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ESSAY REVIEW

Michael Polanyi and the politics of science studies

Mary Jo Nye: Michael Polanyi and his generation: Origins of the social construction of science. Chicago and London: The University of Chicago Press, 2011, 428pp, $45.00 HB, $30.00 PB

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Tacit knowledge is today a key concept in history and sociology of science and, primarily because of the significance of this concept, Michael Polanyi is regarded, alongside other figures such as Ludwig Fleck, Karl Mannheim, Robert K. Merton, and Thomas Kuhn as a forerunner of contemporary social studies of science. And yet, Polanyi's major book, *Personal Knowledge: Towards a Post-Critical Philosophy* (1958), with its invocation of St. Augustine's idea of knowledge as a "gift of grace," its Christian existentialism, its conservative moralism, and its often tortuously complex style of reasoning is much less accessible and amenable to increasingly specialized academics than Thomas Kuhn's *Structure of Scientific Revolutions*. Much of *Personal Knowledge* seems tangential to today's social studies of science: for example, its moralistic anti-Communism and teleological conception of the evolution of human intelligence as the "awakening of the world" (Polanyi 1962: 405). A view of Polanyi as contributing to the idea of the social construction of science is paradoxical because of his outright opposition to the sociology of knowledge, which he expressed in correspondence with Mannheim. He paradoxically combined an emphasis on embodied scientific practice with absolute opposition to materialism. He also saw sociology as more generally pernicious, writing disapprovingly in *Personal Knowledge* that the public is "taught by the sociologist to distrust its traditional morality" (Polanyi 1962: 234; see also Nye: 279). Polanyi's philosophy of science opposed justifications of scientific truth by logical positivist notions of scientific method and pointed toward a sociological view of the trust-dependence, presupposition-laden, and inherently communal character of scientific practice, themes developed in the sociology of scientific knowledge (Shapin 1994; Collins 1992). But can these aspects of Polanyi's work be extracted from the overall framework of his thought or do they carry with them

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presuppositions and implications that formed part of Polanyi's broader worldview? To what extent have Polanyi's broader worldview and political commitments in a more subtle way shaped the ways that we conceptualize science, its sociality, and social relations?

This absolutely brilliant book by Mary Jo Nye analyzes every aspect of Polanyi's biography: his family and cultural background, his development as a chemist, the development of his political and economic thought and how his thinking about the philosophy of science grew out of these preoccupations, and the strained relationship with his brother Karl, to whose socialist politics Michael was strenuously opposed but with whom he shared a preoccupation with the sociality of what are more usually treated as formal systems (146). While Karl showed the institutional and social dependence of the market, Michael showed how science depends on social relations of authority, community, and trust. Nye's book is much more than a biography of Michael Polanyi. It is an intellectual, social, and political history of the emergence of a new way of thinking about science and is a gold mine of insight into the complex personal relationships and political agendas which shaped how these new ways of thinking developed and were debated. Polanyi was part of an intellectual ferment: For not only Polanyi but his interlocutors, allies and enemies, reconceptualizing science was part of rethinking the foundations of, and future prospects for, society and politics.

This ferment was produced by the creation of a drastically new form of modern society and state from the Russian Revolution of 1917, the failure of capitalism in the Great Depression, and the rise of fascism in the 1920s and 1930s. Above all, the new attention to science as a social endeavor was the product of Marxism. The Russian delegation to the International Congress of the History of Science in 1931 included Boris Hessen's materialist reconsideration of Newton, a viewpoint that horrified traditional practitioners of the history of science, but which excited and motivated a new generation of scientists and intellectuals already challenging—through their engagement with Marxism—prevailing intellectual and cultural orthodoxies. Nye describes in depth the movement for social responsibility in science and for the planning of science, advocated by scientists and intellectuals such as J. D. Bernal, J. G. Crowther, P. M. S. Blackett, Hyman Levy, Joseph Needham, and C. H. Waddington. She presents a nuanced portrayal of the different positions held by these figures and a balanced account of what kind of "planning" they were arguing for, taking issue at a number of points with Polanyi's own rather caricatured reading of their positions (217). Nye's account of this movement is an important addition to existing accounts such as Gary Werskey's classic book, *The Visible College,* and her account of the gathering backlash against it is especially valuable. She also highlights the movement's weaknesses, especially its uncritical view of the Soviet Union.

Polanyi's intellectual project was a *reaction* against Marxism, the Soviet Union, and the movement for social responsibility and the planning of science. It was a reactionary project, paradoxically upholding scientific authority against modernity and the moral disintegration that it entails. Marxism and Communism were to Polanyi the chief symptoms of the loss of shared belief in an overly critical post-Enlightenment age. Communism was also the primary force pushing this

disintegration and producing what Polanyi called the "morally inverted" man (Polanyi 1962: 231–232). Polanyi aimed to construct a "post-critical philosophy" of faith, authority, and commitment to oppose the currents of skepticism that he regarded as eroding social and moral order.

But reactionary as Polanyi's project was, it could never be just a straightforward conservative defense of tradition. For one thing, Polanyi found the locus of traditional values he wished to defend in an activity most often regarded as spearheading modernity. Polanyi suggested that St. Augustine's dictum that faith precedes understanding was exemplified more significantly at the laboratory bench than in the pews. Nye sheds light on Polanyi's complex relationship with his Jewish ancestry and with the Christianity to which he converted as a young man (30–33). It is not clear that Polanyi was ever successful in persuading himself to have faith in God (275). In the experience of "exclusion and alienation" that Polanyi shared with his generation of refugee scientists (35), he was quintessentially modern, as was his scientific anti-modernism.

If Marxism was spreading modernity's socially corrosive acid, then the defense of tradition required anti-Communism and the defense of the "free market." However, as Polanyi's brother Karl showed in *The Great Transformation*, the capitalist market was far from being traditional (174). And as the Great Depression further demonstrated, the market could not be left alone to be "free"—its crisis tendencies seemed to be pointing toward its degeneration into fascism or its replacement with state socialism. To remain *laissez-faire*, the market required the state. Polanyi turned with enthusiasm toward Keynesian economics as providing the way to stabilize the market through actively managing the money supply. Polanyi wrote that "A correct Keynsian policy should regenerate free competition and re-establish capitalism on renewed foundations" (quoted on 165). As Nye shows in a fascinating and important chapter on Polanyi's economic thought, his was a decidedly *right-wing* Keynesianism, opposed to the Beveridge Report and to the New Deal (165). His advocacy of an activist, and when necessary expansionary, monetary policy combined, perhaps paradoxically, with the assertion contra Keynes and in tune with Hayek and Ludwig von Mises that the market was a mechanism of spontaneous order (152, 166–167). This was Polanyi's entry into what Philip Mirowski has called the "neoliberal thought collective" instantiated by his participation in the Mont Pelerin Society (Mirowski and Plehwe 2009). Nye notes that in the half century following the late 1940s, "the genre of liberal economics accepted by Michael Polanyi eclipsed the reformist visions of Karl Polanyi and of the German historical school among economists of Great Britain and the United States" (176).

Polanyi applied the notion of spontaneous order both to the economic market and to what Mirowski has called his "quasi-economistic" formulation of the "Republic of Science" (Mirowski 1997: S135). Polanyi's first social-philosophical preoccupation was to attack socialist planning. His notion of tacit knowledge provided ammunition for this, since it suggested that, if planning required explicit knowledge, no plan could ever incorporate all that it is necessary to know. Nye's account points to how Polanyi's argument was in some ways preempted by von Mises, who argued in 1920 that, as Nye puts it, "central planning cannot be a rational economic activity

because no single manager can master all the possibilities of production in order to make judgments of value" (150). Mirowski has argued that a central axiom of neoliberalism is that the market can process information and knowledge more effectively and all encompassingly than any individual (Mirowski 2009: 435).

This, according to Mirowski, underpinned the anti-intellectual dimension of neoliberalism. For neoliberals, the market knows better than any technocrats, planners, or even scientists. But for Polanyi tacit knowledge was primarily a justification for scientific authority. So Mirowski notes there is in Polanyi's "The Republic of Science" "the cognitive dissonance of a rigid authoritarian hierarchy superimposed on a 'naturally' self-optimizing market" (Mirowski 1997: S135; see also Nye: 221). Polanyi's combination of images of science as a market and as a community was a key contradiction in his thought. As Nye argues,

> Science is not simply an economic community… Polanyi discusses the particular characteristics of scientific standards, values, beliefs, and methods that distinguish the sciences from other kinds of activities and systems, ending with his redefinition of the republic of science as a "Society of Explorers."… Polanyi's arguments in this vein undercut his market analogy for science because he accepted the general principle that members of a scientific community are working for a common task rather than acting exclusively from self-interest (180; cf. Mirowski 1997: S133).

Polanyi was concerned to uphold scientific authority as a form of traditional authority. Yet he tied this to the defense of market forces, arguably the most powerful forces undermining tradition in the modern world.

One dimension of the crisis of Keynesian policies in the 1970s, which produced the political triumph of neoliberalism, was a crisis of technocratic authority. The New Left combined with new social movements of the 1960s such as feminism, anti-psychiatry, and environmentalism attacked the claims to neutrality of the Cold War scientific elite and contested expert authority more broadly. On the right, public choice theory and free market currents attacked the idea that government bureaucracies could ever be neutral, arguing instead that bureaucrats act to maximize their own interests. On the left, community was pitted against bureaucracy and New Social Movements often valorized personal experience and values against specialized expertise. On the right, bureaucracy was rejected in favor of the market. Fordist forms of mass production and corporate vertical integration and hierarchy were being replaced with forms of "lean production" inspired by Japanese management methods. "Networks" and "flexibility" were added to "community" as part of the lexicon of anti-bureaucracy, anti-technocracy, and, associated with this, the criticism of the supposedly unwieldy and bureaucratic Fordist welfare state.

It was Kuhn rather than Polanyi who was more enthusiastically adopted as part of the intellectual tide against technocracy. Mirowski notes how "Kuhn's book was regarded as a liberating experience by those looking for a respite from the unalloyed scientism of the immediate post-Sputnik years" (Mirowski 2003: 231). But as Nye shows there was very significant overlap between Kuhn and Polanyi's positions, and Nye shows how both found these similarities somewhat uncomfortable as they

acknowledged each other while differentiating their own positions (223–57.) The anti-positivist leanings of both thinkers made their work attractive for new currents of thinking in the sociology of science which drew inspiration from rejection of Cold War scientism and sixties' challenges to technocratic authority. Nye describes how Kuhn was more of a "clerc" than Polanyi, less involved with political concerns. But there were similarities in their outlook and its relationship to the ideology and academic structures of the Cold War.[1] Nye quotes Kuhn's own admission of the conservative character of his thought: "I was trying to explain how it could be that the most rigid of all disciplines, and in certain circumstances the most authoritarian, could also be the most creative of novelty" (Kuhn quoted in Nye: 254).

Paradoxically, Polanyi sought to uphold his image of science as traditionalistic, hierarchical, and authoritarian as the exemplar of a free society. As Mirowski argues, Polanyi's ideal was really "a society willingly subordinate to science" (Mirowski 1997: S127). A sociology of scientific knowledge that rejected any claims for transcendent truth and challenged scientific realism would have been strongly anathema to Polanyi. This sociology arose in the new period of intellectual ferment of the 1960s and 1970s that challenged, but also as Nye shows, drew on the intellectual legacy of Polanyi's generation. Nye's nuanced and extremely thought-provoking Epilogue on "SSK, Constructivism, and the Paradoxical Legacy of Polanyi, and the 1930s Generation" shows how problematic this inheritance was. Particularly interesting is her discussion of the anti-statist and anti-technocratic implications of Bruno Latour's approach: "Latour's agenda became one of destabilizing the centralized, elitist, and in his view antidemocratic authority structure of French science and French society… Latour's agenda did not simply call into question the alliance of science with the state, but the legitimacy of the state itself" (298). This agenda could be seen to run counter to the high value that Polanyi accorded to scientific authority. But if undermining technocratic authority has been part of Latour's agenda, this could also be seen to resonate with Polanyi's hostility to planning and state intervention. Hostility to the state and to planning was an important part of the cultural and intellectual currents on both right and left contributing to the crisis of Keynesianism. The discrediting of planning has been a key pillar of neoliberal hegemony. Nye writes that "Defeating the social relations of science movement in Great Britain became one of the essential aims in Polanyi's intellectual and political life around 1940" (184). The fact that Polanyi is treated as a forefather of contemporary Science and Technology Studies (STS), while the far more sociological J. D. Bernal is seldom mentioned, suggests that Polanyi achieved this aim. No one in STS speaks of the need for state planning of science, even though without planning it is entirely unclear what could be meant by the talk of "democratizing" science and technology for which there is widespread enthusiasm among practitioners of STS (Thorpe 2010).

A further paradox of Polanyi's legacy is that his enthusiasm for the spontaneous order of the capitalist market against socialist planning combined with his desire to

[1] Nye acknowledges but does not take a clear for or against position on Steve Fuller's argument about Kuhn's enmeshment in Cold War ideology: see pp. 249–250.

shield the guild order of science from market forces. He treated the divide between pure and applied science as absolute, and pure science was to take place in a world of its own. This of course required state funding of science, but Polanyi wanted this funding to come without strings attached. Today, as science is more and more closely integrated into the capitalist market, the less it resembles a metaphorical "marketplace of ideas." This seems to have been Bourdieu's point in a passage quoted by Nye: "Disinterested scientists, who have no program other than the one that springs from the logic of their research and who know how to make the strict minimum of concessions to 'commercial' demands to secure the funding they need for their work risk marginalization in some research areas because of the inadequacy of public support despite the internal recognition that they receive" (299). What Polanyi called the "market" of science could not really be a market, as Mirowski points out: "the act of formal acknowledgment of published scientific work does not look very similar to a price system, so the analogy begins to sputter even before it has left the ground" (Mirowski 1997: S133). Marketization, as commercialization, breaks down the guild boundaries around science that Polanyi was most concerned to defend. Yet Polanyi's case for "spontaneous order" was an important component of the neoliberal worldview which has justified marketizing and commercializing science.

Polanyi is also relevant today in regard to what Harry Collins and Robert Evans call "The Problem of Extension" (Collins and Evans 2002). Collins, the sociologist of science who has done most to further analyze and elaborate the notion of tacit knowledge, presses the implication that some people have it and some people do not. Collins and Evans emphasize that "'Enculturation' is the only way to master an expertise which is deeply laden with tacit knowledge" (Collins and Evans 2007: 24). This implies of course that at least certain kinds of expertise are limited to particular communities of practice and, further, they write that at least certain kinds of "decision-making rights" should be limited within communities who possess the requisite tacit knowledge. This gives rise to "The Problem of Extension": "how do we know how, when, and why, to limit participation in technological decision-making so that the boundary between the knowledge of the expert and that of the layperson does not disappear?" (Collins and Evans 2007: 10) This is very much in line with Polanyi's concern to uphold the authority of scientists as members of specialized communities with special forms of tacit knowledge. However, the Polanyite idea that scientific knowledge is local rather than universal, dependent on trust and often taken-for-granted tacit assumptions can justify a critique of technocratic experts who claim infallibility based on theoretical models and laboratory studies.[2] On this and other grounds, Brian Wynne and Sheila Jasanoff are both highly critical of the Collins and Evans' project of delimiting "decision-making rights" to experts (Collins and Evans 2002: 235, 280; Wynne 2003; Jasanoff 2003). For Wynne and Jasanoff, the limitations of scientists' presuppositions and of laboratory experience point to the need to democratize and extend decision-making. These debates in contemporary STS may be seen to revolve around the implications

[2] Collins and Evans are critical of the way that "too often, science's spokespersons have claimed to be the custodians of universal truths" (Collins and Evans 2007: 8).

of Polanyi's conception of the practical, local, and trust-dependent character of scientific knowledge. But these debates occur in a much different social and political context to that in which Polanyi wrote. Nye's conclusion about how Polanyi's ideas "changed their meaning" for consequent generations is apt (305). But the very fact that both sides in these debates are so indebted to Polanyi's thinking makes understanding his own context and meanings so important. Nye's book shows how Polanyi's thinking about the social character of science was tightly woven with his political and economic thinking. What the book's rich intellectual history implies is that science studies have always been, and must be, about the constitution not only of scientific knowledge, but of society and democracy.

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