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I have been always most moved by those whose views I have ended up opposing. I say ‘ended up’ because the views are typically ones in which I originally invested considerable study and interest. But then a version of the ‘familiarity breeds contempt’ principle sets in, and my intellectual immune system generates antibodies that ward off later, more virulent strains of such thinkers’ thoughts. So fortified, I welcome the opportunity to reflect on the significance of Kuhn (1962) and Latour (1987), who have been influential figures in my thinking about science and technology studies (STS) ever since I began to encounter the field as a graduate student in the early 1980s. In fact, I had read *The Structure of Scientific Revolutions* (SSR) as part of Columbia University’s required general education course, ‘Contemporary Civilization’, in 1976. As for Latour’s work, I first read *Laboratory*

Life in Mary Hesse's M.Phil. seminar at Cambridge in 1980, and I remember purchasing my copy of *Science in Action* (SIA) in the Brunel University bookshop shortly after it came out in 1987. I had been there, I believe, courtesy of early Latour collaborator Steve Woolgar. The trip also coincided with the founding of the journal *Social Epistemology* at the Taylor & Francis headquarters in London. In both cases, my first impression was very favourable – in a way that did not extend to the rest of their works.

My attitude towards Kuhn and Latour and their role in the development of this field has changed in subtle ways over the past quarter century, corresponding to the shape that 'the new production of knowledge' (Gibbons et al., 1994) has taken in the aftermath of the Cold War. However, in retrospect I must say that I have been surprised – and disappointed – at the role that their two books have played in short-circuiting the normative impulse in the STS disciplines, including even the philosophy of science. Asked back in 1987, just when 'social epistemology' was being launched as an unapologetically normative project, I would have expected that by 2012 both *SSR* and *SIA* would be regarded as having provided useful historically and sociologically inspired correctives to the dogmatic simplicities of what was then called the 'received view' of the philosophy of science (Suppe, 1977) – but that in the end STS would consolidate as the successor discipline to the philosophy of science, a normative interdisciplinary metascience of the sort I articulated in my book *Social Epistemology* (Fuller, 1988).

Of course, nearly the exact opposite happened, something that I had seen by the time I wrote *Thomas Kuhn* (Fuller, 2000), which while officially about *SSR*'s impact also

includes a substantial discussion of Latour's ascendancy (chap. 7). *SSR*'s and *SIA*'s continuing influence illustrates beautifully the need for a reflexively applied social epistemology as a propaedeutic for any intellectual progress. To be sure, Kuhn lacked it, which may explain why he was unable to deal creatively with his success. In contrast, Latour (I believe) has understood the context of his reception quite well, though of course it does not follow that he has responded as I would like! In any case, the basic social epistemological point remains: you need to understand why such books by such persons at such times had so much influence in order to escape their spell.

Given the entrenchment of neo-liberal sensibilities since the publication of my book *Thomas Kuhn* (2000), I would now stress that *SSR* had been already warping normative sensibilities for more than a decade before the end of the Cold War. Here I allude to the 'finalization' movement of German social theorists under Jürgen Habermas when he directed the Max Planck Institute for the Study of Living Conditions in the Technoscientific (*wissenschaftlich-technischen*) World (Schaefer, 1984). They glossed Max Weber's autonomy of academic inquiry (as protected by tenured university employment) as Kuhn's self-organization of disciplines (as defined by the dominant paradigm). Whereas the former was meant to be comprehensively self-critical, the latter reduced criticism to troubleshooting. It left the impression that any substantial reorientation of scientific effort would have to come from outside science itself, because, following Kuhn, the finalizationists believed that science left to its own devices would continue to pursue technical puzzles increasingly removed from the outstanding problems of the human condition. As followers of Karl Popper quickly recognized, in the hand of the finalizationists, the role of 'criticism' had

morphed from being a defining feature of science's self-improvement to an external force to serve specific interests – first of the social democratic state and then (after 1989) of the more diffuse neo-liberal social order. The latter came to be championed as 'the new production of knowledge' (Gibbons et al., 1994), in terms of which market-sensitive 'mode 2' knowledge was now presented as an antidote to the paradigmatic rigidities of 'mode 1' knowledge (Weingart, 1997). *SSR* facilitated the smooth transition by casting scientists as natural born dogmatists whose single-mindedness inclines them to run their paradigms into the ground, absent the intervention of some relatively disinterested parties – be it the state or a client pool – capable of checking for diminishing returns on scientific investment.

The logical next step was to undermine altogether the ontology underwriting the internal/external distinction vis-à-vis science. That strategy, championed by Latour, turns science (or, more precisely, 'technoscience') into multiple, partly overlapping, heterogeneous networks consisting of agents (including the state) that, depending on context, can be either producers or consumers of scientific knowledge – in a word: a market, if not *the* market. In such an environment, 'science' is simply the name given to the most extended network. To be sure, this captures the general intuition that for many years we have lived in a world that has become 'scientised' to its core (Fuller, 2006: chap. 5). Yet, Latour's version of this insight loses – and encourages his readers to forget – the normative sensibility that lay behind the desire to keep science, in some sense, 'autonomous' from the rest of society, even if its own practice has failed to live up to that ideal. (My own social epistemology takes off from this point.) As a result, STS has tended to discount the idea of science as a profession or an institution, the two main categories in terms of which the classical sociologists Emile Durkheim and

Max Weber – and their main followers, Robert Merton and Joseph Ben-David – were inclined to see it. Indeed, a recent STS book on the ‘scientific life’ goes so far as to argue that the ideal of autonomous science is a figment of the social scientific imagination that reflects social scientists’ own historic anxieties about epistemic legitimacy that were never shared by more confident and free-wheeling natural scientists (Shapin, 2008).

So how did Kuhn and Latour manage to get us to this state of normative meltdown, whereby science appears to be everywhere and nowhere at once? The basic move was to deny that ‘science’ refers to a way of seeing the world, or even a univocal idea. In a manner not unlike what happened to the concept of species after Darwin, ‘science’ no longer refers to a type of knowledge distinct from other types but to a population of knowers who know other things too. To be sure, this was most definitely not Kuhn’s own view but it turned out to be a long-term unintended consequence of perhaps the most admirable feature of the story of *SSR*’s ascendancy, namely, the intellectual matrix in which the book was conceived. Kuhn was the teaching assistant of Harvard President James Bryant Conant, who designed a ‘general education in science’ curriculum in the wake of the Second World War, during which science scaled up in unprecedented ways that at once raised, if not exaggerated, people’s hopes and fears (Fuller, 2000: chaps. 3-4). Drawing on teachers from across the university, Conant’s strategy was to train introductory level non-science students to discern invariant features of the scientific mindset in practices as diverse as rolling balls down an incline plane and smashing atoms together in a cyclotron. He dubbed such discernment ‘science connoisseurship’. The point would be to normalise science within the legacy of Western civilization – as opposed to allowing science to loom as

a threat to civilization, as many humanists, clerics and ordinary members of the public were prone to see the matter after Hiroshima. Indeed, Conant wanted humanists, who were the bulk of these students, to become actively engaged in the future of science, just as they might any other aspect of public life.

It might be said that, after Kuhn and Latour, three assumptions underlying Conant's pedagogical project have been systematically, if not perversely, deconstructed: (1) Harvard trains tomorrow's elites, so they (not necessarily others) should learn the scientific backdrop of our civilisation, because they will be the ones in control of our future; (2) only professional scientists know how to do science, but that is radically different from understanding what science should be for, a topic fit for elite humanists; (3) despite the institutional changes to science over the centuries, a core scientific mentality remains intact and needs to be preserved. In each case, a key binary has gone by the wayside, as STS's deconstructive mode takes the necessary interaction between two terms as revealing their essential indistinctness: respectively, elite vs. mass, scientist vs. non-scientist, science vs. non-science. It is the dissolution of the third binary that concerns me most here.

It is common to locate Kuhn in the intellectual lineage that derives from William James's talk of 'conceptual frameworks' in guiding scientific inquiry, which was subsequently developed in more analytic terms by his student C.I. Lewis, who chaired Harvard's Philosophy Department in Kuhn's undergraduate days. Lewis may have even been the source of Kuhn's famous example of the Copernican Revolution as involving incommensurable world-views (Fuller, 2000: chap. 6). Conant, though more experimentally minded than these philosophers, continued to treat scientists'

conceptual frameworks as basically their cognitive horizons. Thus, experiments were important primarily as a means of testing hypotheses generated from an overarching theoretical perspective. Kuhn's decisive break with Conant was less to do with 'collectivising' conceptual frameworks as 'paradigms' (as in the ritualistic invocations of Ludwik Fleck's 'thought-collectives') than with downplaying their cognitive character in favour of a form of knowledge even more practical and embodied than that proposed by Harvard's own pragmatists. than that proposed by Harvard's own pragmatists.

The primacy of 'tacit' over 'explicit' knowledge nowadays marks this transition, which the Edinburgh School amplified with readings of Michael Polanyi and the emerging literature in cultural anthropology (e.g. by Mary Douglas) that stressed meaning-making as the patterned movement of bodies in space and time. In that case, science is not an idea shared by, say, everyone working in a laboratory. On the contrary, scientists may hold quite different ideas about what they are doing. However, science is whatever turns out to be the emergent product of their harmonised interactions. It is then just a short step to reach the trademark Latourian conclusion that the very idea of science is the effect – not the cause – of scientific activity. Harry Collins has tried to arrest this intellectual slide by reinventing a relatively autonomous normative sphere of science within post-Kuhnian practices, called 'expertise' (e.g., Collins and Evans, 2007). But it captures only part of the classical concept of autonomy, which in the case of science pertained not only to its technical distinctness from other forms of knowledge but also its supervenience over them and, most importantly for my purposes here, the self-directed character of its pursuit – the original legal aspect of academic life that was shared with the trade

guilds as medieval ‘corporations’ (*universitates*). This particular omission reflects a telling concession to Latour.

Indeed, in light of STS developments over the quarter century since the publication of *SIA*, I would put the point more strongly: Latour has effected a transfiguration of values whereby the very idea of wanting to keep science somewhat autonomous from society is nowadays demonised as a refusal to recognise science’s dependency on the rest of society – and nature. In a bit of Latourian Anti-Enlightenment Newspeak, ‘independence of mind’ has come to mean ‘negligence of matters of concern’ (Latour, 2004). Instead of aiming for an ideal (e.g. ‘Truth’ or some other endpoint of progressive movement) that regards the stuff before our senses as more-or-less means to this greater intellectual end, we should focus directly on our need for things as part of the never-ending quest to strengthen our networks. Latour (1988) has called this position ‘irreductionist’, but that too is Newspeak: the entities proliferated in the name of populating an ‘ecology of concern’ are of equal relevance to the maintenance and extension of the ecology’s constitutive networks. Here Latour suggestively extends the ecologist’s habit of treating all life-forms as ‘living’ in exactly the same sense – but now to cover all *created* beings, not least human artefacts. As a result, the human organism loses any superior vantage point but is itself always in danger of dissociation from the environment in its quest for some spurious sense of self-purification or ‘transcendence’. I would have thought that such a dogged attempt to tether everything to the same ontological plane, flattening any prospect of a meta-level perspective, is rightly called ‘reductionist’. But I seem to be in a minority (Fuller, 2007: chap. 3).

Most recently, a vulgarised version of the Latourian sensibility has planted the seeds of a counter-narrative of the history of Western culture – Luddism’s anti-intellectualist evil twin, as it were – that blames our failure to exploit science and technology’s full potential on a disdain for palpable things in the name of abstract ideas (Ferris, 2011). On this reading, ideas do not steer but block our access to things. Rather than enabling us to be receptive to what the world has to teach us, ideas censor how and what we communicate. What ‘intellectuals’ – not least Karl Marx – extolled as the capacity of ideas to provide unity amidst diversity, ‘engineers’ (the name given to the preferred position) disregard as simply an excuse not to study how things work in practice. What is perhaps most striking about this way of putting things is Marxism’s shift to the ‘intellectual’ side of the intellectual/engineer binary. After all, a half-century ago, as the writings of Bernal, Popper, Polanyi and Hayek could testify, the big hope/threat of Marxism was its ‘engineering’ potential with regard to social and even scientific affairs. What has changed in the interval is a downsizing of the engineer’s teleological ambitions to ‘tinkering’, which in turn reflects a shift in overall metaphysical sensibility from ‘determinism’ to ‘indeterminism’ – that is, from global to local teleology, from the reason of state to the wisdom of crowds.

To be sure, Latour was hardly alone in promoting this shift in world-view. In France itself, which since the days of Napoleon and Saint-Simon had treated the top-down civil engineer as a national hero, the change had been already signalled within the scientific elite. While Latour was conducting his original ethnography of Jonas Salk’s biomedical laboratory in San Diego, a striking piece appeared in *Science* by the Nobel Prize-winning molecular biologist, François Jacob, who made a point of openly endorsing natural selection as an account of evolution (heretofore not a popular move

in France) and then explicitly comparing its *modus operandi* to that of a tinkerer – as opposed to an engineer – a distinction he drew from Claude Lévi-Strauss’s influential characterisation of ‘the savage mind’ (Jacob, 1977). Wittingly or not, Jacob anticipated Latour’s later work by treating the modern top-down ‘engineering’ mentality as an aberration that perhaps marks our humanity but is nevertheless ultimately subject to the rule of nature. I say ‘wittingly or not’ because the spirit of Jacob’s piece appears to be that our modernist engineering capacities might improve upon nature’s endless tinkering, whereas Latourian narratives seem never to present that prospect. Instead, they suggest simply redistributing agency across ever-extending networks to accommodate new entities. Admittedly, for recent recruits to the neo-liberal academic labour market, such narratives are bound to prove attractive. But to me, this suggests that to promote a metaphysical horizon more conducive to a progressive scientific ideology, we must start by securing an institutional basis for autonomous inquiry that might encourage young academics to think of themselves as inhabiting a ‘progressive’ world.

References

- Collins H and Evans R (2007) *Rethinking Expertise*. Chicago: University of Chicago Press.
- Ferris T (2011) The world of the intellectual vs. the world of the engineer. *Wired*, 3 October.
- Fuller S (1988) *Social Epistemology*. Bloomington IN: Indiana University Press.
- Fuller S (2000) *Thomas Kuhn: A Philosophical History for Our Times*. Chicago: University of Chicago Press.

Fuller S (2006) *The Philosophy of Science and Technology Studies*. London:

Routledge.

Fuller S (2007) *New Frontiers in Science and Technology Studies*. Cambridge UK:

Polity.

Gibbons M, Limoges C, Nowotny H, Schwartzman S, Scott P, and Trow M (1994)

The New Production of Knowledge. London: Sage.

Jacob F (1977) Evolution and tinkering. *Science* 196 (4295): 1161-1166.

Kuhn TS (1962). *The Structure of Scientific Revolutions*. Chicago: University of

Chicago Press.

Latour B (1987) *Science in Action*. Milton Keynes UK: Open University Press.

Latour B (1988) *The Pasteurization of France*. Cambridge MA: Harvard University

Press.

Latour B (2004) Why has critique run out of steam? From matters of fact to matters of concern. *Critical Inquiry* 30: 225-248.

Schaefer W (ed.) (1984) *Finalization in Science*. Dordrecht: Reidel.

Shapin S (2008) *The Scientific Life: A Moral History of a Late Modern Vocation*.

Chicago: University of Chicago Press.

Suppe F (ed.) (1977) *The Structure of Scientific Theories*. Urbana IL: University of

Illinois Press.

Weingart P (1997) From finalization to Mode 2: Old wine in new bottles? *Social*

Science Information 36 (4): 591-613.

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Comment [ML1]: Complete a brief bio. For these comments, we're asking for very brief bios, just a sentence or two.

2.0: What It Means to Be Human Past, Present and Future (Palgrave Macmillan, 2011). He is completing a history of epistemology, to be published in 2013.