

CAN SCIENCE SURVIVE ITS DEMOCRATISATION?

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ABSTRACT: The question in the title is addressed in three parts. First, I associate the democratisation of science with the rise of 'Protscience' (i.e. 'Protestant Science'), which pertains to the long-term tendency of universities to place the means of knowledge production in everyone's hands, thereby producing universal knowledge that is also universally spread. Second, I discuss how the current neo-liberal political economy of knowledge production is warping the ways that universities deal with this long-term tendency. These include: the segmentation of research and teaching; the alienation of the student constituency; the lack of incentive to defend the university. I then discuss strategies for addressing the resulting deformities and re-building solidarity within the knowledge producing community. These include the establishment of a student-based co-curriculum and the introduction of employee ownership policies to the university as whole. Third, I reprise the entire argument by focusing on the economic challenges facing the integrity of the university and knowledge as a public good. Some of these arise from Protscience itself and others from the neo-liberal environment that it inhabits. But in any case, it is important that the democratisation of science is not reduced to its marketisation.

KEYWORDS: protscience, public good, university, democratic science, neo-liberalism

1. The Democratisation of Science and the Rise of Protscience

There are four general senses in which science is inherently democratic. However, it is not clear that all of these senses are mutually compatible.

(1) Science is 'universal knowledge' in the strict sense, which it to say, it covers all things for all people. This is the spirit in which the so-called reductionist impulse in modern philosophy – most clearly associated with both 19th and 20th century positivism – should be understood. The appeal to reason and observation (or logic and experiment) in Comte was designed to demystify theology's epistemic authority. In Vienna Circle, it was designed to demystify lay expertise. Moreover, the latter positivism was dedicated to correcting the excesses of the former positivism, since Comte would have science become the new church –

instead of preventing the rise of new churches. Karl Popper's 'science as the open society' was a radical expression of this sentiment.

(2) Even though until relatively recent times the university has been populated by elites, the *modus operandi* of the university has been 'democratic,' given the mandate to integrate original research with mass teaching. Thus whatever initial advantage is gained from an innovative piece of research is minimised if not eliminated once it is made available for more general consumption in the classroom. In this respect, teaching may be seen as *epistemic entrepreneurship* in the Schumpeterian sense of being engaged in the 'creative destruction' of expertise by enabling students to spend less effort than their original researchers did when they first acquired the same knowledge.¹ The textbook is the great symbol of this process, and not surprisingly its introduction across the sciences in late 19th century Germany corresponded with rapid nation-building ambitions.

(3) There is also the inherently 'democratic' nature of the scientific role or personality. This can be understood in three separate senses: (a) universal subordination to a common disciplinary ideal or paradigm (i.e. all scientists are equal in their search for truth, implying similar capacities for insight and error); (b) each person's equally individual embodiment of universal knowledge (i.e. the Romantic German ideal of *Bildung* championed by Goethe); (c) collective production and ownership of knowledge as a public good, which implies that there is scientific standpoint, in principle accessible to everyone, that can be used to govern society (i.e. the ideal common to positivism, utilitarianism and dialectical materialism). These three senses of 'democratic' correspond to the 19th century self-understanding of science in, respectively, Britain, Germany and France.²

(4) Finally, there is what may be the most important intellectual development of the past decade – the rise of what I have called 'Protscience,' short for 'Protestant science.'³ By 'Protscience' I mean a pattern evident in the parallel ascendancies of, say, intelligent design theory, New Age medicine and Wikipedia. Nowadays the Protestant Reformation of 16th and 17th century Europe is taught as

¹ Steve Fuller, *The Sociology of Intellectual Life: The Career of the Mind in and around the Academy* (London: Sage, 2009), chap. 1.

² Steve Fuller, *Science: The Art of Living* (Durham: Acumen, 2010), chap. 3.

³ The term was coined in Fuller, *Science: The Art of Living*, as an extension of the 'secularisation of science' thesis initiated in Steve Fuller, *Science* (Milton Keynes: Open University Press, 1997) and in Steve Fuller, *The Philosophy of Science and Technology Studies* (London: Routledge, 2006).

an important episode in the history of Christianity, but it also marked the first concerted effort to democratise knowledge production in the West by devolving religious authority from the Church of Rome. This is perhaps the strongest institutional legacy of ‘secularisation.’ We are now entering the second such period, consisting in the devolution of scientific authority. I shall explore this point below.

The printing press was crucial to the first rise of Protestantism as both a convenient and lucrative medium for people to acquire the cognitive resources needed to decide for themselves what to believe, and thereby no longer simply defer to the local priest. Indeed, starting with the Bible itself, books became big business once they were published in the vernacular and in a portable form that allowed for easy circulation. This tendency accelerated during the Enlightenment, and is normally credited for the comprehensive liberalisation of Western culture.⁴

Over the past quarter-century, a new wave of vernacular publishing has been made possible by computer-based information technologies – from web searches to social networking sites. Its impact on the distribution of epistemic authority in society is palpable, though its long term consequences are unclear. However, one thing is certain, namely, that the old institutional solutions for managing the diversity of opinions and claims to legitimacy in the first rise of Protestantism – the secular state and the scientific method – are themselves undergoing a ‘crisis of legitimation.’

These old solutions were originally designed to resolve potentially violent disputes among the different and often competing interpretations, applications and extensions of the biblical message. In this respect, regular elections and controlled experiments have functioned similarly. Moreover, as the state came not merely to protect but also to promote the welfare of its citizens in the 19th and 20th centuries, science became increasingly implicated in – and defined by – the state’s workings. Thus, scientific elites are now the high priests of the secular state, the source of admonitions related to health and the environment that can end up having a strong bearing on public policy.

⁴ Robert Wuthnow, *Communities of Discourse: Ideology and Social Structure in the Reformation, the Enlightenment and European Socialism* (Cambridge: Harvard University Press, 1989).

Protscience challenges such close state-science ties, not least because the force of scientific authority tends to be wielded in institutions that are unaccountable to those they would govern. But this time the relevant agencies are national academies of science and academic journals that marginalize, if not ignore, the views of the people whose lives would be regulated, while at the same time expecting automatic deference to their authority. Protscience aims to re-jig the balance of epistemic power, so that, say, a doctor treats a patient in her clinic more like a client who needs to be sold to than a machine that needs to be fixed.

To be sure, 'Protscientists' are convinced of science's integral role in their own lives. For that very reason, they insist on taking an active role in determining how that integration occurs. Thus, they take soundings from alternative, often internet-based sources and supplement the methodological uncertainties of all scientific research with their own experience and background beliefs. But perhaps most importantly, Protscientists uphold their right to decide scientific matters for themselves because they are the ones who principally bear the consequences of those decisions. This results in a pick-and-mix approach to science that retains the vast majority of accepted scientific fact and theory while giving them a curious spin in light of distinctive explanatory principles and life practices.

Interestingly, just as the original Protestants were demonised by Catholics as 'atheists' for their refusal to defer to papal authority, today's Protscientists' are denounced as 'anti-science.' In both cases, however, the people concerned are generally well educated and quite respectful of the need to provide reasons and evidence for their beliefs. Not surprisingly, then, Protscientists make much of the hypocrisy of established authorities that fail to live up their own avowed epistemic standards. Any report of scientific fraud is grist for the Protscience mill, yet one more reason to take matters of knowledge into one's own hands before the entire enterprise of inquiry becomes corrupt.

It is characteristic of Protscience to valorise the 'placebo effect' in medicine.⁵ Protscientists are well aware of tradeoffs involved in relying on clinical trials: Their ability to determine the exact physical effects of novel drugs and treatments is offset by complexities in the likely contexts of use, where the patient's lifestyle, frame of mind and relationship to the attending physician may enhance, diminish or simply alter the predicted effects. Indeed, drugs and

⁵ Dylan Evans, *Placebo: Mind over Matter in Modern Medicine* (London: Harper Collins, 2003).

treatments that fail to be robust under variable real world usage have done more harm than, say, homoeopathy and other forms of complementary medicine whose practices involve physically inert substances coupled with psychological uplift from the physician. Unsurprisingly, so-called scientific medicine clearly starts to outperform complementary medicine only in the final third of the 19th century, when hospital clinics come to be regularly used as test sites for new drugs and treatments.⁶

The Protestant Reformation was the first step on the road to the secularisation of Europe, which Max Weber famously described as the ‘disenchantment’ of the Western mind. Protoscience’s relationship to this process is ambiguous, as it both disenchants scientific authority and re-enchants science itself as a life-shaping form of knowledge. At the very least, Protoscience takes very seriously the idea that any form of knowledge that would claim universal scope for its claims must have universal appeal for its believers. In more fashionable language, it involves the reflexive shaping of self and world to enable one to live – or die, as the case may be – with whatever one happens to believe.

2. The Challenge to the University as a Challenge to Science Itself

That the nature of science is integrally tied to the organization of the university is an idea most closely associated with German Idealism, starting with Kant’s 1798 essay, ‘The Contest of the Faculties,’ which was subsequently addressed most directly in the corpus of Fichte, Schelling and Hegel. However, the contest is rooted in the rivalry between the Masters and the Doctors in the original medieval foundation of the university. The Masters treated the university as a ‘finishing school’ in the most exalted sense, one that resulted in the completion of *Homo Sapiens* as a full-fledged human being capable of speaking and acting for oneself so as not to have to defer to authority. In contrast, for the Doctors the university was a professional school, whereby students acquired the expertise needed to command authority over the minds (theology) and bodies (medicine) of others. From the Masters came the critical side of the university; from the Doctors came its dogmatic side. In more contemporary terms: *science as process* as opposed to *science as product*. If either side is allowed to dominate, the result is that the university is no longer an epistemic regime but a purely political one – either democratic (*a la* Masters) or authoritarian (*a la* Doctors).

⁶ David Wootton, *Bad Medicine: Doctors Doing Harm since Hippocrates* (Oxford: Oxford University Press, 2006).

What sets the university apart from other organizations is its claim to integrate research and teaching within one administrative framework. The principled reason for integration is easy to state: It's the only way that knowledge becomes a public good – that is, something of potential benefit to everyone, not simply those involved in its original production. Knowledge would remain private, or at least restricted to 'peers,' were universities not in the business of making it generally available. This happens normally in the curriculum committee, the site for translating research into teaching.

Yet students apply to study disciplines, while research is funded along interdisciplinary lines. The activities surrounding research and teaching require different facilities, resources and skills. They are also subject to different patterns and rhythms of work, all of which are evaluated differently. So why, then, should the same organization engage in both research and teaching? Clear and imaginative answers to this question are needed – and soon – for universities to justify their continued existence. The university's distinctiveness, especially since Humboldt's re-branding of the institution 200 years ago, has rested on its claim to integrate the two activities under one administrative framework. Universities are under increasing pressure to separate research and teaching.

Nevertheless, if universities do not remain committed to the integration of research and teaching, then it is not clear (a) whether they deserve to be called 'universities' and (b) whether they can effectively compete in a world where research and training are increasingly done by separate organizations. The 'value-added' that universities routinely claim comes from putting together research and teaching cannot be taken for granted but needs to be actively demonstrated. Moreover, even if the integration of research and teaching can be justified in principle, there is still the not-so-simple matter of how to put it into practice. Let's take each in turn.

The principled reason for integrating research and teaching is easy to state: It's the only way that knowledge becomes a *public good* – that is, something of potential benefit to everyone, not simply those involved in its original production. By calling knowledge a 'public good,' I mean to stress that it is a distinct type of good that is uniquely produced by universities by rendering research teachable. Knowledge as a 'public good' in this sense is not a natural outcome of how knowledge is normally produced. 'Epistemic publicity' is a form of immunity that the body politic needs to produce – much as an organism needs to generate

antibodies against invading microbes – lest research be captured by those who first happen upon it, resulting in what economists of technological innovation call ‘path dependency.’⁷

Research is an inherently elitist activity that drives people to discover things that put them ahead of the pack. This prospect makes research a strong attractor for ambitious funders, clients and, of course, academics. But left at that point, research is simply intellectual property, the generation of which does not require universities. Universities really come into their own by mandating that research be taught to a broad range of students – and not only future researchers. In this way, new knowledge becomes a vehicle for democratising society as opposed to simply reproducing existing hierarchies, which is arguably a by-product of intellectual property regimes that reinforce a strong distinction between the ‘knows’ and the ‘know-nots.’ In this respect, the soul of the university is to be found where the translation of research into teaching occurs – *the curriculum committee*.

All of this may sound fine in principle, but there are problems in practice. I shall focus on three contemporary ones, with my proposed ways forward: (1) the segmentation of research and teaching; (2) the alienation of the student constituency; (3) the lack of incentive to defend the university.

First, as universities respond to an increasingly segmented market for teaching and research, it matters less whether the same person is equally adept at both. The main losers here are the students, who are left with few exemplars of people capable of making their ideas and findings accessible and relevant to the larger society. What can be done to preserve the university’s ‘enlightenment’ function? I would argue that even if every academic cannot be both researcher and teacher, teachers should be granted adequate study leave to update the content of their courses. But this is only a stopgap measure against a longer term migration of academics into journalism and consultancy, fields from which we should expect more direct challenges to the legitimacy of academic research in the future.

⁷ Steve Fuller, *Knowledge Management Foundations* (Woburn: Butterworth-Heinemann, 2002), chap. 1.

Second, the increasingly acrimonious debate over student fees – currently very prominent in the UK but likely to spread across the welfare states – threatens to alienate academia’s natural ambassadors and best marketing tool. The US dominates the world’s academic scene largely because of its lifelong commitment to its students, the ‘alumni’, who reciprocate with generous gifts to their ‘alma mater,’ typically for reasons relating to their experience as students – not for whatever job qualifications they received with their degree.⁸

The original universities were places where people were finished rather than fixed, more akin to churches than hospitals, in the sense that one wants to go to the former but is forced to go to the latter. The university can reconnect with its church-like character as an extended community by taking advantage of the so-called *co-curriculum*. The co-curriculum consists of the strictly extra-curricular activities that students pursue, typically under the auspices of the student union, that allow them to integrate their academic and non-academic interests into a seamless whole that they carry over into the rest of their lives. These societies and clubs are especially prominent, and sometimes extravagantly funded, on US campuses.

In particular, course credit might be offered for activities that are intellectually ahead of the formal curriculum – especially in digital media, the emerging lingua franca of knowledge production as such. Students often outpace their teachers in their intuitive understanding of the practical and conceptual possibilities opened up by digital media. Here youth is an epistemic advantage in two senses – not only students’ sheer saturation in digital media but also the fact that students have been exposed to digital media prior to any formal training in how to think about knowledge production. This gives them immunity to the prejudices that academics routinely instil and reinforce in each other. In this respect, ‘co-curriculum’ may need to be redefined to mean a curriculum pursued by academics and students in equal partnership, a role comparable to that of mechanics during the Industrial Revolution. Indeed, the co-curriculum in this sense may be essential to manufacture knowledge as a public good in the future, as the need for digital preservation and curation of knowledge in pre-digital media looms larger.

⁸ Fuller, *Knowledge Management*, chap. 4.

Seen in historical perspective, from Denis Diderot in 18th century France and William Whewell in 19th century Britain, philosophers have argued for the regular incorporation of non-academic forms of knowledge (often under the rubric of ‘arts and crafts’ or ‘guilds’) into science, not simply to legitimate those forms of knowledge but to maintain the legitimacy of science as state-authorised knowledge. Put bluntly, universities would sustain their relevance by introducing normative standards into skills that can be already acquired informally, such as programming, hacking, wiki-based projects or simple blogging. Given the role that youth plays in the case of digital media, the co-curriculum may even serve to hasten the pace of social progress by enabling the next generation of leaders to dictate their agenda earlier. In any case, this is a better position from which to encourage lifelong material contributions to the university – and science more generally – than to appeal to risky claims about one’s immediate employability upon receiving a university degree.

The last – but by no means least – problem facing the future of the university as a defender of science is the gradual decline in regular academic appointments. This has enabled universities to become sites of enormous flexibility but little loyalty. They are great places to pursue one’s own (funded) projects (for a while) but not to contribute to the sorts of collective projects associated with manufacturing knowledge as a public good. Simply consider academics’ visceral hostility to university administrators, the institution’s standard bearers. This hostility then only invites the hiring of administrators who are all too willing to treat academic staff as expendable. Academic unions, despite their best intentions, have only exacerbated this tendency by encouraging academics who are not administrators to think of themselves as ‘workers’ and academics who are administrators as ‘managers.’ In this way, the unions insinuate the logic of class conflict into an organizational setting whose *raison d’être* is supposed to be self-governance.

The way forward may need to be radical. Today most talk of ‘collegial’ academic governance is nostalgic, if not downright reactionary. To walk the walk of collegiality, academics should be willing to have part of their salary paid as shares in the university’s assets in return for tenure and a say in the institution’s decision-making processes: *employee ownership*. The fundamental principle is clearly republican in nature: Autonomy requires a strong sense of collective

property.⁹ But there are many interesting difficulties with the proposal, as captured in the following set of questions: At what cost would states allow universities to become self-owned? Could academics buy and sell their shares? Would they be able to convert their shares when they moved posts (which implies that more than one university would need to move to the employee ownership model)? Would clerical staff, administrators, students and alumni count as ‘employees’ for purposes of this scheme? And what about the eligibility of ‘non-employees’ (e.g. business firms, banks, cities, private investors) interested in purchasing shares?

3. Conclusion: The Standing Economic Challenges to Democratic Science

Three specifically economic challenges face the democratisation of science in an era of Protsience:

(1) Science comes to be evaluated in the same cost-accounting terms as other large-scale public and private enterprises. This could lead to a massive shift in what are counted as the costs and benefits of scientific research. For example, science is normally evaluated in terms of very generous timeframes that ignore opportunity costs and collateral harms. Thus, a large initial investment that diverted resources from the development of other alternatives is often credited as an overall benefit because enough time is allowed to pass – which enables that initial investment to interact with other investments – so as to result in a worthwhile outcome. Moreover, whatever harms are caused along the way are presumed to have been avoidable and not a necessary feature of the investment strategy. This abstract scheme arguably captures the history of nuclear physics research since the 1930s. But even in cases where a small initial capital outlay eventually produced major benefits – as in Newton’s work did vis-à-vis the Industrial Revolution or Faraday’s vis-à-vis the electrification of world – these outcomes may have been overdetermined, such that even without Newton’s or Faraday’s particular contributions, the benefits would have happened anyway by some other means. In that case, one might query the extent to which a particular scientific theory or research programme is necessary to make ‘progress’ in the sociologically broadest sense.

(2) The idea of science as a public good has been most persuasive in terms of a Keynesian logic, whereby the benefits of scientific knowledge are seen as ‘multiplier effects’ from a relatively limited initial investment. Thus, in the

⁹ Steve Fuller, *The Governance of Science* (Milton Keynes: Open University Press, 2000), chap. 1.

welfare state's heyday, all taxpayers subsidized universities that only 10-20% of a generation's cohort would attend. It was presumed that within a generation – if not sooner – those few would produce discoveries, create businesses, open vistas, etc. that benefit everyone in society. However, once everyone is expected to attend university in order to get a job credential, taxes rise, patience shrinks and frustration and disappointment inevitably set in. Moreover, the expectation that universities are the de facto gatekeepers of the labour market means that they have not only forfeited their own autonomy to those whose success depends primarily on short-term adjustments to the market (i.e. employers) but also signalled to primary and secondary school educators that any deficiencies that they failed to address adequately will be remedied at the tertiary level (aka university). The result is 'credentials creep,' whereby more academic credentials are required to gain comparable advantage in the labour market.¹⁰

(3) To ensure that the democratisation of science does not slip into sheer marketisation, knowledge as a public good must be expressly manufactured and not simply presumed to emerge naturally. This means that what people *need* to know must be defined in terms – and driven by a standard – other than what they *want* to know. Otherwise, the value of knowledge will become a short-term survival strategy that promises the most gain at the least cost. It is worth stressing that the problem here is not the simple drive towards 'efficiency' in knowledge production implied in such a strategy, but rather a failure to recognise that efficiency only makes sense relative to particular goals with specific time horizons. To assess efficiency vis-à-vis knowledge manufactured as a public good, one needs to do more than ensure that those paying up front receive a positive return as soon as possible. This point applies to both impatient investors in innovative research and students paying for university degrees. In both cases, people need to be instructed, incentivised, constrained and/or nudged to think of knowledge as providing less direct benefits doled out over a longer term. Only then can one appreciate the value of knowledge as a public good.

In final analysis, the emergence of Protscience is the product of the dialectical tension inherent in the very idea of 'science democratised' that is regularly reproduced in the university's mode of knowledge production.

On the one hand, the university empowers students to decide for themselves what to believe and how to act in the world. Moreover, these powers

¹⁰ Alison Wolf, *Does Education Matter?* (London: Penguin, 2001).

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have become greatly enhanced by the information and communication infrastructure in which more and more of social life is conducted. Thus, individuals happily invest and even risk their own personal resources as front-line knowledge producers. Here the role of the co-curriculum as the seedbed of Protscience comes into full view: It is not by accident that Microsoft, Google, Facebook and Wikipedia were all invented as extra-curricular activities of university students. It may be that the university is today incubating information-based entrepreneurship just as in previous generations it incubated revolutionary political cells.

On the other hand, however much welcomed this dynamism may be, it does force universities to reassert their normative control over knowledge production by systematically testing new claims to epistemic authority (be they beliefs or techniques), setting appropriate burdens of proof for Protscience challengers, and generating narrative contexts in which Protscience intellectual innovations can be understood and critically evaluated by those not directly party to them. In other words, the university will be increasingly compelled to exert governance over the market. In the past, the task was made easier because universities in most countries (outside the US) were ultimately agents of the state. However, now the challenge is for universities to exert a similar authority without necessarily enjoying that political backing.¹¹ The stakes are very high, for if you do not govern the introduction of innovations into the market, then the market will end up deskilling you. This maxim applies just as much to academics as to any other form of labour.

¹¹ Steve Fuller, "Academic Leadership in the 21st Century: The Case for Academic Caesarism," in *Geographies of Knowledge, Geometries of Power: Higher Education in the 21st Century; World Year Book of Education 2008*, eds. Debbie Epstein et al. (London: Routledge, 2008), 50-66.