

The promises of constructivism*

Bruno Latour

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“The experience also taught me a great lesson. I had not carefully designed an experiment that would prove diffusion; I had managed it by accident. That and all the other observations I had made told me that the slime molds were in charge, not I. They would let me know their secrets on their own terms, not mine.”, John Tyler Bonner, *Lives of a biologist: Adventures in a century of extraordinary science*, Harvard, 2002, p. 78 (quote kindly provided by I. Hacking).

“If you want a thing to stand, it has to be able to fall” Richard Powers, *Plowing the Dark*, p. 342.

For Albena Yaneva, architect-watcher

What has gone so wrong? It first looked like a good idea: it was fun, it was original, it was enlightening to use the word ‘constructivism’ to designate the work I was doing on science and technology : laboratories indeed looked infinitely more interesting when described as so many construction sites than when portrayed as dark mastabas protecting mummified laws of nature. And the adjective ‘social’ seemed at first rather well chosen, since I and my colleagues were bathing the venerable work of science into a hot tub of culture and society that aimed at making them young and lively again. And yet everything has gone awry : I had to withdraw the word ‘social’ with shame —scrapping it in haste from the title of **LABORATORY LIFE** like faces of Trotsky deleted from pictures of Red Square parades ; as for the word ‘constructivism’, it does not seem possible to salvage it from the furies triggered by the ‘science wars’ nor from the detritus left by the passage of ‘deconstruction’, this new Attila whose horse’s hoofs leaves no grass

* English kindly corrected by Duana Fullwiley. I thank Isabelle Stengers and Graham Harman for their suggestions.

behind. Everything I wanted to achieve, namely to associate reality and construction into one single dynamic with one single term has been wrecked like a badly designed aircraft. Times have changed : in order to show that one is not a dangerous outcast, it seems compulsory to swear a pledge of allegiance to ‘realism’ — now meaning the *opposite* of constructivism. “You have to chose”, roar the guardians of the temple, “Either you believe in reality or you cling to constructivism”.

And yet saving constructivism is precisely what I wish to accomplish in this paper : I want to deploy the promises hidden in this confusing concept, promises which are at once epistemological, moral and political —perhaps religious as well. My point is that constructivism might be our only defense against *fundamentalism* defined as a tendency to deny the constructed and mediated characters of the entities whose public existence have nonetheless to be discussed. Negotiations toward a viable and peaceful common world are possible among constructivists, but radically impossible if fundamentalists are expected to show up at the diplomatic table —and religion is not the only domain for bigotry : nature can trigger zealots as well, so can markets, so can ‘deconstruction’. Between war and peace stands a realistic definition of what a construction is — this, at least, is my argument.

What is wrong with constructivism ? Everything

To begin with, it might be useful to review everything that is wrong with the notion of construction. Then, once the list had been drawn, we might decide if this concept can be repaired or if it should be abandoned for good.

An implausible role for the social

The first confusion is at once the most widespread and the easiest to redress. When people hear the word ‘construction’ they substitute it with the expression ‘social’ construction, meaning that the construction is made *of* social stuff. In the same way as the houses built by the Three Little Pigs were either made *of* straw, *of* wood or *of* stone, it is thought that the proponents of social construction are defining an ingredient, a material, a type of fabric to account for the fabrication of facts. And exactly in the same way as the Big Bad Wolf’s blow could destroy the Pigs’ houses built of straw and wood, but not the one built of stone, it seems that ‘social constructivists’ have chosen a material so light that the slightest wind would dismantle it. The house of science, it will be argued, is made of solid walls of facts and not of a fragile scaffold of social ties. But such a theory of building is imputed to constructivists only by their enemies : I have never met a social constructivist who claimed that science was a house built on sand with walls made of air.

The word ‘social’ no matter how vague —and Ian Hacking, to whom I will turn later, has nicely ranked the many variants of constructivism¹— does not designate a ‘kind of stuff’ by comparison with other types of materials, but the *process* through which any thing, including matters of fact, has been built. Houses do not fall in place like pies from the sky, and facts no more than babies are

¹ Hacking, I. (1999). The Social Construction of What? Cambridge, Mass, Harvard University Press.

brought by storks. The Three Little Pigs built houses of differing resistance, but they were all house-builders and, besides, they worked together or in competition with one another: it is this common and collective *process* to which ‘social construction’ refers, not to the various materials from which things are made. Why call this process ‘social’? Simply because it is collective, requiring the complex collaboration of many trades and skills. As soon as the word ‘construction’ succeeds in gaining some of the metaphoric weight of building, builders, workers, architects, masons, cranes and concrete poured into forms held by scaffolds, it will be clear that it is not the solidity of the resulting *construct* that’s in question, but rather the many heterogeneous ingredients, the long process, the many trades, the subtle coordination necessary to achieve such a result. The result itself is as solid as it gets.

Unfortunately, this first clarification does not solve anything and does not yet allow one to save the concept of construction from damnation. The reason is that if hard core social constructivists who argue that things consist *of* or *in* social ties do not exist *in science studies*, there exist many people elsewhere —most of those reviewed by Hacking— who claim that society itself, its power relations, its violence, its norms, its laws, provide a framework, a structure, a solid basis, a foundation that is so durable, overpowering and systematic that it could indeed resist the Big Bad Wolf’s attempt to blow it down. The claim now is not that the house of facts is really made of the *softer* material of social ties, but that the soft and superficial links provided by laws, culture, media, beliefs, religions, politics, economics are ‘in reality’ made of the *harder* stuff provided by the social frame of power relations. Such is the standard way for the social sciences and cultural studies to explain why any thing holds: things do not stand upright because of the inner solidity of what they claim to be built with, but because their superficial facades are propped up by the solid steelwork of society. Law for instance has no solidity of its own, it merely adds ‘legitimacy’ to the hidden strength of power: left to their own devices, laws are no more than a fragile layer of paint, a cover up for domination.² The same goes for religion. Ditto for popular culture, market relations, media, and of course, for politics. *Every* thing is made of one and the same *stuff*: the overarching, indisputable, always already there, all-powerful society. Most of the cases reviewed by Hacking fall into this mode, where social constructivists proudly exclaim: “You naively believe that law, religion etc. hold by themselves, but I will show you how they are really made of social relations which are infinitely more solid, long lasting, homogeneous and powerful than the dust and straw that hides their structure like a curtain, a varnish, a decoy”. Those who pride themselves in being relativist are, most of the time, social realist.

That this type of ‘explanation’ makes a sham of the very notion of constructivism, science studies was quick to discover —perhaps I should speak for

² For such a standard account, Bourdieu, P. (1986). “La Force du droit.” *Actes de la recherche en sciences sociales*(64): 3-19 ; for a powerful and definitive critique, see Favereau, O. . “L’économie du sociologue ou penser (l’orthodoxie) à partir de Pierre Bourdieu” in *Le travail sociologique de Pierre Bourdieu. Dettes et critiques*. Edition revue et augmentée. B. Lahire (editor). (2001) Paris, La Découverte: 255-314.

myself here ! First, how on earth could one invoke the more solid stuff of social relations to account for the solidity of the harder facts of nature? Are the facts discovered by sociologists and economists so much stronger than the ones constructed by chemists, physicists and geologists? How unlikely. The *explanandum* certainly does not match the *explanans*. More importantly, how could the homogeneous stuff of almighty ‘society’ account for the bewildering *variety* of science and technology? Constructivism, at least in our little field of science and technology, led to a completely different program than the one repeated *ad nauseam* by critical sociology. Far from trying to explain the hard facts of science with the soft facts of social science, the goal became to understand how science and technology were providing some of the ingredients necessary to account for the very making and the very stability of society. This was the only way to give the word construction some of its original meaning, to highlight the collective process that ends up as solid constructs through the mobilization of heterogeneous crafts, ingredients and coordination.³

The two things science studies did *not* need were to replace the fascinating site it was uncovering by an unconstructed homogeneous overarching indisputable ‘society’ and of course an unconstructed, already there, indisputable ‘nature’. This is why science studies found itself fighting on two fronts : the first against critical sociology it wrongly appeared to descend from (as if it was merely extending social explanation coming from law and religion to science and technology) and the second against nature fundamentalists who wanted facts to pop up mysteriously from nowhere.⁴ If ‘social’ means either the stuff out of which things of science are made —a position which, to the best of my knowledge, has never been defended by any one— or the harder structure that explains the long term solidity of scientific facades —as most people, including Hacking regarding what he calls ‘human kinds’, still believe— it is better to abandon it altogether. This is also why, if I quickly deleted the adjective ‘social’ from the title of my first book, I carefully kept the word ‘construction’ since, thanks to science studies, most of the interesting connotations of the building metaphors were at last beginning to appear : history, solidity, multiplicity, uncertainty, heterogeneity, risk taking, fragility, etc. Obviously ‘social’ did not refer to the stuff out of which other things were made —to be critically denounced—, but to the *associations* of many different

³ For telling examples of this realistic constructivism, see Haraway, D. (1989). Primate Visions. Gender, Race and Nature in the World of Modern Science. Londres, Routledge and Kegan Paul ; Pickering, A. (1995). The Mangle of Practice. Time, Agency and Science. Chicago, The University of Chicago Press ; Rheinberger, H.-J. (1997). Toward a History of Epistemic Thing. Synthetizing Proteins in the Test Tube. Stanford, Stanford University Press ; Knorr-Cetina, K. (1999). Epistemic Cultures. How the Sciences Make Knowledge. Cambridge, Mass, Harvard University Press. For a more philosophical argument, see my Latour, B. (1999). Pandora's Hope. Essays on the reality of science studies. Cambridge, Mass, Harvard University Press.

⁴ In what follows I make no distinction between critical sociology and deconstruction : the first destroys in bulk, the other in detail ; the first is sacrificing the present to the revolution, the second sacrifices everything, including the dreams of revolution, to the jealous god of presence.

sources of relatively solid ingredients. The social sciences were becoming not the sciences of the social, but those of heterogeneous associations.⁵ Constructivism is like the word ‘Republic’: the more adjectives you add —socialist, islamic— the worse they become.

Miscasting creators as well as creatures

Once ‘social’ has been crossed out, the problem of construction, however, remains just as irritating as before. This time the reason has not to do with the demise of critical sociology, the weakness of our own case studies or the persistence of the ‘science wars’, but rather with the inner mechanism of construction itself. The problem with constructivism is that no one could account for the building of anything, even the simplest shack, by using this metaphor as it has been popularized in social sciences. Nothing in it works : neither the role given to the builder or the maker, nor the role of the material being used ; neither the solidity and durability of the result, nor its contingencies or necessity ; neither its history nor its lack thereof. If any mason, any architect, any Little Pig was trying to build anything with the *theory of action* implied by constructivism, they would fail hopelessly to assemble any durable whole.

Let us measure the utter inadequacy of this notion —even if this seems to render its salvation even more hopeless. First to fail is the role attributed to the *maker*. Implied in constructivism is an agent which masters its own acts of making —I use a neutral term here because society, nature, fields of force, structure as well as humans can be asked to fulfill the role of master-builder in some account. When someone says “This is a construction” it is implied: “It was built *by* some agency”. But then by what sort of agency? If it is an all powerful creator who has full command of what is produced out of nothing, this is certainly not a realistic account of the building of any real structure. Even if some architects see themselves as God, none would be foolish enough to believe they create *ex nihilo*.⁶ On the contrary, architects’ stories of their own achievements are full of little words to explain how they are “led to“ a solution, “constrained“ by other buildings, “limited“ by other interests, “guided by the inner logic of the material“, “forced to obey“ the necessity of the place, “influenced“ by the choices of their colleagues, “held up“ by the state of the art, and so on.⁷ No God is less a Creator than an architect, even the most innovative and daring one. To “become sensitive to the many constraints that lead to a rather autonomous scheme that begins to

⁵ Tarde, G. (1999réédition). *Monadologie et sociologie*. Paris, Les empêcheurs de penser en rond and my account of his social theory (2002). Gabriel Tarde and the End of the Social. *The Social in Question. New Bearings in the History and the Social Sciences*. P. Joyce. London, Routledge: 117-132.

⁶ Yaneva, A. (2002). “Scaling Up and Down: Models and Publics in Architecture. Case Study of the Extensions of Whitney Museum for American Art.”, paper presented at the seminar of Max-Planck Institute for the History of Science in Berlin, department II, 21th March 2002.

⁷ For a rich repertoire of such terms see the now classical work of Koolhaas, R. and B. Mau (1995). *Small, Medium, Large, Extra-Large*. Rotterdam, Office for Metropolitan Architecture.

take over a sort of life of its own” is precisely what they will try to emphasize. But then, if we become attentive to humbler ways of speaking, this agency shifts from the all powerful master to the many ‘things’, ‘agents’, ‘actants’ *with which* they have to share the action.

And of course, the vocabulary of ‘making’ will divert attention from the maker to the materials even more quickly if one considers engineers instead of architects —nimbed by the aura of the ‘free’ modernist artist. Learning how to become responsive to the unexpected qualities and virtualities of materials is how engineers will account for the chance encounter with practical solutions : they will never think of describing themselves as little kids molding reality at will.⁸ If there is one thing toward which ‘making’ does not lead, it is to the concept of a *human actor fully in command*. This is the great paradox of the use of the word construction : it is used by critical sociology to show that things are not simply and naturally *there*, that they are the product of some human or social ingenuity, but as soon as this metaphor of ‘making’, ‘creating’, or ‘constructing’ barely begins to shine, then the maker, the creator, the constructor has to *share* its agency with a sea of actants over which they have neither control nor mastery. What is interesting in constructivism is exactly the opposite of what it first seems to imply : there is no maker, no master, no creator that could be said to dominate materials, or, at the very least, a new *uncertainty* is introduced as to what is to be built as well as to who is responsible for the emergence of the virtualities of the materials at hand. To use the word ‘constructivism’ and to forget this uncertainty so constitutive of the very act of building is nonsense.

Second to fail is the conception of the material involved in the process of construction. If you think that builders were treated unrealistically, wait for the poor portrait usually given of matter —the two being obviously linked, as we will see. To exert a determinate and obstinate blind force, to be there as the mere support for human fanciful ingenuity, or simply to offer some ‘resistance’ to human action, these are the only three roles given to things in the constructivists’ scenarios. The first one gives material agencies the exact same implausible function given to the creator in the *ex nihilo* story, but in reverse : things command assent by their sheer force that simply has to be obeyed. The second saps any possibility of agency from things : they are left merely plastic, only able to retain an abundance of shapes offered by the rich, creative and totally free human mind. The third conception of things differs from the former by simply adding some

⁸ Many rich examples can be found for instance in Suchman, L. (1987). Plans and Situated Actions. The Problem of Human Machine. Cambridge, Cambridge University Press ; MacKenzie, D. (1990). Inventing Accuracy. A Historical Sociology of Nuclear Missile Guidance. Cambridge Mass, MIT Press ; McGrew, W. C. (1992). Chimpanzee Material Culture. Implications for Human Evolution. Cambridge, Cambridge University Press ; Lemonnier, P., Ed. (1993). Technological Choices. Transformation in Material Cultures since the Neolithic. London, Routledge ; Bijker, W. (1995). Of Bicycles, Bakelites, and Bulbs. Toward a Theory of Sociotechnical Change. Cambridge, Mass, MIT Press ; Petroski, H. (1996). Inventing by Design. How Engineers Get from Thought to Thing. Cambridge, Mass, Harvard University Press.

resistance for no other reason but to provide the creator with some surprise while he retains full power over matter —and it has to be a “he”. To complete this sad inventory, one should add the comical role of being-there-just-to-prove-that-one-is-not-an-idealist role invented by Kant and replayed over and over again by philosophers all the way to David Bloor : things are there but play no role except that of mute guardians holding the sign ‘We deny that we deny the existence of an outside reality’.⁹ Quite a function well worth hapless ‘things in themselves’.

Any constructivists worth their salt should be ashamed to see that everywhere things have been gyped their due : the first treats matter as master, the second as no more than wet sand in a sandbox and the third as an occasion to feel one’s own force being resisted. But with such theories of forces no one could succeed in accounting for even the simplest task : baking a cake, weaving a basket, sewing a button —not to mention erecting sky-scrapers, discovering black holes or passing new bills. And yet most debates on ‘realism’ and ‘constructivism’ never go further than the next child’s toy box —to which, for good measure, one should add a few ‘mugs’, ‘mats’, ‘cats’ and ‘black swans’. Let us be serious : if the word constructivist has any sort of meaning, it is because it leads us to agencies never falling into these silly and childish roles. Yes, they act, yes they order, yes they resist, yes, they are plastic, but what proved interesting are all the *intermediary* positions they are able to *simultaneously* occupy.¹⁰ The paradox is that critiques retain three or four points in trajectories for which artists, artisans, engineers, architects, house-persons and even children in kindergarten have a rich and talented vocabulary. Certainly Gianbattista Vico never did build much with his hands, to believe that what he had made was for this reason fully and completely known. I have never met scientists at the bench who were content to chose between ‘realism’ and ‘constructivism’, except of course when giving science war pep talks. Show me one single artist who would denigrate the complex material he is shaping into form to the low point of ‘infinitely plastic’ clay —certainly not potters.¹¹ Show me one single programmer who would think in full command of the software she is writing. Have you ever seen a cook who could account for a cheese soufflé by defining its delicate and crusty substance with the simple notions of ‘plasticity’, ‘resistance’ and ‘pure obedience to the forces of nature’ ?¹²

Everywhere, building, creating, constructing, laboring means *to learn how to become sensitive* to the contrary requirements, to the exigencies, to the pressures of

⁹ See Bloor, D. (1999). “Anti-Latour.” *Studies in History and Philosophy of Science* **30**(1): 81-112 and my response “For Bloor... and Beyond” in the same issue.

¹⁰ Latour, B. and P. Lemonnier, Eds. (1994). *De la préhistoire aux missiles balistiques - l’intelligence sociale des techniques*. Paris, La Découverte.

¹¹ Van der Leeuw, S. (1994). Innovation et tradition chez les potiers mexicains. *De la préhistoire aux missiles balistiques - l’intelligence sociale des techniques*. B. Latour and P. Lemonnier (eds). Paris, La Découverte: 290-310.

¹² Surface physics as it has been beautifully shown by Bensaude-Vincent, B. (1998). *Eloge du mixte*. Paris, Hachette has a complex ontology which could not hold a minute either in the poor materialist vocabulary, as Gaston Bachelard has shown earlier in many of his examples.

conflicting agencies where none of them is really in command.¹³ Especially not the ‘maker’ who spends nights and days trying to live up to his or her responsibility to what Etienne Souriau has magnificently called *instauration*, or *l’œuvre à faire*.¹⁴ How come we account for construction, either from the side of the maker or from the side of the made, with a theory of action that any one of our own acts fully contradicts? Yes I know, the bad example comes from high above: the *ex nihilo* Creator playing with His dust, clay and breath has given a bad name to all of us. But it is not because He was the first ‘social constructivist’ inventing everything from the fancy of His own imagination that we have to follow His example... Or maybe, when kicked out the Garden of Eden, we also lost the meaning of this Creation story. Not only would “we toil at the sweat of our brow” and “with pains give birth to children” but we would also be cursed with the impossibility of understanding what laboring and constructing and creating could mean. “Thou shall no longer grasp the meaning of God’s agency”. Will we live for ever punished with the original sin of mistaking constructivism for ‘social’ constructivism?

An impossible sentence : “the more constructed the more real”

To the Garden of Eden there is no trail back. It might be possible however to regain some of the lost powers of the original idiom of constructivism if only we could undo the curse that paralyses our tongues every time we wish to use it. For that, it is not only necessary to delete the word ‘social’, to redistribute agencies and to add some uncertainty concerning *what* is doing the making, as I just did: in order to salvage the constructivist manners of speech, another even more difficult move is requested of us since we also have to be able to stick to practice in just the way the sophisticated versions of constructivism forbids us to do.

Any architect, mason, city planner, tenant, in accounting for the reality of the building they designed, built, planned or inhabit will consider the amount of work done as one of the *reason why* the building is well designed, well built, well planned or well furnished. So, for them, working hard and having a building standing solidly and *independently* of their work is one and the same thing — provided it has been *well* done. In their implicit accounting system, they have one *credit* column in which they enter their own work *as well* as the autonomous solidity of the building, and a *debit* column in which they enter what has been *badly* designed, planned or built and what for this reason has been left dangerous, shaky, unfinished, ugly, inhabitable. How come then that they are asked by rather crooked constructivists to keep another book with an entirely different accounting practice? One in which all the items showing that the building *stands solidly and independently* are entered in the credit column while all the items tending to show that *work* has been done are noted in the debit column? Even Enron and Arthur

¹³ According to Jullien, F. o. (1995). The Propensity of Things. Toward a History of Efficacy in China. Cambridge, Mass, Zone Books and (1997). Traité de l’efficacité. Paris, Grasset, those thoughts would be much easier to conceptualize in chinese...

¹⁴ Souriau, E. (1935). “L’oeuvre à faire.” ; Souriau, E. (1939). L’instauration philosophique. Paris, Félix Alcan.

Andersen would not dare massage their account books to that extent. And yet, this is exactly what we do when we move from the practical language of construction to a theoretical one. We cheat, we lie, we enter into shabby double-dealing.

It is exactly such a betrayal of constructivism that science studies has contested. In the practical parlance of scientists at work, it is *because* they work and work *well* that facts are autonomous and stand independently of their (the scientists') own action.¹⁵ And yet, as soon as they reflect back on what they have done—or as soon as they come under the influence of some sort of realist philosopher...—they cook their book, doctor their accounts and begin to draw two opposite lines: one for the independent reality of the facts (the credit) and another for the mundane, human, social, collective work they have done (the debit line).¹⁶ Silly deal, first because the very *word* 'fact' still retains traces of the other accounting system clumsily erased—'*les faits sont faits*'—; second, because in manipulating this new account, scientists lose any chance of gaining credit for their own hard work which now goes into the debit column!; and third, because they deprive themselves of any authority to ask for grant money, since it seems, by reading their massaged ledgers, that they will know even better, faster and truer if they were not working, if they had no instruments, no collective undertaking, no construction site... Independent reality stands alone and they are standing on the other side of a huge gap, unable to bridge it. But the fourth reason is really the one that exposes best the silliness of this double-dealing: the difference between *good* and *bad* science, *well* designed and *badly* designed experiment, *well* fabricated and *badly* fabricated facts has disappeared, whereas it was exactly this crucial difference that the other accounting system captured so well—and the one to which all the attention of scientists at work has been directed: the difference between a *good* and a *bad* scientist.¹⁷

If it is clear, in the case of architects, that the only real interesting choice is between good and bad construction and not between construction and autonomous reality, why is not the case for scientists and facts? Because of two added features that seem to condemn the language of constructivism for good. When we say of a building that it stands on its own weight *after* the work of

¹⁵ Latour, B. (1996). Petite réflexion sur le culte moderne des dieux Faitiches. Paris, Les Empêcheurs de penser en rond.

¹⁶ Still inspired—or rather contaminated—by the antifetishism of critical theory I misunderstood this shift in Laboratory Life: I thought that the product of their own hand—fabricated facts—became what no hand had produced—unfabricated facts—so that scientists, like good fetishists, were inverting causality by granting to what they had themselves done the reason why they had done it. But they were right... and so was I: in effect, there was indeed a shift, but from the first accounting system—the more hands the more autonomy—to the second—you have to choose between work and autonomy. To ferret this out, though, I had to dig at the heart of antifetishism which remains to this day the main staple of critical theory..

¹⁷ Difference which is at the heart of Isabelle Stengers's epistemology Stengers, I. (1993). L'invention des sciences modernes. Paris, La Découverte; Stengers, I. (1997). Power and Invention. Minneapolis, University of Minnesota Press.

engineers, planners, architects and masons, and *because* of their *good* work, we don't have to engage ourselves in a tricky metaphysical question : everyone will agree that, whatever its autonomy, the building was not there before. No matter how elegant, coherent, necessary, adjusted the shape of a house in a landscape might end up being, no matter how 'necessary' it appears to be, no matter how pleasing to the eye, it does not provide the sort of necessity requested from matters of fact. It still has a source and origin in some architecture studio signaled by a marble or brass plaque fixed somewhere on the wall —like all of us have the mark of our navel on our belly to humble our dream of self-construction. But it is precisely this navel that irritates (with good reason) scientists and philosophers when they see the word 'fabrication' used in relation to 'facts' —even though they might be painfully aware of the word's damning etymology. The autonomy they strive for is that of a building which has always stood erect on its own weight no matter what work has been necessary to discover its exact location, to measure its height and to visit or inhabit its interior. Such a degree of certainty, such an occupation of time and space, such an unquestionable autonomy, solidity and durability, no idiom of construction, no architectural metaphor can provide —even if we stick as closely as possible to the confusing practice of really building real buildings— since construction, by definition, leaves exactly these traces that should be erased. If the double-book accounting system can be exposed for architects and engineers, it does not seem possible to do the same when hard facts are in question : autonomy and labor indeed seem contradictory. Is this then the last breath of constructivism ?

Probably, especially when, to add insult to injury, critical sociology seizes this most difficult of all metaphysical questions and trivializes it into a Q & A at the end of a course in Continental Theory 101 : "Is constructed reality constructed or real ?" Answer : "Both". Commented with a mildly blasé smile : "Are we so naive as to think that we have to chose ? Don't we know that even the maddest ideologies have real consequences ? That we live in a world of our own construction and that it is no less real for that ?"¹⁸ How I despise this little 'both' that obtains so cheaply a veneer of depth that passes nonetheless for the ultimate critical spirit. Never was critique less critical than when accepting as an obvious answer what should be, on the contrary, a source of utter bewilderment. 'We' never build a world of 'our own delusion' because there exist no such free creator in 'us' and because there exist no material pliable enough to retain the marks of our playful ingenuity. 'We' are never deluded by a 'world of fancy' because there exist no force strong enough to transform us into the mere slaves of powerful illusions. On both accounts —as creations of our own imagination, or as what those creatures impose upon us in return— the critical spirit fails since it uses the least realistic definition possible of what it is to create, to construct, to be influenced, to be deluded. It transforms into a simple thing exactly what is most

¹⁸ For a typical example see Heinich, N. (1993). "Les objets-personnes. Fétiches, reliques et oeuvres d'art." *Sociologie de l'art*(6): 25-56. For a 'critique' of this critical position, see Robert Koch "The critical gesture in philosophy" in Latour, B. and P. Weibel, Eds. (2002). *Iconoclasm. Beyond the Image Wars in Science, Religion and Art*. Cambridge, Mass, MIT Press pp. 524-537.

mysterious in the sharing of agencies with other actants, with *aliens*. The critical spirit slumbers just when it should be wide awake : no one was ever taken in by the return reality of a world of one's own making. Once again, constructivism is a victim of its own apparent friends and the least probable version of what it is to 'build a world of one's own' is used to render impossible any account of this very construction. This belief in naive belief is the only naive belief ever visible —only if you hold a Ph.D. in critical theory can you maintain this illusion against the constant disproof of practice.

So, in the end, things don't look very good : there seems to be no plausible way to say that *because* something has been constructed and *well* constructed it is *thus* solid, durable, independent, autonomous and necessary —even though this is what the manifold languages of practice obstinately belabor, and what science studies has tried to extract by staying as close to the bench as possible. The threat will be carried out, we will have to submit to the examination : "You have to chose : *either* it is real, *or* it is constructed", and if we dare answer "both" our own *positive* both will be confused with the weak, cheap and blasé *negative* answer of our worst enemies, i.e. our dear friends the critical sociologists... It seems that if deconstruction, more voraciously than termites, has been able to turn into dust all the claims to solidity, autonomy, durability and necessity, it is because constructivism was too fragile a material to begin with. There seem to be no antitermite treatments, no fumigation to protect constructivism against falling into ruins. Only what has *not* been constructed will stand the test of time.

A scale to qualify the right amount of constructivism

One solution would be to abstain from the word constructivism altogether.¹⁹ But that would leave the field to whom? Naturalists, on the one hand, deconstructionists, on the other. There would be a place in the sun only for those who link reality with the *absence* of labor, and those who have the front of using labor to *debunk* claims to existence, solidity, necessity and durability. Science studies will have no room for itself. A strange accounting system will render practice opaque to enquiry.

Fortunately, Ian Hacking has done good work on clarifying this most muddled topic in **THE SOCIAL CONSTRUCTION OF WHAT ?**. Thanks to his attempt, I might succeed in offering a convincing inventory of what sentences such as "X should be taken as constructed", where X stand for "laws of nature", "divinities", "technologies", "political representations", "market organizations", "subjectivities", could mean. And we need such sentences to possess clear meaning since they designate all the ingredients which are up for grabs in the progressive definition of the common world —the name I now give to political process.²⁰ Could the curse on the theory of action implied by the many metaphors of construction be lifted ?

¹⁹ And delete the word 'construction' from the subtitle of Laboratory Life after having deleted the word social —before facts, I am sure, go away too !

²⁰ The necessary link between constructivism and diplomacy is explored in Latour, B. (2002). War of the Worlds: What about Peace? Chicago, Prickly Press

Hacking understood that the reason these disputes around the right mix of reality and construction trigger so much passion is that they are political: they seem to talk about epistemology but they are really about how we should go about living together. To classify the various schools of ‘social constructivists’ (only a branch of this family, as I will show), he offers a scale that goes from stage 0 (X is given by nature), then to stage 1 (X could have been otherwise), then to stage 2 (X is bad), then to stage 3 (X should be overthrown) (p.6). In this view ‘social constructivists’ can be ordered from the most innocuous —things have not always been the way they are, they have a history— to the more radical: they should be changed. And all the brands are opposed to a stage –1, which Hacking implies but does not define: X is the way it is, period.

Although it is a very important step forward to reveal the inherently political nature of the argument, Hacking’s gradient is too asymmetric. If it nicely orders the different brands of ‘social constructivists’, he says nothing of the politics of those who should be called ‘naturalists’, namely those who need this implied stage –1 which allows for X to be there as a permanent fixture of nature. To be able to use Hacking’s scheme, it seems fairer to also include the politics of those who use this indisputable necessity of nature to define the common world: it is already made and remains off limits for any political process. Once this is done, constructivists and realists are all engaged in what I call ‘political epistemology’, namely the organization of the arenas in which the various candidates that claim to inhabit the same shared world —humans and non-humans— are *represented* in all the many meanings of the word. Thus, the debate should not be seen as what pits scholars who object to the politicization of nature against militants who politicize everything, including the facts of nature for their various radical goals: rather, it allows different factions, parties, leagues to make *explicit* and *public* how they are supposed to distribute what is disputable and indisputable, what is contingent and necessary, what should be kept and what should be changed. To use a traditional set of metaphors, political epistemology is not an unfortunate distortion of good epistemology or good politics, but rather the necessary task of those who write a ‘Constitution’ distributing powers in the various ‘branches’ of this vast ‘government of things’, looking for the best arrangement of ‘checks and balances’.²¹

Once this common ground is recognized —once Hacking’s asymmetric treatment of the various claims has been redressed— it might be possible to abandon, for a moment, the various labels given to the contending parties —realists, naturalists, constructivists, deconstructionists, etc— to look instead at the list of *guarantees* they all wish to obtain from participants in the common world, although through different means. The list below appears to me to offer more generality, and maybe more clarity on ordering the sub-family of social

Pamphlet. Chicago University Press which is very much a companion paper to this one.

²¹ For all of this complex set of moves, see Latour, B. (1999). *Politiques de la nature. Comment faire entrer les sciences en démocratie*. Paris, La Découverte (in translation by Harvard University Press).

constructivists, than the one offered by Hacking. It deals with his same ‘sticking points’, but offers a different diplomatic opening.

First guarantee : once there, and no matter how it came about, discussion about X should stop for good. This is an essential assurance against endless controversies, heckling, superfluous doubts, excessive deconstruction. Such is one of the two meanings of the word ‘facts’ : once in place, reality should not be allowed to be disputed and should be used as the indisputable premise of other reasonings. This is the only way to assure a base of solid and stable facts to rest upon —if only to occasionally thumb a table in good spirit... If this leverage is taken out, it seems that discussion is no longer possible any longer (Hacking’s ‘sticking point’ #3, p.84). If a party named ‘constructivists’ appear to be jeopardizing this essential guarantee, then “that means war”, and it is no surprise that the other factions will try and exclude it from any ‘parliament’.²² What went so wrong in the earlier debates around ‘social construction’ was that such a guarantee went ignored —or rather was confused with the equally important one just to follow.

Second guarantee : in spite of the indiscutability insured by the former, a revision process should be maintained, an appeal of some sort, to make sure that new claimants —which the former established order had not been able to take into account— will be able to have their voices heard —and ‘voice’, of course, is not limited to humans. This is exactly what the crowd reviewed by Hacking requires when they attack the ‘naturalized’, indisputable, taken for granted stage O. Only what has been made can be unmade or remade, such is an indispensable source of energy. If all the means of revision are taken away, if we are simply faced with the indisputable matters of facts which have always been the way they are, an essential guarantee has been jeopardized and that, too, “means war”. New candidates to existence will be forbidden access to the common world. If a party called ‘naturalists’ appears to forestall all discussions, all revisions, because they use the state of nature to shortcut due process in the name of ‘law and order’, then it is not surprising that the other factions will try to exclude it from the parliament.

The delicate checks and balances of political epistemology require both guarantees, there is no due process without them. But the discussion does not stop at these two.

Third guarantee : the common world is to be composed progressively, it is not already there once and for all. This guarantee is totally muddled when transformed into an argument for contingency against necessity —and on that account Hacking falls into the trap (his ‘sticking point’ #1). To prove that matters of facts have been ‘constructed’, it is argued, one has simply to show that they are contingent, that they could have been otherwise, that they are not necessary.²³ To disprove the constructivist account, it is counterargued, one has simply to show

²² Stengers, I. (1998). La guerre des sciences: et la paix? *Impostures scientifiques. Les malentendus de l'affaire Sokal*. B. Jurdant (ed). Paris, La Découverte: 268-292.

²³ In technology studies the same role is played by the tired old notion of ‘interpretive flexibility’ or ‘pliability’, as if being flexible and pliable were the only two states of matter worth registering.

that there are no two ways for X to exist, only one. But such a debate is a profound misreading of the real argument in science studies, especially in the history of science : the point is not about demonstrating the existence of ‘alternative’ physics, chemistry or genetics, but about the impossibility of absorbing the world—in the singular—in one single chunk.²⁴ ‘The’ unified world is a thing of the future not of the past. In the meantime we are all in what James calls the ‘pluriverse’, and those—scientists, philosophers, activists, commoners of all sorts—who strive to make it one are *taking risks* and they *could fail*. Danger, contingency, uncertainty does not qualify the result—which might well be Necessity herself—but the process through which ‘the’ world becomes progressively shared as one *same* world. The opposition is not between contingency and necessity, but between those who want to order the world once and for all on the cheap pretexting that it is already ‘one’, so that they can *subtract* everything else from it, and those who are ready to pay the price of its progressive *composition* into one because they cannot subtract anything.

Fourth guarantee : humans and non-humans are engaged in a history that should render their separation impossible. Again, this feature of constructivism is deeply misread when seen as a debate between realism and nominalism (Hacking ‘sticking point’ #2, p.80). Words and worlds do not represent two statues facing one another and marking the respective territories of two kingdoms—only to one of them will loyalty be sworn. Rather, words and worlds mark possible and not very interesting extremities, end points of a complex set of practices, mediations, instruments, forms of life, engagements, involvements through which new associations are generated. To imagine that a choice has to be made between statements and matters of fact, would be like pitting the two banks of a riverbed against one another while ignoring the huge and powerful river that streams in between. If philosophy has only registered the choice between realism and nominalism, this has nothing to do with the way we all deal with the truth content of matters of facts, but with a precise political order that has requested a strict separation between humans and non-humans.²⁵ As soon as the political assembly is modified—and this is precisely what is registered by science studies—the guarantee is not to finally obtain a clear separation between words and worlds, nature and culture, facts and representation, but just the opposite : to insure that there is no such separation.

Fifth guarantee : institutions assuring due process should be able to specify the quality of the ‘good common world’ they have to monitor. As I have shown

²⁴ Hacking himself, in the beautiful last chapter 7 on dolomite shows how, even on such a simple case as rocks—the one Steven Weinberg liked to kick with his foot to prove that it was ‘there’!—the ‘oneness’ of ‘the world’ is hard to come by, because of the multirealism any enquiry leads to. The author does not seem to be aware that this chapter renders his former analysis of the ‘sticking points’ moot. My list of guarantees simply try to do justice to his empirical chapter better than he has been able to do.

²⁵ For a political and intellectual history of nominalism, see de Libera, A.. La querelle des universaux. De Platon à la fin du Moyen Age. (1996) Paris, Le Seuil.

above, what is so crucial in the accounting proper to constructivism is to be able to differentiate good and bad construction —and not to be stuck for ever in the absurd choice : is it or is it not constructed ? Although the philosophical tradition has separated the moral question of the ‘good life’ from the epistemological one of the ‘common world’, it is just a question of which common world is *best* and how it can be shared as *one* which occupies the stage when the subtle discourse of practice is foregrounded.²⁶ This is where the *composition* of the common world takes its meaning and what has been expressed from the Greeks onward by the word *cosmos* —by opposition to *kakosmos*.²⁷ The quest of the common world cannot even begun to be raised when an opposition is drawn between an ‘unconstructed’ world already there, already unified, devoid of values, on the one hand, and a ‘constructed’ motley of conflicting social or subjective value claims, on the other. Simply to ‘be there’ is not enough for matters of fact to be absorbed, associated, digested, rendered compatible with other conflicting claims : they have to be composed, they have to become instead *state of affairs*.²⁸

The idea of my (very rough) list is that it should now be possible to compare propositions entering the common arena —the new public space— to check if they lead toward a strengthening or a weakening of those five guarantees *taken together*. My claim is that this list allows a much more efficient classification than the scoring system proposed by Hacking (p.199).²⁹ For lack of a better term (I’d like to introduce ‘compositionism’ but it has no pedigree), I wish to retain the word ‘constructivism’ for the propositions that foot the bill and either ‘naturalism’ or ‘deconstruction’ for that who fail to fulfill them —the former because it maximizes the first guarantee while being indifferent to the others, the latter because it sticks to the second and fifth guarantee but minimizes the others. I am prepared to abandon the term completely, as long as a new one is used to describe the constitutional order that I have wished to describe with this embarrassing word. Any term will do as long as it can allow me to designate something which a) has not always been around, b) which is of humble origin, c) which is composed of heterogeneous parts, d) which was never fully under the control of its makers, e) which could have failed to come into existence, f) which now provides occasions as well as obligations, g) which needs for this reason to be protected and maintained

²⁶ Stage 2 and 3 of Hacking’s list aims at this when they transform the contingent history of X, stage 1, into what ‘is bad’ and ‘should be discarded’, but they abandon the fourth guarantee as well as the third since *their* world, the one promised by ‘revolution’, is exactly as uncomposed and as unnegotiable as the one they want to replace.

²⁷ The conditions under which the fact/value distinction could be replaced by another set of two questions : what entity should we take into account ? how can they be associated ? is the main object of *Politiques de la nature* op.cit.

²⁸ To register the differences between two tradition of empiricism and the two stages in political epistemology they imply, I trie to give a technical meaning to the difference in English between matters of fact and state of affairs.

²⁹ With which I am simply unable to grade myself although I am one of the guinea pigs of his book —and with which it would be impossible, in my view, to score Hacking’s own chapter on dolomites...

if it is to continue to exist. Too many traits, I confess, for one poor little word — and one ending with this rather damning postfix ‘-ism’.

If only constructionism and deconstruction could part company

The reason why my solution will most probably fail is not only because its usage raises the red flag for science warriors (I still think that they can be reassured),³⁰ but because of its much more dangerous association with *de*-construction.³¹ Even though the prefix ‘*de*’- should be enough to indicate that it goes exactly in the opposite direction, the critical spirit will always hold back its ironical head and exclaim with glee: “If X is constructed, then I can easily ‘deconstruct’ it to dust”. The relation seems as inevitable as the ecological one between prey and predator. When the word ‘construction’ is uttered, instead of immediately looking for which tools and resources would assure its upkeep and maybe even restore the built structure, the Big Bad Wolf chomps his deconstructionist jaws in eager anticipation. The reason is that critical minds share at least one thing with fundamentalists, their harsh enemies: they too believe that if something is built, that alone is a proof that it is so weak that it should be deconstructed until one reaches the ultimate ideal they all share, namely what has not been built at all by any human hand.³²

Deconstruction meanders down a steep slope that constructionism — or compositionism — tries to ascend by painful zigzags. How strange that these two movements get confused when their goals are so different. It is true that viewed from above and afar they look alike since they both greatly diverge from the straight line fundamentalists always dream to trace. Both insist on the inevitable tropism of mediations, on the power of all those intermediaries that make impossible any *direct* access to objectivity, truth, morality, divinities, or beauty. Resemblance stops there, however. Deconstruction goes downhill to avoid the peril of presence, compositionism goes uphill to try to catch as much presence as possible. One behaves as if the main danger was for words to carry *too much* meaning, the other fights to wring out as much reality as possible from the fragile mediators it has painfully assembled. If the former meanders so much it is because it has to constantly *delay* saying something, while the other strives for rectitude and is diverted only by the extreme steepness of the slope it tries to *ascend*. One tries to flee as far as possible from the face of the God it wishes to erase, the other knows there is no face of God, and thus nothing is to be erased. A face is to be produced

³⁰ This is at least what I have attempted in (1999). *Pandora's Hope. Essays on the reality of science studies*. Cambridge, Mass, Harvard University Press.

³¹ It is interesting to notice that there is one explicitly deconstructionist, even Derridian, architect, Daniel Liebeskind, but even a quick visit at his moving, claustrogene and magnificent Jewish museum in Berlin is enough to show that he too is, first of all, a constructivist, and a master one at that.

³² On this *acheropoietic* dream see the articles by Galison, Koerner, Mondzain in *Iconoclasm. Beyond the Image Wars in Science, Religion and Art*. B. Latour and P. Weibel. Cambridge, Mass, MIT Press

instead, to be painted and repainted through as many non mimetic re-productions and representations as possible.³³

Deconstructionists behave much like those illustrious French generals who were always one war late : they fight an old battle against naïveté, immediacy, naturalization as if intellectuals still had to free the masses from too much belief. Have they not realized that critical minds have long died from an overdose of disbelief? The miniaturization of criticism, like that of computers, has cheapened doubt so much that now every one, with no effort, can doubt the strongest and most entrenched certainty, deconstruct the most solid and high standing building at no cost —any box cutter will do. Why are they so slow to realize that the diffusion of conspiracy theory has taken the place of the ‘naive confidence in authority’; that this expanded, popularized and cheap revisionism has pushed criticism to mutate into its exact opposite, which one could call ‘naive diffidence in authority’ or ‘critical barbarity’.³⁴ By contrast, compositionists do not have to debunk belief, but rather to slowly produce confidence again. They don’t see naïveté as the ultimate sin, but as a refreshing virtue to be regained with great pain. They don’t jump to their gun when the word ‘certainty’ is uttered, since they know what price has to be paid to produce a little bit of this most precious ware.

To convince the critically minded that constructivism means our only slow and progressive *access* to objectivity, morality, civil peace and piety, and that, for this reason, all the subtle mediations of practice, should be *protected* and cherished instead of being debunked and slowly destroyed, would require such a deep alteration in our intellectual ecology that it is hard to see how it would come about.³⁵ And yet, this first move would be necessary if the next one, even more problematic, is to be attempted : namely to convince fundamentalists that the idiom of constructivism might provide them with more solid and durable guarantees for preserving the values they all too quickly are ready to die for. How long will it be before the word ‘construction’ does not sound either like an insult to be repaid in blood or like a confession of weakness inviting deconstruction ? How long will it be before the word is heard not as a war cry to take up arms or hammers, but as an appeal for the extension of *care and caution*, a request to raise again the question : “How can it be built *better* ?” ?

³³ See Koerner, J. (2002). The Icon as Iconoclasm in op.cit. 164-214.

³⁴ I don’t think it is a coincidence that these two critical barbarities have struck the World Trade Center one after the other: the first by destroying it to rubble, the second, adding insult to injury, by claiming that it was the deed of victims themselves, helped by the CIA or the Mossad... But it is Baudrillard who has the honor of putting the last nail in the coffin of criticism: has he not claimed that the Towers, ‘icons of a self destroying capitalism’ (Mr. Bin Laden *dixit*), had deconstructed *themselves* by attracting passing planes to commit suicide?... ((2002) *L’esprit du terrorisme*, Galilée, Paris). One can only hope that this ultimate gesture, this ultimate self-destruction of nihilist thought about a nihilistic act of self-destruction, will be the last gasp of critical barbarity.... History shows, alas, that nihilism has no bottom.

³⁵ The exhibition *Iconoclasm* —see op.cit. for the catalog— was, in my view, such a small effort at a local ecological alteration in the gardens of our prejudices.

To finish with a quizz (in the spirit of Ian Hacking's scoring system), I propose the following test :

“When you hear that something you cherish is a ‘construction’, your first reaction is (check the right circle):

- to take a gun
- to seize a hammer
- to erect a scaffold

Answer: If you checked the first, then you are a fundamentalist ready to annihilate those who appeal to the destruction of what remains strong only if it is unconstructed by human hands ; if you ticked the second, then you are a deconstructionist who sees construction as a proof of weakness in a building that should be pressed to ruins in order to give way to a better and firmer structure untouched by human hands ; if you checked the third, then you are a constructivist, or, better, a compositionist engaged at once in the task of maintaining and nurturing those fragile habitations ; if you ticked them all, then you are hopelessly muddled...”