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Michael Polanyi's Republic of Science: The Tacit Dimension

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ABSTRACT *Michael Polanyi spent his long career thinking and writing about the workings of science and the scientific community. Moreover, he saw in the workings of that community the core principles and practices of the good political republic, as spelled out in his famous essay, 'The Republic of Science'. There is, however, a tension between his political theory and his epistemological contribution, in particular his path-breaking writings about the tacit dimension in knowledge formation—or what he described as 'personal knowledge'. On the one hand, his political essay supports a classical conservative position, while on the other, his theory of tacit knowledge anticipates much of the post-modern radical critique of long-standing Enlightenment assumptions about scientific objectivity and the disinterested pursuit of knowledge. This otherwise contradictory position can be understood by following Polanyi's own epistemological prescription, namely by examining the underlying assumptions that constitute his own tacit knowledge. Polanyi's personal history reveals the less-apparent assumptions tacitly underlying his republic of science. Polanyi's own 'fiduciary community'—in particular, his deep personal and intellectual ties to classical conservative theory, his association with Frederick von Hayek, and his membership in the neo-liberal Mont Pelerin Society—shaped his theoretical conceptualization of the so-called 'republic of science'. In this way, Polanyi's political contribution diverges from his own epistemological requirements, in a way that largely obscures important intellectual roots required to properly interpret his political thought.*

KEY WORDS: Michael Polanyi, republic of science, tacit knowledge, personal knowledge, social constructivism, Karl Polanyi, scientific community, technocratic ideology, postmodernism, philosophy of science, Karl Popper, neo-liberalism, Frederick von Hayek, Mont Pelerin Society, Edmund Burke

Introduction

Michael Polanyi (1891–1976) is a classic intellectual figure in social studies of science. His contributions to our understanding of the workings of the scientific community, the role of the tacit dimension in the process of scientific discovery, and his political writing on what he called the 'republic of science' are standard touchstones in the

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scholarly literature on the philosophy of science and science studies more generally. But, interestingly, Polanyi's contributions have also remained a source of controversy. This has especially been the case for his theory of tacit knowledge and for his vision of a 'republic of science'. These ideas have been the subject of numerous symposia and publications whose goal has been to interpret his philosophical writings on both science and politics.

While many hold up Polanyi as one of the great intellectual masters of his time, others find his contributions to both fields of inquiry to be ambiguous and confusing, if not wrong-headed. Some, moreover, have argued that his epistemological work and his political theory almost read as if they were written by different men. It is to this aspect of the debate that we turn our attention. We seek to show here how Polanyi's essay, 'The Republic of Science', is in significant ways intellectually connected to his theory of tacit knowledge. In the process, we describe Polanyi's own historical and intellectual roots; that is, the sources of his own tacit knowledge grounded in his personal experiences with Hungarian communism, Nazi Germany, and with his later associations with Fredrick von Hayek, leading neo-liberal conservative theoretician and founder of the Mont Pelerin Society. Although Polanyi did not define himself as a political person per se, through this latter association he was closely involved in an ideological project that played a significant role in helping to usher in the neo-liberal revolution that reshaped the contemporary political-economic landscape.

Polanyi's involvement with science began with his training as a physical chemist in Budapest. From that time on, he was intrigued by the nature of scientific inquiry and the workings of the scientific community. One of the primary results of that intellectual fascination was his theory of the role of the 'tacit dimension', what he called 'personal knowledge', in the very process of scientific inquiry. It remains one of the brilliant, radical and path-breaking contributions to modern epistemology, all the more impressive given that the social studies of science had scarcely emerged as a field of scholarly investigation. Beyond this epistemological insight, he also saw in the workings of the scientific community the core principles and practices of the good political republic. As he wrote in *Personal Knowledge*, 'the recognition granted in a free society to the independent growth of science, art and morality, involves a dedication of society to the fostering of a specific tradition of thought, transmitted and cultivated by a specific group of authoritative specialists' (Polanyi, 1962a, p. 244).

We began our engagement with Polanyi through an interest in tacit knowledge as it relates to political deliberation and social learning. In the course of those explorations we took notice of an apparent tension between his formulation of tacit knowledge and his political theory, especially as it is presented in 'The Republic of Science'. On the one hand, his theory of tacit knowing impressively anticipates much of the post-modern radical critique of long-standing Enlightenment assumptions about scientific objectivity and the scientific community's so-called disinterested pursuit of knowledge; on the other hand, his oft-cited political essay (and many earlier essays that he wrote on politics and the economics of the day) supports a classical conservative position. Is there a genuine contradiction here? And if so, how could one explain it? Our search for an explanation prompted this article.

The effort here is to make sense of this otherwise contradictory position by following Polanyi's own epistemological prescription: namely, by examining the presuppositions that constitute his own tacit knowledge. It does this by turning to Polanyi's personal history to reveal the less apparent assumptions underlying his vision of a republic.

Specifically, we attempt to show that the ways in which Polanyi's own 'fiduciary community', especially his deep personal and intellectual ties to the work of classical conservative theory, to Frederick von Hayek and the neo-liberal conservative Mont Pelerin Society, shaped his theoretical conceptualization of the so-called 'republic of science', as well as his efforts to identify a generalizable system of republican governance. In this way, we argue, Polanyi's political contribution not only fails to conform to his own epistemological requirements, but also does it in a way that largely obscures important intellectual roots that must be acknowledged in an effort to properly interpret his political thought. The essay concludes with some observations about what a republic of science informed by Polanyi's epistemology might look like.

Tacit Knowledge and the Republic of Science: A Theoretical Tension?

A serious attempt to come to grips with Michael Polanyi's impressive oeuvre can leave one feeling somewhat perplexed. Beyond the sheer volume of the writings that he left behind, there are a number of basic threads that do not seem to fit together. This is especially the case with regard to his famous essay on 'The Republic of Science' (Polanyi, 1962b).

One can easily ask: How could a man who wrote so brilliantly about 'post-critical philosophy' and 'tacit knowledge' advance what would appear to be a politically naive understanding of the relationship of science to society? Whereas his work on what he described as personal knowledge and its tacit dimensions is a significant forerunner of contemporary social constructionism in science and technology studies, as well as the postmodern critique of the Enlightenment and its intellectual traditions, by contrast, 'The Republic of Science', might be read as something of a sociological illusion. Indeed, Polanyi's writing here is in many ways in line with Mertonian celebrations of science and the scientific community, in which the scientific ethos serves as a model for a democratic republic more generally.[1] While that view held sway in the 1950s and early 1960s, thanks to early contributions of Thomas Kuhn (1962) and in particular the subsequent critical work in the social studies of science that was to follow over the next several decades, this view of the working of the scientific community is now largely seen to rest on major misunderstandings about its workings.[2] And where it is still invoked, it is criticized as a basic element of technocratic ideology.

In the discussion that follows, we take up Polanyi's work on 'personal knowledge' and 'tacit ways of knowing', which is in all ways a seminal contribution to science and social epistemology (Polanyi, 1962a; Kegan & Polanyi, 1966). But beyond appreciating the theory for its own sake, we try to extend its implications for science and politics. Rejecting his conceptualization of a 'republic of science', specifically his call for a free and self-regulating scientific community, we seek to draw out the more postmodern implications of his theory of tacit knowledge for science and for a democratic politics.

Our basic concern is what we see as a clash between two very different lines of argument in Polanyi's thought. On the one hand, in 'The Republic of Science', Polanyi argues that 'the community of scientists is organized in a way that resembles certain features of a body politic' (Polanyi, 1962b, p. 54). Based on this assessment, he asserts that science is the most important source of innovation and authority in modern society and there should be no external interventions into the workings of this community. Indeed, beyond this privileged position in society, for Polanyi, science's model behaviour in the pursuit of knowledge and truth is seen to recommend itself even more importantly as a

universal model for political and economic decision-making in a free society. This is a claim that could be taken directly from a traditional argument for technocratic governance, although we will offer a rather different interpretation of its meaning (Fischer, 1990).

On the other hand, Polanyi's path-breaking work on tacit and personal knowledge and its social implications would appear to be clearly at odds with the kind of scientific authority upon which that 'Republic of Science' relies. In what can easily define him as a postmodern theorist well ahead of his time, he argued in this other line of investigation that the very sources of authority underlying knowledge are always anchored to the tacit assessments, 'intellectual passions' (Polanyi, 1962a, pp. 132–202), and 'declaration[s] of loyalty' (Polanyi, 1962a, p. 219) of those within a like-minded community. For Polanyi, such a 'fiduciary framework', involves a 'commitment' to a shared language and culture outside of which no knowledge can operate (Polanyi, 1962a, pp. 299–324). From such a 'post-critical philosophy' (the subtitle of *Personal Knowledge*), it is difficult to understand why the scientific mode of knowing and its intellectual traditions should necessarily be evaluated as superior to all others; that is, why it should serve as a universal model guiding the functions of a free society—a society of multiple communities, each one competing to advance its own perspectives and the interests associated with them.

Put in another way, the authority of the scientists in Polanyi's 'Republic' appears to be grounded in reliable *objective* knowledge based on trained expert consensus. Yet, for Polanyi, all knowledge is anchored in social beliefs deriving from specific social experiences, including those of the scientists (which, at times, cannot be fully expressed, thanks to their tacit moorings). How should we understand these conflicting orientations? We propose here that the answer might well be found in Polanyi's own socio-cultural background and the very personal knowledge he drew from it. That is, we want to argue that the tacit dimensions of Polanyi's own understandings, steeped as they were in his own biography, shaped his views about both science and politics.

Polanyi: The Formative Experiences

The story begins in Budapest, then part of the Austro–Hungarian Empire. Michael Polanyi and his older brother Karl were born in the waning years of the nineteenth century into an educated Jewish family. Financially well off, at least until the years before World War I, the family was involved in numerous cultural, intellectual, and political activities—interests that they passed along to their children. From their father, an engineer by training, they gained a strong appreciation of science and technology; from their mother, daughter of a rabbinical scholar, who wrote a cultural column for a German-language paper in Budapest, they were exposed to a wide array of social and cultural traditions. With homes in both Budapest and Vienna, the family hosted many drawing room gatherings devoted to discussions of the pressing issues of the time. Although the careers of both sons led them far from their native Hungary, the intellectual environment of their early years remained a lasting influence on the works of both.[3]

Early on, son Michael showed considerable promise in the natural sciences, especially chemistry. However, given that university teaching and research positions in the natural sciences were no sure thing for Jews in Hungarian universities at the time, he chose to graduate with a degree in medicine. During the course of his medical studies, though, he spent a period of time working at the institute of a distinguished chemist at the University of Karlsruhe. And after serving in the medical corps in World War I, he earned a doctorate

in physical chemistry in Budapest before taking up a research post in chemistry at the Kaiser Wilhelm Institute in Berlin. In this setting, Polanyi not only came into contact with leading scientists in Germany, such as Einstein and Planck, he authored many scientific papers on chemical processes and was granted the title of Professor at the University of Berlin.

While his natural inclinations were in the sciences, Polanyi always exhibited a keen interest in social and philosophical questions, particularly as they related to science and society. This was already evident in his college days when he helped his brother Karl found the Galilei Circle, an intellectual group that promoted Hungarian cultural traditions and an independent Hungarian state. These activities also included publishing an intellectual journal devoted to debating theoretical questions related to Marxist materialism, socialism and the Soviet Revolution. In this effort, the brothers shared a common political-cultural orientation described as free-thinking, Tolstoyan, and anti-clerical. They identified their position as 'revolutionary culturalism'. Basic to the discussions in which they were so deeply involved was a central political-philosophic and sociological interest in questions related to the role of knowledge in society. An important issue stimulating the debates at the time was the need to develop a rigorous theoretical response to the famous Hungarian philosopher, Georg Lukács.[4] The central question concerned Lukács's influential theoretical writing on the role of the working class and the Communist Party, in particular the question of which social agent was able to gain a view of the social totality. Among the other members of their circle grappling with this question, it should be noted, was the young Karl Mannheim.[5]

One of the important issues in the search for a response to Lukács's Marxism was the idea or possibility of a 'positivist ethics' of intellectual activity as put forward by Bertrand Russell, one of the most influential analytic philosophers of the time. An analytical pro-science tradition challenged by the neo-Kantian traditions of German thought (particularly represented by the Heidelberg School), the group engaged the problem of ethics from various theoretical perspectives. These included Wittgenstein's use of logic and language rather than traditional epistemology to argue that ethics cannot spell out rules about what science can and cannot say about the world. Members of the Circle also took up Lukács's controversial rejection of any notion of an intellectual ethics and science in favour of the Communist Party as the ultimate arbiter of knowledge.

Despite such common interests revolving around these activities, by the end of the 1920s, an intellectual split began to emerge between the Polanyi brothers. Moving away from a cultural revolutionary orientation, brother Karl's writings began to take a more leftist political turn. Not only did Karl Polanyi become a leading critic of free-market capitalism, he also helped to establish the National Radical Bourgeois Party in Budapest. Brother Michael, at the same time, began to move toward libertarian conservatism and what he called at first the 'New Scepticism'. In this spirit, he published an article in the Galilei journal which argued that 'scientists and artists, "men of spirit", must erect the church of the new scepticism, and await the coming of those enlightened ones who no longer believe in politics. It was politics that had entangled the world' (Polanyi cited in Nagy; see McRobbie, 1994). Indeed, here was an early formulation of what would become a central argument in 'The Republic of Science'.

Given the intense ideological politics of the time, these political differences were not without personal consequences. With communists fighting socialists and fascists (and Nazis fighting both of them), particularly in Weimar Germany, everything political was

up for grabs, including the ideas and values of western liberalism. The growing split between the Polanyi brothers, one supporting socialism and the other classical liberalism, was to become a deep and enduring rift. The fact that Karl and his wife sympathized with the rapidly developing Soviet Union (she had been a member of the Party) was an important factor triggering the break (Polanyi-Levitt, 1990). No minor matter, the brothers ceased to associate with one another for several decades, at times scarcely speaking to each other.

Between 1920 and 1933, while working as a chemist in Berlin, Michael continued to cultivate his interest in social philosophy. Following his various intellectual preoccupations, he travelled widely, making trips to both the United States and the Soviet Union. The visit to the Soviet Union was of enduring importance in terms of his social-philosophic writings. Beyond merely expressing his growing worries about totalitarianism and the spread of communism, he began to regularly write about the 'corrupting' influence of state control on the sciences. Polanyi spelled out his concerns in a number of articles and lectures attacking the economic and scientific policies of the USSR (Polanyi, 1935, pp. 67–89, 1940, p. 174).

It is not clear when Michael first came into contact with Frederick von Hayek. Although it is very likely that Polanyi was aware of the Vienna seminar and its discussions before he knew Hayek, we can only say with certainty that they came into contact sometime in the 1930s. What is clear is that Polanyi and Hayek carried on an intellectual association over many decades, both through correspondence and academic gatherings (Walpen, 2004, p. 136). With Hayek and the group with whom he associated, Polanyi found his like-minded community, one that was worried about the threat of scientific Marxism, the spectre of socialism it was casting across Europe, and its implications for the future progress of an autonomous science.[6] It was an intellectual association—to borrow from Max Weber and Goethe, one might say an 'elective affinity'—that lasted the rest of his life, from his close association with Hayek in the Mont Pelerin Society, his academic life in England, and his later involvement with the University of Chicago and its Committee on Social Thought, which, in addition to Hayek, was home to many of the leading neo-liberal conservative intellectuals of the time.

Indeed, this circle of intellectuals and its anti-socialist, free-market agenda constituted the social-philosophic 'fiduciary framework' of like-minded intellectuals to which Polanyi contributed. The intellectual projects of this group, ranging over many topics and several continents, constituted the neo-liberal conservative knowledge 'matrix' to which he directly and implicitly situated his own work. Even when not explicitly articulated, the worldview of this intellectual community provided the foundation of the tacit assumptions upon which his social theorizing was founded. It is, we argue, the 'shared idiom' and the 'cultural heritage' that shaped Polanyi's vision of the nature of things and upon which the legitimacy and acceptance of his social and political knowledge rested.

To this, however, we would quickly add that Polanyi was no simple-minded ideologue. Throughout his career, he invariably exhibited an independent mind, not least within this community. Indeed, it was said that he always exercised the right to dissent. In fact, on several occasions his pronouncements proved disappointing, even disturbing, to some of the hard line theorists of the Mont Pelerin Society. The most notable instance involved some favourable remarks he offered about Tito for having introduced a form of market socialism in Yugoslavia. Given that support of socialism in any form was unacceptable to many in the group, his comments required Hayek to come to his defence, although,

in doing so, Hayek emphasized Polanyi's intellectual pedigree and not his support for Tito (Walpen, 2004, p. 136).

Given the centrality of this particular intellectual community in Polanyi's life, it is important to elaborate somewhat on its project, especially given the impressive network of scholars to which it gave rise, as well as its later impact on contemporary world affairs. Toward this end, the essential component is the formation and role of the Mont Pelerin Society.

Institutionalizing the 'Fiduciary' Community: Hayek, Polanyi, and the Mont Pelerin Society

Directly and indirectly, the Mont Pelerin Society has its origins in Vienna. During Polanyi's formative intellectual years, including the years of the Gallilei Circle in Budapest, Vienna was the site of open and often-vitriolic intellectual disputes between socialists and free market libertarians. On the socialist front, there was nothing less than a famous experiment in Municipal Socialism underway in the city, as well as the emergence of the epistemology of logical positivism of the so-called 'Vienna Circle' and its variant, scientific Marxism. Central to the socialist camp was the work of economist Otto Neurath, who was not only involved in the local political project, but had been an official in the Munich Soviet Republic as well (Hull, 2006, pp. 146–148).

On the other front, there was a thriving critique of Marxism and socialism. The primary address for these debates was the private seminar of economist Ludwig von Mises, the *Doktor Vater* of the young Hayek, an energetic participant in the discussions. The focus was on what participants saw to be the limits of centralized economic planning, especially Soviet-style planning. In the process, of course, the group celebrated the virtues of its alternative, the free market capitalist system. Far more than just a business-oriented apology, though, the seminar discussions focused on fundamental methodological questions posed by central planning, in particular the role of knowledge. Specifically, the seminar explored the nature of economic knowledge and the problems of business calculation, including such practical issues as accounting.

These debates constituted contemporary, practical variants of the kinds of discussions in which the younger Polanyi had already been engaged in Budapest, albeit at a more philosophical level. And it was through his later association with Hayek and related colleagues, as already noted, that he found an intellectual discourse that would engage him throughout his career. Although Polanyi has to be positioned as a somewhat unorthodox thinker in this community, there is little in his later work that cannot be taken as a contribution to this neo-liberal intellectual project and its political objectives.

Interestingly, in the context of the earlier discussions in Budapest, it is not just Michael who was involved in this phase of the intellectual journey. Albeit inadvertently, his brother Karl also came to play an indirect role in founding the Mont Pelerin Society. Disturbed by the neo-liberal conservative critique of socialism, including that of his brother—and what he took to be the capitalist intentions behind it—Karl chose to directly engage Hayek, focusing in particular on Hayek's radical emphasis on free market liberalism as the source of all that is good. And not without import. His oppositional writings drew considerable attention and, in turn, became both the political impulse and intellectual foundation of his famous book, *The Great Transformation*, one of the most enduring challenges to economic liberalism (Polanyi, K., 1944).

None of this was lost on Hayek, both as theoretical and intellectual entrepreneur. With good reason, he interpreted the success of Karl Polanyi's book as a leading example of the need for a more formal intellectual apparatus capable of responding to the challenge of the political left (Walpen, 2004).[7] During those years, in fact, traditional conservative liberalism had clearly taken a backseat to both social democratic politics and thought (Caldwell, 2005).[8] In recognition of this, Hayek sought out a number of wealthy contributors, including Credit Suisse, to take interest in the challenge. The result was the 1947 founding of the Mont Pelerin Society in Switzerland, which was to evolve as a network of intellectuals running and coordinating many well-healed neo-liberal think tanks. Regularly drawing together leading neo-liberal conservative thinkers from around the world, as well as anyone else engaged in the struggle against socialism, its members and visitors came to include the likes of Raymond Aron, Bertrand de Jouvenel, Karl Popper, Ludwig von Mises, Lionel Robbins, Henry Hazlitt, Felix Morley, Fritz Machlup, Frank Knight, George Stigler, and Milton Friedman. Not only was Michael Polanyi part of this group, he was present at the founding meetings of the Society (Walpen, 2004, pp. 391–396; Mirwowski & Plehwe, 2008).

Although the Mont Pelerin group left no topic untouched, from business and labour to education and social welfare, it was also the central site for working on what came to be called the 'Hayek Knowledge Problem' (Walpen, 2004; Hull, 2006). Involving the translation of practical arguments and methods about economic calculation, accounting, and planning into theoretical questions of epistemology more generally, the project explored the production of economic and social knowledge, their distribution, and utilization. A major part of this knowledge question related to the limits of foresight and prediction, risk and uncertainty, and thus the possibility of planning. Examining the ways in which knowledge is acquired and communicated, Hayek sought to establish a distinction between the analysis of the plans and actions of individuals and those of groups. An argument basic to the neo-liberal conservative critique of socialism and its emphasis on centralized planning, it was an effort to show how separate, competing individuals produced results superior to those of cadres of centralized planners.

And this is essentially the argument that Polanyi replays in 'The Republic of Science'. He invokes it as the grounding for his position that the state should neither impede nor influence the activities of individual scientists. As he explained, the fundamental question is how the varied knowledge existing in the minds of individuals can result in outcomes superior to those developed by a group.[9] In 'The Republic of Science' he refers to this as 'the spontaneous coordination of Independent Initiatives' (Polanyi, 1962b, p. 2). It refers to the freedom of a 'community of explorers'—both scientific and political—where social coherence is created and maintained by self-coordination, based on the authority of equals.

In other words, it is here that we find Polanyi's turn to the neo-liberal conservative free market analogy to explain scientific activity. In the essay, he uses the analogy in his challenge to the efforts of British universities to target scientific research for particular social purposes. The pursuit of scientific knowledge should never be explicitly organized and directed by a public authority to serve the welfare of society. Rather than the result of political decisions, any benefits that could emerge should be left to a Smithian-like 'hidden hand' of scientific inquiry.[10]

London, Manchester, and Chicago

Given the rise of the Nazis in continental Europe, many members of this neo-liberal conservative circle left for England or the United States and, in the process, the discourse shifted to the Anglo–American World. Hayek took a chair in economics at the London School of Economics and Political Science in 1931, thanks to the support of the School's leading conservative economist, Lionel Robbins (a former participant in the Vienna seminars and member of the Mont Pelerin Society). Hayek, in turn, convinced the School to bring Karl Popper, whom he knew from Vienna and then the Mont Pelerin Society, to London in 1946. Popper had eluded the Nazis in Vienna by taking a position in New Zealand, where he felt altogether isolated (and thus remained forever thankful to Hayek, despite later theoretical differences). Soon after, Polanyi was offered a position in Chemistry at the University of Manchester (that he held from 1933 to 1948). Although there is no clear evidence that he was under pressure at the time, the anti-Semitism sweeping over Nazi Germany was becoming a dangerous situation for anyone of Jewish ancestry. The immediate manifestation in the early 1930s was the growing Nazi influence on appointments at leading research institutions, including the one in which Polanyi worked in Berlin.

Polanyi's earlier associate in Budapest, Karl Mannheim, it should also be noted, left Germany for a position at the London School of Economics, although he had by this time taken a different theoretical road, emphasizing a reformist conception of economic and social planning. Given his argument about the 'free-floating' or detached nature of the intellectual, coupled with his hopes for top-down planning, socialist or otherwise, Mannheim was unacceptable to the members of the neo-liberal conservative knowledge project, despite his own more conservative tendencies after leaving Germany. Even with his development of a sociology of knowledge and its implications for Hayek's 'knowledge problem', and even more so for Polanyi's 'personal knowledge', Mannheim was seen as taking the study of knowledge in the wrong direction.[11] The problem lay in Mannheim's emphasis on planning and on the role of technical intellectuals.

In the UK, the polemic against socialism, along with the agitation for a neo-liberal capitalist society, continued in high gear. In particular, Hayek, Popper, and Polanyi were disturbed by the degree to which positivism had become the dominant epistemology in their new homeland; for them it was associated with Marxism and totalitarianism (Caldwell, 2004). Even the new more limited notions of planned governmental fiscal intervention, Keynesianism in particular, were interpreted by Hayek and Polanyi in this light. For them, these less incisive incursions into the economy were at best understood as incipient moves in the dreaded direction of state planning. The alternative neo-liberal approach was monetary policy. Indeed, Polanyi himself ventured into economic theory, writing a book on full employment, free trade and monetary policy. He even made a film (accompanied by a handbook) designed to explain the monetary perspective to ordinary citizens (Polanyi, 1945a, 1945b).

As his work during this period increasingly focused on economic and social theory, Polanyi shifted from the chemistry department at the University of Manchester to a chair in 'social studies'.[12] From 1935 onward, he concentrated on writing a series of articles and reviews on the value of an autonomous scientific community and the dangers of attempting to centrally direct its research activities—his 'Republic of Science' article being the most famous. For these writings, he received financial

support from various conservative organizations, in particular the J.R. Baker Society for Freedom in Science, which he helped to found, as well as the Congress for Cultural Freedom (supported by CIA funds), and the Committee on Science and Freedom (the English affiliate of the former). He also received monies from the Rockefeller Foundation and the Volker Fund, both supporters of the Mont Pelerin Society.

During this period, Polanyi deepened his assault on the positivist understanding of scientific activity. In various papers he addressed what he continued to see as the underlying and entrenched causes of contemporary social and economic problems—namely the obsession with rationality on the part of both scientists and planners, and their belief in and pursuit of complete and perfectly objective knowledge. Challenging the view that positivist science constituted the only reliable source of knowledge, Polanyi argued that subjective elements were much more than unreliable disturbances in an otherwise objective process of inquiry.

Nowhere was the penetrating thrust of his attack on this understanding of knowledge and epistemology better captured than in a favourable review of Hayek's book, *The Counter Revolution in Science* (1952). For Polanyi, the problem was 'scientism' and it involved nothing less than 'a waywardness, due to a deeper and indeed total instability of reason at its present level of consciousness which required a curing [of] this basic disorder' (Polanyi, 1953, p. 3). And it was to the mission of 'curing this basic disorder' that he devoted his *magnum opus*, *Personal Knowledge*. In this volume, Polanyi worked out his understanding of a 'post-critical philosophy' that identifies the underlying relationship of tacit knowing to what is otherwise understood to be objective scientific inquiry.

In the 1960s, Polanyi accepted an offer to join the faculty of the Committee on Social Thought at the University of Chicago, where Hayek had already moved. Chaired by the conservative sociological critic of the intellectual classes, Edward Shils, this distinguished Committee played an important role in helping to turn the university into a contemporary centre for conservative thought. Here, in addition to Hayek and Shils, were men like Frank Knight, George Stigler, Milton Friedman, and Aaron Director, all members of the Mont Pelerin Society. And high on the agenda of these scholars, with help from political philosopher Leo Strauss, was the basic disorder of the times, namely the misbegotten principles of the Enlightenment and the scientism to which it gave rise. There can be little wonder why the Committee sought to bring Polanyi to Chicago (Jha, 2002, p. 28).

But, alas, Polanyi was unable to join them. Despite many visits and lectures in Chicago on various occasions, he was denied the opportunity to take the position. In what can only be described as a bizarre story, the FBI blocked his application for a visa. Having delivered a lecture at an institute in London that, unbeknownst to him, had communist affiliations, he turned up on a black list. For the FBI, it seems, the fact that the lecture criticized Soviet science, in particular Lysenko's rejection of Darwinian genetics, coupled with political outrage at the institute over his criticism, was of no particular consideration. Polanyi thus remained in England and joined Oxford as a research fellow for the remainder of his career.

Polanyi in Postmodern Perspective

What does all of this have to do with postmodernism? One can speak of Polanyi's work as having been a precursor to postmodernism in two respects. The first has to do with his

critique of the Enlightenment.[13] The second has to do with his postpositivist, constructionist understanding of knowledge and science. To make the connection, we need only briefly examine the basic tenets of postmodern philosophy.

While there is no one commonly accepted philosophy or 'theory of postmodernism', basic to all versions is an attack on the Enlightenment, a philosophical orientation emphasizing the positivist correspondence theory of knowledge and truth and a belief in social progress through scientifically informed guidance. Although the legacy of the Enlightenment takes different forms, an important element in relation to the social and political realms was an emphasis on scientifically-based planning and on the primary role of technical experts in decision-making.

Throughout his many writings, Polanyi raised the same concerns about this Enlightenment emphasis on science and its understanding of progress. The 'sickness of the modern mind', according to Polanyi (1953), was rooted in the presumption that knowledge was achieved through a detached objectivity. As he saw it, the identification of knowledge with the positivist ideal of objectivity gradually poisoned the confidence in the intellectual bases of our moral convictions. By holding that convictions cannot be empirically grounded, such an orientation treated values as soft and relative, thus becoming relegated to a kind of intellectual limbo (Fischer, 1980). Along with this loss of confidence went, as well, a weakening of an active commitment to the ideals of the free society that Polanyi indefatigably supported.

This weakening of moral commitments, particularly in Continental Europe at the time, led many to look for what they understood to be a more 'realistic' approach to human betterment based on empirical facts. In this view, explicit moral undertakings were denigrated as simplistic, often lending themselves to the political manipulations of demagogues. The alternative focus was human interests. Independently of what people thought and said, the firmly grounded material needs and interests of humankind provided a more realistic and stable basis for social action. Rather than seeking to found action on moral principles and political intentions, proper action would be based on empirical predictions based on an understanding of interests and needs.

In Polanyi's view, both philosophers and politicians came to believe that the baser human instincts, devoid of both moral intentions and principles, were the sources of action that moved history, a reality that simply had to be accepted, if not justified. Such moral detachment, he argued, freed political leaders to subvert or clear away established social arrangements. The newly emerging Soviet Union and the revolutionary fervour that accompanied it was his primary example of the totalitarian threat facing the twentieth century, especially its manifestation in scientific Marxism [or what he called 'the moral force of immorality' (1962a, p. 227)].

There is little about Polanyi's critique of objectivity or the limits of Soviet Marxism that postmodernists do not share. In all ways, postmodern theorists call into question the possibility of scientific objectivity, as conventionally understood. Moreover, in their critique of 'grand narratives' and other 'totalizing' ideologies, postmodern theorists have from the outset identified Soviet style Marxism as the prime example of such domination. Baudrillard (1983), for example, holds the truth claims of such hegemonic powers to be a form of 'terrorism'. As Lyotard argued,

> We no longer have recourse to the grand narratives—we can resort neither to the dialectic of Spirit nor even to the emancipation of humanity as a validation for

> postmodern scientific discourse ... [T]he little narrative [*petit recit*] remains the quintessential form of imaginative invention, most particularly in science.

As such, 'the modern project has been not abandoned or forgotten but destroyed, liquidated' (1984, p. 60).

This, then, was the problem. But what was the solution? For Polanyi, it was a question of how to revive and sustain the moral foundations of a free society. Like Hayek, the answer was to be found in rejecting the obsession with a 'value-free' understanding of objectivity. But without an alternative understanding of knowledge and its uses, people could not be expected to reject a convenient attachment to a positivist understanding of objectivity. Both the problem and its solution, as Polanyi saw it, were fundamentally epistemological.

Toward this end, Polanyi challenged the assumptions of the physical sciences, which had become the model for all other forms of rigorous inquiry (Prosch, 1986, pp. 49–122).[14] What he showed is that the investigatory behaviour of the physical scientist in pursuit of the objective world does not correspond to official epistemological principles. Specifically, he focused on the inexactnesses involved in this work and how scientific ideas and conclusions are interpretively mediated by the scientific community itself. Basing his observations and arguments in significant part on a reflective understanding of his own experience as a research chemist, as well as those of colleagues, for Polanyi, it was personal beliefs and commitments held by individual researchers that enabled them to pursue their projects in particular ways, often topic-specific, based on their own experiences with both science and the research topic itself. And it is from this understanding that he derived his view that individual freedom was essential to successful scientific work. Because of these personal elements, he argued, scientists could never in any formal sense be objectively detached. Indeed, for Polanyi this very *lack* of detachment was basic to discovery and progress in the sciences. It was this position that he intricately worked out in *Personal Knowledge*, his lengthy analysis of how we come to perceive, know and understand the meaning of things.[15]

While challenging the Enlightenment does not make one postmodern, Polanyi's theory of 'personal knowledge' and the subjective orientation of its epistemological challenge renders the comparison difficult to avoid. One need only consider the following from *Personal Knowledge*:

> We must now recognize belief once more as the source of all knowledge. Tacit assent and intellectual passions, the sharing of an idiom and of a cultural heritage, affiliations to a like-minded community: such are the impulses which shape our vision of the nature of things on which we rely for our mastery of things. No intelligence, however critical or original, can operate outside such a fiduciary framework ... While our acceptance of this framework is the condition for having any knowledge, this matrix can claim no self-evidence ... This then is our liberation from objectivism: to realize that we can voice our ultimate convictions only from within our convictions (Polanyi, 1962a, pp. 266–267).

The passage clearly reveals Polanyi's understanding of the subjective side of knowledge. It brings forth his effort to counteract the one dimensional positivist emphasis on external objectivity by establishing the personal foundations of cognitive activity. Assuming a

personal commitment to the search for truth, coupled with a firm belief that knowledge of reality is obtainable, Polanyi's theory recognized that scientific outcomes are a function of social interactions based on intellectual traditions and their conventions and practices. He saw these largely tacit social dimensions operating behind the scenes in the development of creative, imaginative hypotheses. He also saw how they influence the way scientists decide what is valid and what is not.

This post-critical theory of tacit knowing was in every way Polanyi's most original and innovative contribution to modern epistemology. Whatever name is applied, there is little in his theoretical approach that does not relate to a postmodern/postpositivist understanding of knowledge, scientific and otherwise. What Polanyi recognized is that various traditions and conventions that influence and sometimes guide the social interaction inherent in scientific inquiry are not immediately available to us. Toward this end, he identified a process of tacit knowing that is logically prior to the explicit form of knowing identified by objectivist epistemologies. Such tacit knowledge, he theorized, implicitly entered into the process of observation, everyday and scientific, through the observer's very act of perception, which relies on a *gestalt* of past experiences.[16] This tacit knowledge, as a repertoire of understandings and beliefs that undergird 'the traditional pursuit of scientific inquiry', is the very fulcrum from which otherwise objective knowledge acquires both its possibility and significance (Kegan & Polanyi, 1966, p. 64).[17] As such, cognitive knowing begins in the realm of the tacit—in the implicit—*before* taking an explicit form. Exactly because of these hidden influences, as he put it, we always know more than we can say.

This is an idea that is still difficult for many to accept, even to grasp, because it fundamentally challenges the neo-positivist insistence on offering a complete statement of each component involved in the creation of knowledge. That is, only a full acknowledgement of these components holds out the possibility of intersubjectively reproducing and thus testing the validity of scientific statements. Polanyi's theory of tacit knowledge makes clear that this is not possible. At the same time, he argued that any explanation of cognition that neglects these tacit factors will, at crucial points, lead to a false account.

Polanyi's understanding of this tacit dimension was well ahead of its time, and not well received by scientists and philosophers, as demonstrated by scholarly reviews of *Personal Knowledge*. For example, Brodbeck (1960, p. 583) described the work as 'existential mumbo-jumbo', an 'epiphany of Higher obscurantism'. Earle (1959, pp. 831–832) wrote that Polanyi provides us 'with no means whatsoever [to] distinguish truth from error'; and that, for Polanyi, 'fact is dependent on sheer belief' (1959, pp. 831–832). For our part, we are fully sympathetic to Polanyi's understanding of science. Indeed, given the time in which he developed it, it was an astonishing epistemological advance. His emphasis on social interaction and established conventions is truly a forerunner to a postpositivist, constructionist theory of the scientific community and the process of inquiry. Indeed, the role of tacit knowledge remains an ongoing challenge to those attempting to further elaborate the social constructionist perspective.

Since his time, the social studies of science have deepened the perspective in one important way that very much bears on the question at hand. This has to do with the specific nature of the dynamics of social interaction in scientific inquiry, in particular the question of the very *origins* of the specific tacit knowledge that underlies scientific work. It is in the light of these developments that we advance our critique of Polanyi's 'republic of science'.

Tacit Knowledge: Social Origins and Societal Meaning

Tacit knowledge, as Polanyi explained, is based on past experiences. It is, as he described, tethered to bodily and communal social experiences. Unfortunately, however, he failed to fully work out the social implications of these origins. Where he focuses rather narrowly on their influence on the social conventions of scientific practice, the postmodern perspective demonstrates that these social dimensions reach more deeply into society itself. In this view, the scientist is rooted not just in the conventions of the scientific community, but in the larger social system as well. That is, the very practices of scientific inquiry are situated within a particular social-historical context. We have learned that science has meant different things at different times, though this point need not be inconsistent with Polanyi's concept of conventions. It would only need to be developed and elaborated. Second, and more important for the present discussion, we have learned the ways that particular understandings of society permeate scientific practices themselves.

This deeper understanding of tacit knowledge contains the rudimentary elements of a new kind of social theory, one that includes a basic critique of underlying orientations about human nature, basic value configurations and their implications for social arrangements, and fundamental notions of how change can come about. Here the work of feminist scholars provides an excellent example of attention to this deeper level of the tacit dimension and its effects upon the organization of society, including science. That is, feminist work on epistemology by such authors as Fox Keller, Lloyd, Gilligan, Chodorow, Ruddick, Harding, and Michelson has shown the ways in which what Bordo (1986, pp. 439–456) describes as the 'Cartesian masculinization of thought' has penetrated our ways of knowing. For these theorists, equating 'detachment' with objectivity and uncritically elevating an ahistorical notion of rationality to the pinnacle of scientific thought, misses the ways in which subjects, knowledge and power are interconnected, and how gender politics enter the making of knowledge at various points.

Fascinatingly, this kind of orientation, which emphasizes the presence of 'epistemic negotiations' and pushes us to pinpoint the specific ways in which beliefs and discoveries of all kinds are always made within 'an interactive dialogic community' builds on attention to the influence of 'basic beliefs' and 'convictions' that Polanyi's own descriptions want to announce.[18] However, while Polanyi uses his insight to argue both in general and historical terms for our 'liberation from objectivism', the feminists and others have gone beyond the mere acknowledgment of the tacit dimension to disclose its specific socially and historically constructed nature, including its potential limitations and distortions.

Once we recognize our 'loyalty' to these underlying societal influences and the importance of 'transmission of social lore', we can also appreciate that the scientists' own deeper social views, especially as manifested in more latent tacit knowledge, influence their work. At the tacit level, such latent knowing operates more as tendencies, impressions, temperaments or impulses of 'conviviality' that lead people to lean both cognitively and normatively in one direction or the other. Moreover, if such underlying knowledge orientations influence the natural scientist's work, it is much more influential in the development of social theory itself, where it is always difficult to separate empirical from normative considerations, and ideologies from explanations.

And it is just here that we bring Polanyi's own theory of tacit knowledge to bear on 'The Republic of Science', an exercise in social and political theory. In this case, there is every

reason to assume that his formative experiences in Budapest are part of the tacit social knowledge that informed his life work. Indeed, it is reasonable to assume that just this tacit knowledge guided his interest in the kinds of questions that Hayek and the Mont Pelerin Society were pursuing. They became the 'fiduciary community', that is, the chosen and trusted community of knowers to whom he tacitly gravitated before formally joining them.

It is, then, here that we make our primary claim. If knowledge is grounded in tacit assessments, and no intelligence can operate altogether outside the fiduciary framework of which it is a part (i.e. the idiom and cultural heritage of the like-minded community), one can argue that the acceptance of Polanyi's neo-liberal conservative understandings are an important condition for taking seriously his republic of science. Outside this framework, there can be no claim to self-evidence. It follows then that 'The Republic of Science' cannot stand alone. In terms of Polanyi's own post-critical epistemology, his proposal needs to be assessed within the neo-liberal traditions in which it is tacitly grounded. And as such, it need not be accepted by anyone holding a different set of assumptions, tacit as well as explicit. In fact, his own post-critical account of knowledge would require an open articulation of these assumptions in the processes of advocating his version of an authentic republic of science. Such a presentation of this tacit dimension would have better enabled others to grasp and judge his argument.

In this respect, Polanyi failed to give the full accounting that he would otherwise find essential to fulfil his own prescriptions of an adequate assessment. Nowhere in this work does he formally ask the reader to consider the social and cultural assumptions which indicate the basic orientations that gave shape to his tacit understandings—presuppositions required for a full assessment of his contribution. It may be the case that one cannot—perhaps by definition—spell out *every* detail of one's tacit knowledge (Polanyi would be the first to point out how difficult this is), but this does not preclude presenting some of the basic influences and assumptions that have shaped it. Indeed, Polanyi describes the contours and workings of his ideal republic in such a way that they often take on the character of a *natural* model of science and society rather than a sociopolitical construction. And if he doesn't make such an argument, it does emerge later in the sociology of science. Merton and others, citing Polanyi, simply posit it as the basis of the good political society. In this regard, the idea of a republic of science goes on to have a life of its own, detached from its very particular fiduciary community.

The ultimate test of Polanyi's own formulation is found in the fact that his unstated, but intuitively detectable assumptions, make the members of other fiduciary communities weary about his formulation from the outset. This suspicion operates on two levels. One is the more intuitive. For other knowledge communities, in particular a left-liberal or a postmodern community, his prescripts are almost immediately suspect; that is, the very language, intellectual symbols, and structure of the argument give these readers their own tacit clues as to what this theory is about, even if they cannot at first say why. But there are also more explicit clues that help to further open the door to a deeper and clearer understanding of Polanyi's most basic assumptions. One of the best of those is his reference to Edmund Burke (1970). Although the significance of this brief discussion can easily escape the reader, it is of central importance to the more fundamental purpose. To grasp this, however, one has to turn to Polanyi's other political-philosophical writings, again more squarely grounded in his fiduciary community.

The Republic of Science: Traditional Authority and the Problem of Social Change

As earlier noted, Polanyi's essay on 'The Republic of Science' has been interpreted as a call for a technocratic approach to political decision-making. But his purpose was *not* to argue that scientists should make the decisions for society as a whole. Instead, at its core, 'The Republic of Science' is an attempt to bring classical conservative theory in line with contemporary political realities. Polanyi, in this respect, was at best minimally interested in the details of the institutional decision-making processes of a democratic republic, such as constitutional or legislative-executive arrangements. Indeed, he devotes very little attention to them. Rather, for him, the future of a free society depended on the acceptance of a set of basic ideas—but not just any ideas. His is an argument for Burke's ideals and, more generally, for the conservative political tradition. Polanyi is most concerned with what he sees as a particular problem confronting this tradition, namely its lack of an adequate theory of social and political change.

Specifically, Polanyi saw a need to update conservative thought with a more robust theory of social and political change and, in the process, to provide a set of guidelines for governing it. Given the problematic lack of clarity that often emerges in the essay, in order to grasp this direction of his work, one has to turn to other writing to which he alludes in passing in 'The Republic of Science'. In the view here, it is his relatively unsystematic mode of discussion that leads many to write off his republic of science as anachronistic, technocratic, or just confused.

Burke, as a pillar of classic conservative political philosophy, is essential to the tradition in which Polanyi immersed himself. Given that Burke was a major opponent of social and political revolution, it should come as no surprise that Polanyi had a particular interest in his work. Whereas Burke was the leading critic of the French Revolution and the idea of revolution more generally, Polanyi was worried about the Soviet Revolution. Although he shared Burke's fundamental concern about the fate of conservative values in revolutionary times, Polanyi also recognized that times had changed. He saw that Burke had not supplied an adequate theory of social change, especially one suited to the fast moving pace of the twentieth century. To be sure, Burke recognized the role of change; he offered an evolutionary theory of gradual change. For Polanyi, though, a theory of gradual change had to be provided with a contemporary and relevant set of political arrangements.

To underscore the importance of the issue, Polanyi engages the radical position of Thomas Paine, the great American revolutionary, by juxtaposing it to Burke's writing on revolution. Specifically, this debate between the two men was structured around Paine's response to Burke's writings about revolution. Whereas Burke vehemently rejected cataclysmic social change in the name of tradition and authority, Paine (2008) asserted the right of each generation to make its own revolution. Of course, Paine's support of a revolution by every generation is not a practical possibility, and the debate comes off as rather contrived. But Paine's argument was significant to the American Revolutionary political legacy and thus still carried a certain ideological appeal. And, no doubt, Polanyi was concerned about the echoes of such a legacy in the socialist arguments for revolution in the 1920s and 1930s in Europe, and later, as well, in the developing world (see Allen, 1998). Polanyi thus found it fitting to use the argument as a vehicle for reintroducing Burke's contention that cultural tradition and authority, rather than firebrands, should guide society. At the same time, though, he recognized that change had become

a much more dynamic feature of the politically turbulent technological societies of his time than it was in Burke's aristocratic horse-and-buggy England of the eighteenth century. A theory of evolutionary change, in short, needed to be equipped with a more sophisticated theory for guiding the process.

The particular problem that needed attention, as Polanyi saw it, was Burke's less developed understanding of the institutions or processes that could guide and govern orderly social change. The Whig conception of tradition and authority—elitist and class-based—was overly focused on social stability, providing institutional arrangements inadequate for managing Polanyi's broader understanding of 'societal self-improvement'. For him, the mechanism was at hand. It involved extending to the larger society the social interactive model of governance that he believed to characterize the scientific community. Guided by tradition and authority, as he argued in 'The Republic of Science', science offers an orderly process of change that can be adapted, if not directly transferred, to a system of political decision-making.

In this understanding of the political system, social ideas and political proposals are likened to scientific hypotheses; social and cultural traditions can function like established conventions in science; and the authoritative elites of the socio-political system can replicate the gatekeepers of a scientific community, always there to judge the validity and reliability of the arguments. This then supplies the basis for an incremental rather than a radical process of social change. It is a prescription that is not only widely shared by conservative thinkers; it also leans toward Popper's noted concept of piecemeal social engineering, advanced at the time as an antidote to the Marxist theory of social change.[19]

This turn to the dynamics of scientific change as the model for the larger society is a subtle and potentially appealing theoretical move. But it fundamentally misconstrues the difference between the natural and social worlds. In Polanyi's conception of social interaction in the scientific community, tradition and authority are narrowly drawn. They pertain mainly to conventions of interaction and discovery basic to a commitment to truth, the need to relate hypotheses to established propositions, deference to the peer review process, and the like. When we turn to culture and authority in the social world, however, the realm of considerations expands dramatically.

In this context, culture undergirds nearly everything relevant to the organization and guidance of a multi-faceted social system. Even more important, in the world of political struggle, culture itself is one of the topics at issue. That is, culture in the political world cannot simply be established as a given. Indeed, from a postmodern sociological perspective, the emphasis is placed on the very *multiculturalism* of a liberal society. Members of different groups in such a society do not necessarily share all aspects of the same culture. To be sure, for such a society to hold together there must be common elements. But some hold subcultural variants of the dominant cultures. Others will be members of altogether different cultures, which will sometimes break out into open conflict with the dominant culture. Contemporary cultural clashes around feminism, environmentalism, and the possibilities and limitations of religious diversity in a predominantly Christian society are primary examples.

Put in another way, in the social world, there is thus no fixed vantage point to which one can ground a cultural orientation and its traditions. Whereas the scientific community has the physical world as a relatively fixed reference point to which research must refer, the socio-political world has no such anchor. In the political world, moreover, judgments about social action affect a much wider range of actors sharing different social

assumptions, competing understandings of social behaviour, ways of knowing, political orientations, and the like. Unlike members of a scientific community, the members of a society do not necessarily share a commitment and a narrowly defined set of criteria that they bring to bear on the decision-making process. Given this social reality, final decisions in the political world ultimately rest on the exercise of power.

In the political realm, those with power determine the dominant cultural practices, whether they be acceptance of ethnic groups, same sex marriage, government aid to religious organizations, or the protection of natural wonders. Although political ideas and arguments are offered in support of particular social and political practices, they are ultimately grounded in interests. As postmodern theory has emphasized, to the dismay of conservative thinkers, there can be no commonly accepted arbitrator capable of rationally or methodically prioritizing or ruling out particular ideas.

Today we even recognize that leading epistemological ideas have emerged from particular political-cultural contexts. To be sure, there are procedural rules and conventions for dealing with political decisions, but they are not attached to an unchangeable social reality. Indeed, postmodern politics has emerged as a form of cultural politics geared to the deeper considerations that construct—or deconstruct—a particular reality (Jordan & Weedon, 1995).

In this regard, to return to Polanyi's critique of Paine, there is scarcely a chance that Paine would have accepted Polanyi's argument. Paine's 'political citizen' and Polanyi's 'citizen of science' are just not the same person. Paine would have only reasserted his hostility to the very aristocratic, repressive culture, and hierarchical authority underlying Burke's—and Polanyi's—worldview. Paine was, in fact, calling for the abolition of the social injustices and economic inequalities to which they gave rise. And surely the same can be said for any of the socialist agitators that Polanyi feared. For them, Polanyi's republic of science would be judged as a romantically conceived ideological cover for the inequalities and repressions of capitalist class structure. What is most telling is that such topics never emerged as central concerns in either Polanyi's own writings or in the fiduciary community to which he aligned himself.

Indeed, reading Polanyi one never gets a clear sense that he had much of a grasp of political sociology, social structure, and the class politics basic to these topics. Not only did he fail to acknowledge that he was—tacitly—defending what is essentially a class position (one that gave rise to socialist critiques and their movements in the first place); he never discussed the implications of social structure and class for his own theory of science and society. And this is not without implications for his own theory of science and society, a point that is well illustrated by Gouldner's theory of the 'new class intelligentsia'.

The defining feature of 'new class' intellectuals, as Gouldner (1979, pp. 49–72) made clear, is their commitment to a 'culture of critical discourse' that denies or rejects—at least formally—any *a priori* standing to tradition or authority. Finding tradition both anachronistic and oppressive, they typically search for new social arrangements to replace existing ones. And while there are differences among segments of this new class, even the technical intelligentsia, according to Gouldner, is not exempt from this culture. While the critical dimensions of such discourse culture typically remain latent among technical experts, it can and does often emerge in times of paradigm conflict. The technical intelligentsia, moreover, has in significant part based its claim to influence and power on the ideology and methods of positivist knowledge and its utilitarian value (namely, their ability to keep the apparatus running). Indeed, from Gouldner's point of

view, this intelligentsia trades on just the kinds of epistemological abstractions that Polanyi was worried about.

In short, the very scientific class to which Polanyi wanted to turn appears to be an unreliable lot for the task he would assign to them. Gouldner, echoing Mannheim in interesting ways, sees intellectual workers as having no special allegiance to the upper or moneyed classes whom they serve, opening the possibility of alliances with other groups under particular circumstances. In fact, Gouldner portrays them as the closest thing to a universal class that we have, albeit an imperfect one. While they never act against their own interests, they owe no special or necessary allegiance to the culture and traditions of capitalism, holding out the possibility of other alliances under different circumstances. The potential conflicts and contradictions between this class and the system for which it works have been analyzed by numerous sociologists. Bell (1976), for one, framed the problem as a 'cultural contradiction' of modern capitalist society.

These considerations bring us back to our earlier point, namely that scientific tradition is not directly analogous to social tradition, as Polanyi's model suggests. This then poses the question: Has Polanyi's under-sociologized theory of the republic of science failed to see this potentially problematic social tension in what he was essentially offering as a model foundation for a relatively stable socio-political order based on individual freedom? If Gouldner is right, as we think he is, Polanyi's theoretical proposal carries within it the seeds of just the kind of postmodern politics from which he wants to rescue western society.

To be sure, postmodern theory can be construed as just one such new challenge. Oriented to a more radically democratic vision of a free society, it questions both the conception of progress underlying the republic of science, as well as the authority of the scientists and technologists driving it. Whereas Polanyi's social theory looks to the past, postmodern theory looks for a new future. Instead of searching for a set of governing procedures anchored to a particular way of knowing, postmodern scholars argue for a broader—and thus more democratic and equitable—conception of both science and society. It is one that calls for many voices rather than a narrow few. As such, it recognizes the role of experts, but calls for a much more expanded definition of the kinds of knowledge upon which such expertise rests, including the local knowledge of citizen experts engaged in open deliberative practices, both political and scientific.

The purpose here is not to argue for such a politics, but rather only to point to the very different kinds of political proposals that necessarily flow from the recognition of competing forms of tacit knowledge and the more explicit postmodern theoretical challenges that have emerged from them. Given his own tacit orientation, these are directions that Polanyi surely deplored. But, in ironic ways, this direction is built on the very kinds of understandings Polanyi himself introduced in his own remarkably rich and provocative writings.

Conclusions

We began our discussion with the question of the 'republic of science'. What was Polanyi proposing and how can we understand it? This question quickly posed two problems. The first was that Polanyi doesn't really offer us a clear and detailed discussion of a republic of science. As we pointed out, his essay provides no discussion of institutions in practice—of division of powers, of rules for decision-making, and the like—that one would expect to accompany the delineation of a governing republic. Instead, what one finds is a pastiche of

interrelated themes, mostly about a vision of what he describes elsewhere as 'a society of explorers' (Polanyi, 1962b, p. 16), which, for the most part, is interesting enough, but never sufficiently substantive to help the reader know what the author wants us to take away from the text. Polanyi's one unmistakable message is that, the scientific community has its own mode of interaction, that it is of crucial importance for the improvement of a society based on free association and thus, as he argued throughout his career, no government should interfere with the work of scientists. Indeed, Polanyi wants us to accept the practices of the scientific community as a guide for designing a system of republican governance. As such, one is tempted to conclude that the argument is a variant of earlier calls for technocracy. In any case, given what we know about science and society today, thanks to a newer sociology of science (to which, in important ways, Polanyi contributed), Polanyi's political-philosophical contribution seems surprisingly thin, if not politically naïve.

We thus asked how the man who could brilliantly develop a post-critical philosophy worked out in his *Personal Knowledge* could also author 'The Republic of Science'? Especially given the postmodern epistemological nature of his theory of the tacit dimension and the tacit knowing that necessarily flows from it, it was, from the outset, difficult to reconcile these two directions of his thought. In an effort to unravel this quandary, we looked more closely at Polanyi's fuller treatments of these themes in some of his other writings and discovered a clue—namely, that there was another dimension of the man and his life that does not emerge in either 'The Republic of Science' or the works of those who have sought to present and analyze his understanding of science and politics. Polanyi himself, as we have tried to show, was deeply connected to a 'fiduciary community' involving the leading neo-liberal conservative thinkers of his day. The themes running through the various (and at times seemingly disjointed) discussions in 'The Republic of Science' are part of the intellectual heritage and ongoing debates of this particular group, especially as they manifested themselves in Hayek's neo-liberal network, the Mont Pelerin Society.

It is this less visible intellectual history that, we have argued, began in Budapest and ran through Mont Pelerin, Manchester and Chicago, which shaped the foundation of what Polanyi himself would surely have urged us to identify: the delicate tacit judgments and evaluations underlying the construction of the arguments advanced in his 'The Republic of Science'. Indeed, there is scarcely a point—whether it is his discussion of the limits of 'planned science' or of planning of any kind, his critique of totalitarianism and its dangers, the Smithian 'hidden hand' of individual action in coordinating economic activity, the misguided efforts to target and support scientific research, or his references to Burke and Paine—that does not connect with the debates of the Mont Pelerin Society and the deeper presuppositions and conclusions of neo-liberal discourse more generally.

Nowhere, it seems, did Polanyi seek to explicitly examine the significance of the power and influence of this tacit background upon his own thinking. Especially given that Polanyi argues in *Personal Knowledge* that no knowledge can exist independently of such a tacit framework, and that the 'articulation' of problems, the 'intellectual passions' and 'beliefs' that inform any intellectual project, and the very heart of a knowing life are guided by a particular tradition of thought, it is astonishing that this hidden dimension has received no mention. That is, if we accept Polanyi's own theory of knowledge, it is essential to have this background information—both personal and cultural—in order to

make an adequate assessment of his contribution to a discussion of science and society. But nowhere in 'The Republic of Science' does he make us aware of this rich and specific historical, intellectual and quite personal background that gives meaning to his social and political writings.

Having identified Polanyi's own tacit dimension and its connections to the arguments about a 'republic of science', our article then sought to examine the implications of such a theory of tacit knowledge for science and politics more generally. Indeed, we have argued that Polanyi's insightful writing on personal knowledge prefigured what was later to become the postmodern turn in social theory and social studies of science. Earlier than others, Polanyi's understanding of the institutions and authority structures of the scientific community pointed to a social constructionist perspective in studies of science. As we have tried to show, a fuller extension of the implications of his theory would more fully situate the scientific community within society itself. Whereas Polanyi mainly limited his discussion to social behaviour *within* the scientific community, postmodern scholars would urge us to go further: to see this relationship anchored more fundamentally in the social beliefs, ideologies, and systems of power of the society of which the scientists themselves are an integral part.

As we have argued, Polanyi's 'The Republic of Science' was actually his attempt to supply society with a cultural orientation resting on *specific* scientific traditions and authority. But a deeper look at the writings behind these assertions showed that he conflated this understanding of tradition and authority with ideas he found, and an entire worldview that he embraced, in the conservative political philosophy of Burke and the neo-liberal conservatism of Hayek and others. We have argued that while science can rely on a relatively narrow and specific conception of culture and tradition, no political system can do the same. Certainly, if one looks carefully at any modern pluralist society, one sees that there can be no preordained social or political culture. In place of a single dominant culture, as postmodernists argue, there is a need for a multicultural perspective and a cultural democratic orientation. Polanyi actually invites us to move in this direction, but stops short of its implications.

Finally, we hope to have shown that beyond the relevance of our analysis for intellectual history, the discussion of tacit knowledge has myriad implications. Polanyi's insights about tacit knowledge, in fact, have again emerged in the contemporary literature, especially in the professional fields of medicine and management (see Sternberg & Horvath, 1999). Unfortunately, these works tend to rest on a rather limited understanding of what Polanyi urged us to recognize. We thus see a need to work out a more critical understanding of the role of this tacit dimension in both inquiry and deliberation. While we cannot develop that point here, we hope to have called attention to the need for a more critical conceptualization of tacit knowledge and for the processes of knowing it. Indeed, it is time to take seriously the more challenging theoretical/epistemological perspectives introduced in Polanyi's work and incorporate them into our contemporary understanding of both epistemology and social theory. The spirit of Michael Polanyi's own work would expect nothing else.

Notes

[1]Merton's 1973 text has long represented—and in some places still does represent—the mainstream tradition in the field. In this work, the social context of science was focused on the scientific community

itself, in particular the institutional and normative factors that govern it. Also see Hollinger (1998) and Jarvie (2001).

[2]It should also be pointed out that there were some similarities between the views of Polanyi and Kuhn on the dogmatic and often authoritarian nature of the scientific community, which Polanyi noted himself in comments on a paper by Kuhn (see Polanyi, 1963). Also see Fuller (2000). We refer here as well to the more critical tradition of the social studies of science that was to follow after Kuhn, in particular the works of Latour and Woolgar (1979), and Jasanoff *et al.* (1995).

[3]The narrative presented here is based primarily on the writings of Prosch (1986), Gill (2000), and Jha (2002); Scott and Moleski (2005), Gelwick (2004), Knepper (2005) and Hacohen (2001).

[4]Hull provides a useful discussion of this history of ideas in his essay, 'The Great Lie: Markets, Freedom, and Knowledge' in Plehwe *et al.* (2005). Although his focus is different from ours, his argument that the very idea of 'knowledge' and 'related intellectual inventions', such as Hayek's 'problem of knowledge' and Polanyi's 'tacit knowledge', are 'politically-motivated intellectual devices' is an important contribution and most relevant to this discussion. Where Hull (2001) seeks to understand the inner epistemological workings of Polanyi's theory of tacit knowledge, we have a different purpose in this essay. Our task is to apply the significant insights of Polanyi's own theory of the tacit dimension in an effort to better understand his theory of the Republic of Science.

[5]A testament to the level of these discussions about politics, science, and society is that they laid important foundations for Mannheim's later contribution to what came to be known as the sociology of knowledge, spelled out in his famous book, *Ideology and Utopia* (1936). The book developed the early foundations of a post-positivist sociology of knowledge.

[6]With regard to Hayek there tends to be a certain amount of confusion about the use of the term 'conservative'. While Hayek is generally considered to be a conservative theorist, this covers over important differences among writers on the political right. Indeed, Hayek (1960) had his differences with many conservatives, spelled out in his essay 'Why I Am Not a Conservative', first published as a chapter in *The Constitution of Liberty*. As opposed to traditional conservative free-market theorists, Hayek argued that capitalism required a stronger commitment to reform and change, thus necessitating a larger role for the state than was usually accepted by other free-market conservatives (see Nash, 1996). Thus it is more helpful to consider Hayek as a 'neo-liberal conservative'.

[7]It is significant to note that Hayek's most famous book, *The Road to Serfdom* and Karl Polanyi's *The Great Transformation* were both published in the same year, 1944.

[8]As noted above, whereas classical liberalism emphasized the role of the market, Hayek's neoliberalism accepts the need for a limited state in a market society.

[9]As Polanyi described 'Any attempt to organize the group of helpers under a single authority would eliminate their independent initiatives and thus reduce their joint effectiveness to that of the single person directing them from the centre. It would, in effect, paralyse their cooperation' (Polanyi, 1962b, p. 3). See also Allen (1998).

[10]Parenthetically, it can be noted that Hayek and his associates, including Polanyi, have never succeeded in clarifying why the fragmented components of the individual's mind better come together than those of central planners. One of their standard attempts to explain this purported reality involved pointing to Kenneth Arrow's impossibility theorem, which shows that public preferences cannot be rationally aggregated. But always neglected in this explanation is the fact that Arrow's theorem also applies to the private sector. It thus supplies no solid support for the argument against public planning. In short, a central component of the fiduciary framework remains more of an ideological contention than an established theoretical finding.

[11]Polanyi and Mannheim remained in touch during these years, particular through the intellectual activities of a group that referred to itself as 'The Moot'.

[12]The title of 'social studies' was decided after the sociology department at the university refused to acknowledge him as a sociologist. The president of the university thus established a free standing chair in Social Studies for Polanyi.

[13]See Gill (2000), especially chapter 1.

[14]Also see *Tradition and Discovery*, a journal that specializes in Polanyi scholarship.

[15]It is surely not by accident that Polanyi devotes 70 pages of analysis in *Personal Knowledge* to the role of 'intellectual passions' (see chapter 6, pp. 132–202). For Polanyi, passions and even love are never far away: 'Yet personal knowledge in science is not made but discovered, and as such it claims to establish contact with reality beyond the clues on which it relies. It commits us, passionately and far beyond our

comprehension, to a vision of reality. Of this responsibility we cannot divest ourselves by setting up objective criteria of verifiability—or falsifiability, or testability, or what you will. For we live in it as in the garment of our own skin. Like love, to which it is akin, this commitment is a "shirt of flame", blazing with passion and, also like love, consumed by devotion to a universal demand. Such is the true sense of objectivity in science . . .' (p. 64).

[16]For a good discussion of this theory, see Prosch (1986, chapter 4). Also see Thorpe (2001).

[17]As they argue, 'the scientist can conceive problems and pursue their investigation by believing in a hidden reality on which science bears' (pp. 74–75).

[18]See Potter (1993), Longino (1993), Michelson (1996) and Harding (2008). Bat-Ami Bar On (1993) refers to 'epistemic privilege' (pp. 83–100).

[19]With regard to social change, it might be noted that Polanyi cautioned Hayek against his support of utilitarianism, as it can also be used to support the socialist interest in expanding the welfare state. Whereas utilitarianism offers no substantive criteria, tradition requires adherence to established, stable, authoritative pathways to societal improvement. See Allen (1998). With regard to Popper and Hayek on these points, see Nordmann (2005).

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