enunciation even more closely, by distinguishing the chains of reference which anthropologies of science have studied very closely from legal chains of reference, which are very difficult to describe[22]. However, the task is not impossible, because the fabrication and processing of files reveal the traces of these two ways of establishing relations, which in one case are made of information, and, in other, of what can only be called *obligation*. But what does that mean? I shall try to describe what is transported from one layer of inscription to another in the course of an experiment, and what happens to a file when it undergoes the process through which legal grounds are extracted from it. My hypothesis is that most of the superficial features that we have set out so far are explained by the differences between these two orders of circulation.

Before exploring these differences, we should recall the common origin of both legal and scientific practices, the ancestral learning that still constitutes the basic apprenticeship of scientists and lawyers, namely, the manipulation of texts, or of inscriptions in general, which are accumulated in a closed space before being subjected to a subtle exegesis which seeks to classify them, to criticize them, and to establish their weight and hierarchy, and which for both kinds of practitioner replace the external world, which is in itself unintelligible. For both lawyers and scientists, it is possible to speak confidently about the world only once it has been transformed – whether by the word of God, a mathematical code, a play of instruments, a host of predecessors, or by a natural or positive law – into a Great Book, which might equally well be of nature or culture, whose pages been ripped out and

[22] On chains of reference, see Latour, Bruno (1999). **Pandora's Hope. Essays on the reality of science studies.** Cambridge, Mass, Harvard University Press.

rearranged by some diabolical agency, so that they have now to be compiled, interpreted, edited, and rebound. With scientists as with judges, we find ourselves already in a textual universe which has the double peculiarity of being so closely linked to reality that it can take its place, and yet unintelligible without an ongoing work of interpretation[23]. And both for scientists and lawyers this incessant activity generates new texts, whose quality, order, and coherence will, paradoxically, increase the complexity, disorder, and incoherence of the corpus they leave to their successors, who will themselves have to take on this labour of Sisyphus or Penelope. Stitching, weaving, reviewing, and revising of Exegesis, mother of both science and law.

The common exegetical role of the good researcher and the good lawyer can be seen in the way that they both evaluate stacks of heterogeneous documents by attributing a different value of trust to each. Just as the expression "*Qui sera publié au recueil*" carries more weight than "*aux tables*" in the description of a precedent, so an article published in *Nature* or *Science* will elicit a greater degree of attachment than a preprint posted on a website. Both scientists and lawyers have great respect for existing publications – which in both disciplines can be tracked down by a coded scheme of citation and references – and yet both have a certain distance, defiance, or even disrespect for too close a linkage of references. Just as a *conseiller du gouvernement* will say, quite politely, that "This decision seems to me to be quite isolated, and, in truth, quite unrepresentative of the case law", so a researcher will have no hesitation in writing that "Although there a number of experiments which assume the existence of this phenomenon, no conclusive proof has ever been provided". Both differentiate very subtly between those documents which are assured and those which leave enough gaps and contradictions on which to hang the argument, or to suggest alternative formulations. Both kinds of practitioner work collectively, and without the close collaboration of their colleagues they would be quite unable to say anything at all. In both domains, everything may already have been written, but still nothing has yet been written, so that it is necessary to begin again, collectively, with a new effort of interpretation.

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[23] This is the main thrust of Pierre Legendre from (1983). **L'empire de la vérité. Introduction aux espaces dogmatiques indutriels (Leçons II)**. Paris, Fayard to (1999). **Sur la question dogmatique en Occident**. Paris, Fayard.

However, whereas in the Conseil d'Etat the act of writing is always explicit, in a laboratory such as that of Rossier, it always seems to be a mere appendage of scientific work, or perhaps even a kind of chore. For example, on arrival at the Conseil, each new member receives two documents: the *Memento du rapporteur devant les formations administratives du Conseil d'Etat*, and the *Guide du rapporteur de la Section du Contentieux*. These substantial volumes, which explain in detail how to draft notes and *arrêts*, are essentially style manuals paying as much attention to the form of bureaucratic stamps and endorsements as they do to the proper layout of paragraphs or correct punctuation. Although there are (especially in the United States) courses which provide future scientists with a training in writing skills, most laboratory workers would be surprised to find their activity described as a work of exegesis. Until this character was revealed by the anthropology of science, scientific texts were assumed to be nothing more than supports for information, whose only virtue was transparency, and whose only defect obscurity. In order to reconnect the sciences with their ancient roots, these texts had to be seen in the light of the output of laboratory instruments and the important role of inter-citation. Only then could scientific authors once again appear as hermeneuts, as writers or scholars, except that the texts they compare incorporate textual proofs extracted from phenomena put to an experimental trial. *Conseillers*, on the other hand, are always talking about their writing activities, and quite often speak in formulaic phrases made up of citations. For them a text is never just a support for information, and is never evaluated on the basis of its clarity alone; indeed, that much becomes obvious if one reads any of their writings!

If I remind ourselves of their common roots, it becomes impossible (whatever might be said in the vast body of writing on the subject) to distinguish scientific texts, which are supposed to be factual and impersonal, from legal texts, which are supposed to have the special property of doing what they say, or, depending on the circumstances, of saying what should be done. There are of course a number of differences, but we should hesitate to understand these in terms of the conventional distinction between fact and law, or between declarative and performative statements. Scientific texts, as I have already suggested, resemble neither the mythical statements of rhetoricians or philosophers of language ("water boils at 100 degrees") nor affirmations ("the decision made on the 17th April 1992 by the administrative court of Grenoble is hereby overturned"). Unlike the manuals or

encyclopedias with which they are so often confused, the scientific or research text that emerges straight from the laboratory deals not so much with a fact that has to be described, but with a profound *transformation*, which the word "information" does not really describe. Unless, that is, the term is understood etymologically, to mean placing within a *form*, the latter being understood quite literally or materially, as consisting in a graph, equation, or table. No *in*-formation can be produced without a cascade of these sorts of *trans*-formations[24]. Moreover, no scientific article would make do with a single such transport, with just one representation in the form of a graph, but has instead to orchestrate dozens, each linked to the other so as to compose a drama or a chain of reasoning, each one being precarious in the sense that it seeks to carry over all of the relevant elements of the preceding layer while at the same time thoroughly modifying them so as to give added force to the particular theory, formula or interpretation. Finally, as I have observed, this whole process of transformation takes the form of a claim or petition, which is characterised by uncertainty and danger, and which the authors release into the mass of existing publications[25]. The truth value of the statement will be attributed retroactively, from the treatment that the claim or petition receives at the hands of other authors, supporters as well as detractors.

This sort of textual trail, or complex alchemy, has no more to do with the common sense notions of a factual statement than it does with legal texts. If the very particular (but not defining) kind of activity that one finds in laboratories is understood as the hazardous construction of referential chains, one can find numerous traces of that process in judicial files, but far from defining the nature of judicial activity, it merely organizes a few of its segments, the remainder being characterized by activities that are more properly legal. For example, the question whether a map was annexed to a file might be answered by the referential gesture of pointing to the file, or the map might be adjudged to have been annexed by connectivity[26]. In this

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[24] Lynch, Mike et Steve Woolgar, Eds. (1990). **Representation in Scientific Practice**. Cambridge, Mass, MIT Press.

[25] See Fleck, Ludwig (1935). **Genesis and Development of a Scientific Fact**. Chicago, The University of Chicago Pres for a classic analysis of this alchemy.

[26] In one of their decisions, the Conseil had judged that a map for a building authorization is 'said to be' annexed to the expulsion procedure file even though it is not physically present in the annex, provided it can be consulted somewhere at the mayor's office.

manoeuvre, the furrow of one referential chain is abandoned in favour another, which we have still to define.

The differences between law and science are clearly revealed in the clash or interruption of these two furrows. For example, if the question whether an acknowledgement of receipt was actually sent is raised in the course of a hearing, and the file contains the appropriate post office form, signed and dated by the claimant, the quality of the reference is unquestionable; similarly, when the assembly is convinced, having taken a common sense approach in reading tracts annexed to a file, that a candidate defamed his opponent to some degree on the eve of the election; or, again, where an aerial photograph attached to file allows them to establish whether or not a park is fully enclosed by a wall, this being the point at issue, the judges retrace a short referential chain by doing what geographers, geologists, or surveyors might do, that is, by superimposing layer upon layer of documents and tracings, which are very different in terms of their materiality (photographs, graphs, documents, and plans) but which by their nature keep information intact across a play of transformations. But the judges' confidence would soon evaporate if, instead of having to make the few referential steps which they take when they track a map, graph, signature, or opinion through their files, they had to cross the dozens of transformations that are necessary for scientists to establish a reasonably solid proof in a somewhat specialized field. Would a judge agree to entrust his judgment to an electronic microscope which requires a hundred or so adjustments, each of which completely transforms the initial sample[27]? A judge would exclaim indignantly that he needed a more 'direct contact' with reality.

On the other hand, would a researcher agree to make a decision on the basis of a frame that was as narrowly defined as "what is contained within the file"? The short referential chains which are contained in the folder would soon be disrupted by slippages, dislocations, and changes of register which would be horrifying to scientific researchers. When a judge says that there is nothing in the file to the effect that a foreigner expelled from France had children born in France, he satisfies himself with the limits defined by the antagonistic logic of the case, and settles for an inquiry as to whether any defence submission had disputed the fact, using the phrase, "and that point

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[27] Galison, Peter (1997). **Image and Logic. A Material Culture of Microphysics**. Chicago, The University of Chicago Press.

was not contested". A procedure of this sort, which requires that one keep to the traces accumulated in the file, would freeze the blood of a scientist. He too, like his judicial critic, would demand a more direct, richer, and more living, contact with reality! "Let's put the file to one side and go and see what's happening for ourselves, let's do some fieldwork, question the witnesses, forget the pathetic arguments of the lawyers, and escape from the straightjacket of this paper world, which is unable to capture reality". The point is that the researcher confuses the *supplément d'instruction* with the process of judgment. His objective is always to know more, and he would expect there to be a two-way path between the offices of the Conseil and the facts, which would allow the transportation of (appropriately transformed) information to be continually improved. But, as a result, he would accumulate more and more information without yet being able to pass judgment. The process of *instruction* would be inflated to quite fearsome proportions, and no decision would ever be reached. He would, in fact, be engaging in research, not judgment.

Lawyers and scientists are each scandalized by the other's forms of enunciation. They both speak truth, but each according to a quite different criterion of truth. Judges consider that scientists have access to what is only a pale version of reality, because they write articles which have a relation to the facts they describe that is so indirect that there are dozens of steps in their reasoning, and as many leaps from each graphic representation to the next. Scientists, on the other hand, don't understand how judges can be content with what is wrapped in their files, or how they can apply the term "incontrovertible fact" to a submission that has been contradicted by a counter-submission. Scientists, by contrast, measure the quality of their referential grip in terms of the mediate character of their instruments and their theories. Without making this long detour, they would have nothing to say other than whatever fell immediately before the senses, which would be of no interest, and would have no value as information. Judges, for their part, hold that the quality of their judgments is closely dependent on their ability to avoid the two hazards of *ultra petita* and *infra petita*: that is, issuing a judgment that either goes beyond or falls short of that which the parties have asked for. What seems to judges to be a major failing is considered by scientists to be their greatest strength; yes, they can only attain precision by progressively distancing themselves from direct contact. And that which scientists regard as the greatest defect of law is taken as a compliment by the

conseillers: they do indeed stick to what can be elicited from the file, without addition or subtraction. Here, we have two distinct conceptions of exactitude and talent, or of faithfulness and professionalism.

It might be argued that these differences are quite minor by comparison with what both have in common, namely the reduction of the world to paper. From this overly general perspective, both scientific inclusivity and the inclusivity of the file resemble stuffing a quilt into an envelope. But these are two very different modes of reduction, and the whole aim of this section is to distinguish them. The important thing is to understand how the relation between the legal file and the particular case is unlike the relation between a map and the territory, if maps are taken as both a symbol and an example of chains of reference.

Legal reduction seeks to constitute a domain of unquestionable fact as quickly as possible (which means only that there should be no submission from the defence contesting those facts), so that it can then subsume the facts into a rule of law (which is in practice a text) in order to produce a judgment (which is, in reality, a decree, a text). Scientific reduction effects the same astonishing economy because it too replaces the richness and complexity of the world in all its dimension with paper and texts. But the approach it establishes is utterly different because, once one is in possession of a piece of paper, a document, or a map, it is always possible to retrace ones steps, returning to the territory to pick up the trail, once one has found the signposts, the surveyor's stakes, or the right perspectives and calculations of angles. At each point, the reasoning process takes hold on the superposition of instruments, graphs, theodolites, markers, graduations, and measurements which enable reasoning to act as though it was always moving from like to like above the abyss of the transformation of matter. But in law, even when resemblance or precedent is invoked, what is involved is never a precise superposition. When the *rapporteur* says:

> "One of the arguments alleges a procedural impropriety, on the basis that the plan was neither initialed nor numbered by the *commissaire enquêteur*; this allegation is not supported by the facts because although the register was initialed only on every other page, this is not serious because the cases define a leaf as a folded sheet".

The minuscule portion of reference that enables him to verify the signature is immediately diverted, or, more precisely, relayed, by the legal definition of what is 'a leaf'. This does indeed involve tracing a path, but in this case it binds a factual element to what lawyers call a "qualification": "is this a leaf in the sense that the term is used in article 13-25 of the procedural code of the *déclaration d'utilité publique*?" Someone who holds a map in their hands also holds the territory, or at least a two-way path that would allow him to learn more on the occasion of the next iteration, or on the occasion of his next visit to the territory; someone who holds a file has established a connection that means that he will no longer have to learn anything more from the fact, and which, on his return, will allow him to transport an unquestionable decision.

The difference between reference and qualification is clearly exemplified in a case in which an assembly had to decide whether the illustrator of a gardening magazine, who had been refused a highly coveted press card on the grounds that she did not deal with current affairs, could have the decision of the journalists' professional body overturned. As one might expect, there was some discussion of the distinction between current affairs and seasonal affairs: are this year's peonies, peach trees, or kiwi fruit "current affairs"? Is the person who illustrates them "a reporter"? But this question of substance would lead nowhere, because the question is not whether an illustrator of current affairs is really, truly, fundamentally, or referentially a reporter, but whether, as against the professional body, she is able to establish that quality "within the meaning of article L 761-2 of the employment code". There is simply no relation between this and a definition of essence, nature, truth, or exactitude. Or rather there is, but the relation is one of simple connectivity: it is not necessarily the case that progress in one dimension advances things in the other dimension, or vice versa.

> "It being the case that Mme Eyraud claims the status of a professional journalist as an illustrator-reporter; and pursuant to the provisions of the third subsection of article L.761-2 of the labour law code, which states that `The following participants in the editorial process shall be treated as professional journalists: translator-editors, stenographer-editors, sub-editors, illustrator-reporters, photographic reporters, except advertising agents, and those who are participate in the editorial process only occasionally; given that according to the

> facts of the case the duties of Mme Eyraud, who is employed by the magazine Rustica as an illustrator, consist in the illustration of sheets which are designed to describe methods and techniques of gardening; and given that in this case these illustrations are sufficiently linked to current affairs as to characterize their illustrator as a reporter in the meaning of the foregoing provisions; Mme Eyraud is therefore able to claim the benefit of article L.761-2 of the labour law code."

Even in this very simple case, the two forms of discourse, that of the dispute itself and that of law, remain absolutely heterogeneous. What does it mean to say that `in this case these illustrations are sufficiently linked to current affairs'? However much you play with the meaning of article L 761-2, it will not provide you with the answer to that question. The text says nothing other than that, in this particular case, the judges considered Mme Eyraud to be a reporter within the meaning of the article. Full stop. "Yes, but is she really a reporter?", one might ask. What does the notion of a "sufficient link" mean? That question would carry us all the way along a referential chain, distancing us from another chain, that which ensures the fragile and provisional linkage between a text and a particular case.

Ah, you might say, but this is a very familiar kind of operation: this is just a process of classification. In much the same way as a postman uses the departmental postcodes written on envelopes to sort letters into boxes ordered by ZIP codes, so a legal file allows one to order the facts of the particular case according to the relevant categories, such as, for example, legal error, *ultra vires*, or public works. But the word `classification', like the words "reduction", "fact", "reasoning", "judgment", or "qualification", changes its meaning depending on the kind of enunciation that we're trying to characterize. A process of scientific classification would allow one to subsume each particular instance within the category in such a way that, having established that A is an instance of B, anyone who had B in their possession could obtain A, or at least all of the relevant features of A. If A is an instance of an acetylcholin receptor, given a knowledge of acetylcholin receptors, I would know all that there is to be known about A. But this is not how particular facts are qualified by legal rules: nothing in article L 761- 2 tells one whether the facts of the next case will or will not disclose a sufficiently close connection to current affairs. The rule contains no knowledge or information about the particular facts, except in the most

superficial sense; one might say, for example, that such and such a case is a case of *ultra vires*, which would mean that the *Service des analyses* should steer it towards a particular assembly specialized in those topics. But this kind of ordering is of assistance in logistics rather than in judgment. Minor referential chains (A is an instance of B) are subordinated to what, from the point of view of the law, is the only true kind of chain: A is an instance of B *as it is defined by* article C. Whereas in science the relation between the instance and category is taxonomic, in law this is only superficially true. In both cases one finds linkages and pathways establishing numerous relations between texts and events, but in each case the grids differ as much as a grid of fibre optic cables differs from an urban gas supply network.

To enter a referential chain is to approach things quite differently from a legal file. The cascade of transformations which produces information is such as to oblige the protagonists to produce that rarest of commodities: new information about newly-forged beings, which have come into contact with science and which have to be recognized, taken into account, ordered, and qualified in such a way that, once these requirements have been satisfied, one might return to them in order to gather supplementary information or fresh knowledge, until eventually they have been so thoroughly disciplined, understood, trained, domesticated, and mastered that they can be put in a "black box", at which point they can be considered as known, and used as the premises of new processes of argumentation or experimentation[28]. This dynamic of knowledge patterns the world with two-way paths which eventually saturate the territory that is being mapped, thoroughly confusing the two registers in a single truth-telling discourse. Those who are recognized by their colleagues as the fortunate producers of new and reliable information will be rewarded with eponymy; their name will forever be associated with a particular discovery, such as Newton's laws or Boyle's law.

Strangely, eponymy exists in law but it rewards not the judge but the claimant, whose name will forever be associated with an important decision which, as they say, a "landmark decision". Although the name of the *conseiller du gouvernement* is sometimes attached to a decree, above all if his conclusions

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[28] For two recent marvelous examples see Rheinberger, Hans-Jorg (1997). **Toward a History of Epistemic Thing. Synthetizing Proteins in the Test Tube**. Stanford, Stanford University Press, Knorr-Cetina, Karin (1999). **Epistemic Cultures. How the Sciences Make Knowledge**. Cambridge, Mass, Harvard University Press.

are published, no-one remembers the name of the author of a landmark decision, which is necessarily anonymous; and, as we know, every effort is made to ensure that change is presented in terms of legal continuity: the phrase "*plus ça change, plus c'est pareil*" is absolutely applicable to a corpus of law. Whereas in science everything is done to ensure that the impact of new information upon a body of established knowledge is as devastating as possible, in law things are arranged in such a way as to ensure that the particular facts are just the external occasion for a change which alters only the law itself, and not the particular facts, about which one can learn nothing further, beyond the name of the claimant. In law too, paths are traced across the world, weaving numerous relations between claimants, legislative acts, decrees, and codes, but these links do not produce any information or novelty: they are traversed by *moyens*, vehicles that are every bit as original as information, but which are quite different, and which we have to study further if we are to describe them properly. The difference is clearest in the situation where a *conseiller*, addressing a difficult point, exclaims that "Since last week, we know that…" The knowledge in question does not rest on a newly established connection between a fact and a theory, across the hazardous passage of a referential chain; rather, it means that "We have decided the question, and there is therefore nothing more to be discussed".

Res judicata pro veritate habetur

No bond is stronger than legal obligation or certainty as to facts. That was what led me to make this (occasionally daring) comparison between two activities which are entirely different, but whose precise and intricate manufacture is unknown to the broader public. But, as we have seen, popular representations of law and science confuse the features of the two activities so much that they are of no assistance in elaborating this comparison. However striking the differences, and however much those differences are accentuated at each stage of the comparison, they are difficult to pin down because, on the one hand, judges appropriate the scientist's white coat in order to represent their role, while, on the other, scientists borrow the judge's robes of purple and ermine in order to establish their authority. At the risk of momentarily abandoning ethnography to engage in philosophy, I shall conclude by drawing up an inventory of these exchanges, so as to render unto Caesar that which is Caesar's, and to render unto Galilee that which is Galilee's.

Most of the qualities that are commonly attributed to scientists are drawn from the micro-procedures invented by lawyers to produce their fragile ethos of disinterest[29]. Indifference to the outcome of a case, the distance established between the mind and the object that is being spoken about, the coldness and rigour of judgment, in short, everything that we associate with objectivity, belongs not to the world of the laboratory or of calculation, but to the judicial bench. Or rather, we should distinguish objectivity as the basis of a mood of indifference and serenity as to the solution, from what might be termed "objectity": the ordeal by means of which a scientist binds his own fate and that of his speech to the trials undergone by the phenomenon in the course of an experiment. Whereas objectivity pertains to the subject and his interior state, objectity pertains to the object and its peculiarly judicial role. The same adjective – "he has an *objective* mind" – can therefore point to two quite different virtues, one of which is essentially just a particular form of subjectivity (distance, indifference, disinterest) and the other a very specific form of subjectification in which the researcher subjects himself to an experimental object. Doesn't this common-sense admiration for the objectivity of scientists imply that they should sit as judges? And when, on the other hand, common sense complains about the fragility of its lawyers, doesn't this imply that they should display the same kinds of objects as laboratory researchers?

The strange thing about legal objectivity is that it quite literally is *object-less*, and is sustained entirely by the production of a mental state, a bodily *hexis*, but is still quite unable to resign its faculty of judgment by appealing to incontrovertible facts. It therefore depends entirely on a quality of speech, deportment, dress, and on a form of enunciation, and therefore on all of those external appearances that have been derided since Pascal, without recognizing that this respect for appearances is a form of objectivity that is unattainable for scientists. Scientists speak inarticulately about precise objects, lawyers speak in precise terms about vague objects. That is because judges have no superiors to whom they might refer the task of judgment (unless, of course, they are judges of first instance). Scientific objectity, on the other hand, is distinguished by the fact that it is *subject-less* because it accommodates all sorts of mental states, and all forms of vice, passion,

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[29] For reasons which have been studied in Shapin, Steven et Simon Schaffer (1985). **Leviathan and the Air-Pump. Hobbes, Boyle and the Experimental Life**. Princeton, Princeton University Press.

enthusiasm, speech deficiencies, stammers, or cognitive limitations. However unfair, excessive, expeditious, or partial researchers might be, they will never lack an object. Above each of them, like the sword of Damocles, hang the facts – or rather the strange hybrid produced by the encounter between incontrovertible facts and controversial colleagues – and this threat is sufficient to call even their most extreme enthusiasms or injustices to order. Suspended above researchers, there is always a third object that is appointed judge and charged with deciding on their behalf, to which scientists delegate the task of judging, without worrying whether they themselves, in their own consciences, are "objective"[30]. As for judges, they have no-one else to judge on their behalf, and they can become "objective" only by constructing an intricate and complex institution which detaches and isolates their consciences from the ultimate solution.

Having rendered unto judges an objectivity that is a form of subjectivity, and unto scientists an objectity predicated upon the guaranteed presence of the object, we can now locate the second feature that common sense surreptitiously displaces from the realm of law to the realm of science, namely, the ability to have the last word. The invention of the role of the expert witness has allowed two quite opposing functions to be confused, because it requires that scientists, having been diverted from their roles, occupy the throne of supreme court judges, cloaking their testimony in the incontrovertible authority of the facts as judged (*res judicata*). But there is a difference between expert and researcher[31]. For the latter, there is no such thing as the authority of science "as judged", and if she were to come across a set of propositions that the current, fragile, state of scientific controversy had made unquestionable, what would she do? Why, of course, she would immediately question them! She would return to her laboratory, carry out new experiments, re-open the black box that her colleagues had just sealed closed, change the protocols, or, if she herself shared their conviction, she

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[30] In the formulation given by Stengers Stengers, Isabelle (1993). **L'invention des sciences modernes**. Paris, La Découverte, « an experiment is the invention of a power to grant things the power to grant the experimenter the power to speak in their names" (p.102) (Stengers, Isabelle (2000). **The Invention of Modern Science**, The University of Minnesota Press..

[31] For a recent presentation of the difference, see Callon, Michel, Pierre Lascoumes, et al. (2001). **Agir dans un monde incertain. Essai sur la démocratie technique**. Paris, Le Seuil ; see also Jasanoff, Sheila (1990). **The Fifth Branch: Science Advisers as Policymakers**. Cambridge Mass, Harvard University Press.

would use this guaranteed output to construct a new experiment and to engender new facts. In science, incontrovertibility is always the high point of a movement by which the work of information/transformation is continually renewed. When discussion comes to an end, it does so only so as to inaugurate a new phase of intense discussion about entities which have only recently come into existence. When the expert scientist is given the power to decide or not decide, he is lent the regalia of a mode of sovereignty that belongs exclusively to law.

This confusion would be especially harmful because what the judges call "having the last word" resembles neither the authority of the expert nor the scientists' endless renewal of discussion[32]. Indeed, however forceful the authority of *res judicata* in law, what is involved is always, as lawyers say, the `exhaustion' of the available channels of appeal. The end of a case never reaches a limit that is any more grandiose that this particular kind of exhaustion: "it's reported in the Lebon", "the issue has been decided", "as the law now stands", "unless the European Court of Human Rights rules to the contrary". Nothing said in the Conseil d'Etat is more juicy, or more sublime, than these sorts of expression. When they reach the "end" of a hearing, judges take care to ensure that this ending is not clothed in the grandiose forms of Incontrovertibility. When Roman lawyers intoned the celebrated adage "*res judicata pro veritate habetur*", they were declaring that what had been decided should be taken *as* the truth, which means, precisely, that it should in no way be confused with the truth. The esteemed role of the expert corresponds neither to the model of scientific research, which re-opens a discussion that had been closed too quickly, nor that of the judge, because the latter demands of closure nothing more transcendent than a simple end to the discussion. This kind of immanence is a modest, constructive, or even constructivist solution: given that there is no-one above us, and that the case is simply stopped by the decision which is French is precisely called and *arrêt*, that is, a stop: that which we know without engaging in further discussion, we know because, quite simply, we have exhausted the discussion. There is no further appeal. Full stop.

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[32] For a marvelous example see Lynch, Michael et Ruth McNally (1999). "Science, Common Sense and Common Law: Courtroom Inquiries and the Public Understanding of Science." ***Social Epistemology*** **13**(2): 183-196.

It might be said that in this respect judges offer to scientists what epistemologists have described as Science's nightmare: the example of a mode of unfettered arbitrariness in which a closed assembly decides, without reference to any external arbiter, with no tools other than words, and by simple consensus, what should be held as the truth. On that basis, they would be entirely free to call a cat a dog, to consider a slave a free man, to say that a contractual clause was a separate agreement, or to extract from silent texts a set of "general principles of law" whose writing no-one had ever witnessed; in short, to exercise all the prerogatives of the technique of *fictio legis* which, by means of "praetorian glosses", ensured that the citizenry mistook bladders for lanterns[33]. Clearly, nothing could be more disturbing from the point of scientists, who are concerned to build as much reality as possible into their statements, than this capacity to invent everything anew. One can see in this model the famous notion of "social construction", a spectre summoned up by sociologists so as to scare epistemologists by threatening that all quests for the truth end up in a locked room where a secret ballot is held to decide what will henceforth *count as* the truth. But, in the same way as an expert witness has nothing in common with real scientific work, so social construction manufactured behind closed doors has nothing in common with real legal elaboration.

Once again, the advantages of not confusing the distinct features of these quite specific forms of enunciation become clear. Just as scientists can indulge in all kinds of moods, being as passionate or partial as they like, because the laboratory object occupies the same place as a legal text or a binding precedent, so, by contrast, lawyers can indulge a power to invent fictions, and to introduce what they call "constructive solutions", because, precisely, in making their decisions they have no object, or no objectity, to deal with. What is so shocking about the fantasmatic image of "social construction" is that it applies a model of legal decision-making to scientific objects: in which case, of course the special prowess of adjudication does indeed turn into a cynical nightmare of arbitrariness. But the point is precisely to avoid confusing the two things. Indeed, my attempt at clarification seeks to remove from science the power to have the last word which was entrusted to it in error or through cowardice, and to encourage it to resume the construction of those referential chains whose continual

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[33] But *fictio* has in law a very precise meaning, see Thomas, Yan (1995). "*Fictio Legis* L'empire de la fiction romaine et ses limites médiévales." ***Droits*** **21**: 17-63.

movement loads them with information that is more and more reliable, more and more precise, and more and more capable of sustaining discussion. On the other hand, if legal enunciation is relieved of the impossible task of transporting information and uttering the truth, it is left free to circulate through the fine channels of that very particular kind of vehicle, which is the only one capable of freighting and transporting those priceless commodities that are known as "*moyens*", "qualifications", "obligations", and "decisions".

It would, however, be quite wrong to draw a contrast between science, set against an intangible reality that resists all attempts to manipulate it, and which cannot be twisted in accordance with our desires, and law, which, because it consists only in words and consensus interpretations reached in a closed hearing, can say whatever it likes so long as it is authorised to have the last word[34]. Law has its own resistance, its own solidity , rigidity, or positivity, and even its own objectivity, which, despite the admission that it is constructed, has no need to be envious of scientific realism. We know that scientists speak the truth about phenomena precisely because they can manipulate, transform, and test them in thousands of ways, and because they can use experiment techniques to insinuate themselves into the most intimate details of their material existence. It is precisely because reality is not intangible, and because it bears no relation to the `matters of fact' imagined by epistemology, that science can speak quite faithfully about reality. It is therefore pointless to distinguish science and law in terms of the differences between objects and signs, hard and soft, unquestionable and arbitrary. If *res judicata* are not to be (mis)taken for the truth, the point is not that this justifies some form of cynicism, but that it has better things to do than mimic or approximate to the truth: it has to produce justice, and declare the law, in accordance with the existing state of the texts, taking into account the precedent, with no arbiter other than the judges, who have no-one to judge for them.

It might be said that this simply revives the old distinction between judgments of fact and judgments of value. For my part, I would be more

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[34] This is the weakness of the term 'legitimate' overused by sociologists to misunderstand and law and society, see Favereau, Olivier (2001). L'économie du sociologue ou penser (l'orthodoxie) à partir de Pierre Bourdieu. **Le travail sociologique de Pierre Bourdieu. Dettes et critiques. Edition revue et augmentée**. Bernard Lahire. Paris, La Découverte**:** 255-314.

inclined to see this distinction itself as the echo of something invented by the great 17th century English philosophers, who, for reasons which were largely political, inappropriately crossed law with the emerging laboratory sciences. Indeed, it is strange to note that the scenography of empiricism borrows the definition of a fact from judges so as to apply it to science, whereas, as we have seen, it in no way defines the articulation between researchers and their objects. In the empiricists' imagination, raw facts, the essential "data" or "sense data", have the peculiar virtue of being both insignificant and incontrovertible. They constitute the raw material of judgment, which gets under way by ordering them, associating and combining them in the human mind. But isn't this precisely the relationship that lawyers have to the facts, which have to be defined as quickly as possible so as to move on to what really matters, namely, processes of qualification or scholarly explanation? But in what laboratory would one find a researcher dealing with simple "sense data"? Only an empiricist could imagine that the articulation between a scientific article and what it describes could be anything like this extravagant division between that which is questionable and that which is unquestionable. Once it is recognised that the very definition of "raw facts" is a strange hybrid of law and science, it becomes easier to understand how the virtues of distance, indifference, detachment, or disinterestedness, which characterise the work of judges, came to migrate to the scientist, or to the quite improbable and highly politicised historical figure of the "expert", who has the capacity to bring discussion to an end by arrogating to himself the power to bind or unbind by delegating the issue to "matters of fact". This is a deviation from the careful work of scientific research, but it is an even greater derailing of law, which only allowed itself to bring discussion to an end precisely because it could *not* delegate the task of ending a dispute to any authority other than its own fragile immanence. By means of this spectacular manoeuvre, empiricism led us to confound the virtues of politics, science and law in a Gordian knot, thereby turning those virtues into vices.

The 17th century representation of matters of fact was based on the suppression of something which is now being brought to our attention more and more insistently, namely the common etymology that links things and cases, causes to causes, thing and *Ding*.[35] By a strange inversion, and as a

[35]The icelandic ealiest parliament was, and still is, called a Thing. For a full treatment of the argument, see Latour, Bruno (1999). **Politiques de la nature. Comment faire**

result of being bombarded by things that are alien to the social world, scientific objects have once again become cases that are subject to common discussion in a parliament or a courtroom. Having emerged from the courtroom, or at least from those extraordinary forums which preceded courts, the two etymological genealogies had gradually become separated by the supposed distinction between the arbitrary discussions of judges and the supreme tribunal of experts speaking in the name of incontrovertible facts, beyond any human affair, trial, or plea. But, having extended laboratory life to all of our collective existence, it seems that, as the project of modernism gradually exhausts itself, there is now no fact that is not also a cause or a claim. The thing has once again become a Thing or a Ding. That is why it is all the more important, now that objects have been restored to their common origins, not to confuse the characters of science and law. Clearly, in order to deal with states of affairs that are so intermeshed, it is hopeless to characterise the work of scientists in terms of what was nothing more than the usurpation of legal or political authority, just as it is impossible to demand that lawyers replace scientific enunciation. In drawing the distinction between incontrovertible facts and negotiable values, modernism referred to the nature of objects, without paying proper attention to the different tasks of the scientists and lawyers, but that distinction should now be made differently, by reference to the nature of the two jobs, which address causes, or cases in common. It is now essential that science should not be asked to judge, and that law should not be asked to pronounce truth.

That would be to confuse the last of the features which distinguishes these two modes of attachment: whereas scientific research can engage with turbulent or violent history of innovation and controversy, a history that continually being renewed, law has a homeostatic quality which is produced by the obligation to keep the fragile tissue of rules and texts intact, and to ensure that one is understood by everyone at all times. A premium is put on legal predictability [*sécurité juridique*] but there is no such thing as scientific security. Scientists, once they have added their own particular pebble to the edifice of a discipline, might well see themselves in the role of Samson shaking the columns of temple, overturning paradigms, overthrowing common sense, and bankrupting old theories. Lawyers, even when they make an especially daring argument for overturning established precedents,

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entrer les sciences en démocratie. Paris, La Découverte (to be published by Harvard).

have to secure the integrity of the legal edifice, continuity in the exercise of power, and smoothness in the application of the law. Science can tolerate gaps, but the law has to be seamless. Science can draw on lively controversy, but the law has to restore an equilibrium. Although one might speak admiringly of "revolutionary science", "revolutionary laws" have always been as terrifying as courts with emergency powers. As one of my interviewees suggested, "Our first concern is for stability; we have to plough a furrow that is as straight and as deep as possible, because litigants expect coherence and transparency'. All those aspects of law that common sense finds so irritating – its tardiness, its taste for tradition, its occasionally reactionary attitudes – are essential to law's functioning. Like the Fates, the law holds in its hand the fine thread of the whole set of judgments, texts, and precedents, which cannot be broken without lapsing into a denial of justice. Whereas the scientist can satisfy herself with partial information because she knows that the power of her instruments will enable other scientists, at some point in the future, to refine the science and extend the chains of reference, a judge has to ensure that holes are repaired immediately, that tears are darned without delay, gaps filled, and cases resolved. Whereas the fabric of science extends everywhere but leaves a lot of voids, rather like a lace cloth, the fabric of law has to cover everything completely and seamlessly.