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Richard Woodfield

POLANYI, Michael (1891–1976)

Michael Polanyi was born in Budapest on 11 March 1891 and died in Northampton on 22 February 1976. At the age of seventeen Polanyi began his medical studies at the University of Budapest. At the university, he and his brother Karl, the future economist and historian of the industrial revolution, founded a radical, progressive student group called the Gallie Circle, which participated in publishing a literary magazine, *West*, and a political journal, *Twentieth Century*. Polanyi did not neglect scientific research. Between 1910 and 1911 he published three papers on the chemistry of body fluids while still in his third year of medical school. Polanyi spent the summer of 1912, before completing his medical degree, doing research in physical chemistry with Professor Georg Bredig at the Karlsruhe College of Technology in Germany. There, Polanyi researched the relation between the Third Law of Thermodynamics and extreme pressures. Bredig sent the results of Polanyi's research to Einstein, who was quite impressed with the effort, and Polanyi published his paper on the subject in 1913. At the end of the summer, Polanyi returned to the university in Budapest to complete his medical studies, and received his degree in 1913. Polanyi then returned to Karlsruhe, where he engaged in research in physical chemistry, and published five papers on thermodynamics and two papers on the adsorption of gases by solids in 1913–14, and

two further papers on adsorption in 1916–17.

When World War I broke out in August 1914, he joined the Austro-Hungarian Army as a medical officer. Polanyi's military service ended when he contracted diphtheria in 1915. During his recuperation he wrote a dissertation in physical chemistry based upon his Karlsruhe research. This work, 'Adsorption of Gases by a Solid Non-Volatile Adsorbent', was accepted by the University of Budapest, and Polanyi received a doctorate in chemistry in 1917.

After the war, Polanyi took up a position at the University of Budapest as assistant to chemistry professor George von Hevesy, a former associate of Bredig in Karlsruhe and of Rutherford in Manchester. His disaffection for Bela Kun's communist regime induced him to leave Budapest for Karlsruhe some time at the end of 1919. In 1920 Polanyi took up a position at the Kaiser Wilhelm Institute of Fibre Chemistry in Berlin, and in 1923 he became the Head of one of the departments of the Fritz Haber Institute for Physical Chemistry and Electrochemistry. Based on his work there, Polanyi was appointed a life member of the Kaiser Wilhelm Society for the Advancement of the Sciences and received the title of professor from the University of Berlin in 1926. When Hitler came to power in 1933 Polanyi decided to leave Germany. He resigned his life membership of the Kaiser Wilhelm Society, relinquished his position at the Institute, and accepted the Chair of Physical Chemistry at the University of Manchester.

In England, Polanyi continued to run a research laboratory and to publish significant scientific papers until the mid 1940s. Polanyi became a British citizen in 1939, and was elected a fellow of the Royal Society in 1944. He published his 218th, and final, scientific paper in 1949.

In the 1930s Polanyi's interests turned increasingly to politics, economics and philosophy. Polanyi's experiences in Kun's Hungary and Hitler's Germany had convinced him that freedom of thought and expression, of which freedom of scientific research is simply a special

case, is a social necessity. Polanyi believed that it is this freedom that ultimately ensures that the truth will be heard, and that it is the possibility of truth that promises the hope of justice. In keeping with these convictions, Polanyi published essays criticizing the callous disregard for the truth by both the Nazis and the Soviet communists. He was a tireless critic of the forces of social determinism in England, and in 1940 he published *The Contempt of Freedom*, a collection of essays criticizing a movement among British Marxist intellectuals advocating the social planning of scientific research. Polanyi's opposition to this movement led him in 1941 to co-found, with Professor John R. Baker, a biologist at Oxford, the Society for Freedom in Science.

Beginning in 1943, Polanyi began to synthesize these interests into a research project concerning the interrelationship between scientific research and the broader social fabric of which it is a part. He presented this work as the Riddell Memorial Lectures at Durham in 1945, and published it, as *Science, Faith and Society*, in 1946. In it, Polanyi employed findings of Gestalt psychology and case studies from the history of science and mathematics to illuminate the way in which scientific investigation results from a delicate interaction between the free thought of individual researchers and the scientific consensus within which those researchers function.

Polanyi's new dedication to the development of a philosophical system capable of explaining scientific discovery led him to exchange his Chair in Chemistry at Manchester for a Chair in 'Social Studies', created specifically for him, in 1948. On the strength of his growing reputation, the Committee on Social Thought at the University of Chicago prevailed upon the university administration to offer Polanyi a chair in 1950. However, Polanyi was unable to take up the chair because he was denied a visa to enter the USA. A 1942 lecture that Polanyi gave to an organization he did not know to be communist was sufficient grounds for US officials to find him to be 'politically unreliable'

according to the recently passed McCarran Act. Thus, despite the recognition conferred by the invitation to give the Gifford Lectures at Aberdeen in 1951–2, and although he benefited greatly from the collaboration of the philosopher Marjorie Grene, Polanyi was forced to conduct the research for his most significant philosophical work, *Personal Knowledge: Towards a Post-Critical Philosophy*, based on his Gifford Lectures, without the aid of a vibrant community of social scientists at the University of Chicago who were already sympathetic to his ideas.

After the publication of *Personal Knowledge* Polanyi was invited to be the first Lindsay Memorial Lecturer at Keele. The lectures were published in 1959 as *The Study of Man*, in which Polanyi extended to the human sciences the new philosophy he had expounded in *Personal Knowledge*. In the same year, Polanyi left Manchester to take up a senior research fellowship at Merton College, Oxford. However, due to the greater interest in his work in the USA, Polanyi held a number of visiting appointments there in the years until his death. In 1962 he gave the Terry Lectures at Yale University, published in revised form in 1966 as *The Tacit Dimension*. In 1969 Polanyi gave two series of lectures on 'Meaning' at the Universities of Texas and Chicago. In those lectures he extended his philosophy of tacit integration, and increasingly used analogies from the realms of art, religion and myth to illustrate his philosophical system. These lectures, along with other material, formed the basis for Polanyi's *Meaning*, completed with the aid of Professor Harry Prosch and published in 1975. Polanyi died in February 1976.

Polanyi's central philosophical work, *Personal Knowledge*, published in 1958, received largely unfavourable reviews from philosophers. Even those reviewers more inclined to view the work positively treated it as a work in the sociology of science. This was in no small measure due to the difficulty of Polanyi's presentation. Polanyi wrote in a dense continental style, employing conceptual frame-

works from Gestalt psychology and marshalling data from psychological research as evidence for his theses. Furthermore, Polanyi eschewed the dominant analytical emphasis on clarity of presentation and providing explicit proofs of theses. Instead, Polanyi employed a number of neologisms and relied frequently on analogical argument based on examples from a wide range of fields, including biology, languages, art and religion.

Despite these perceived weaknesses in presentation, Polanyi's work offers much of value to the careful reader, and his contributions were recognized by, among others, Thomas Kuhn and the sociologist of science Robert K. Merton. Polanyi's criticisms of the then-dominant positivistic conception of science are often damning, and his own positive conception of knowledge prefigures current interests in both naturalized epistemology and phenomenology. Some of the central issues of the book include the critique of objectivism, the introduction of the concept of personal knowledge, and a discussion of the role of tradition in the 'republic of science'.

According to Polanyi, objectivism involves the following four theses: (1) knowledge is limited to what is physically observable and measurable; (2) thus, scientific theories, in that they go beyond observables, do not contain truths; rather, they are 'simple', 'symmetrical', 'economical' or 'fruitful'; (3) knowledge is detached, and thus incompatible with emotional and personal involvement on the part of the knower; and (4) reality is reducible to the objects studied by chemistry and physics.

Polanyi seeks to supplant the objectivist conception of knowledge with his own view of knowledge as personal. It is crucial to note that Polanyi's notion of personal knowledge is no more a subjectivist one than it is an objectivist one. Polanyi rejects the charge of subjectivism for a number of reasons, among them his notion of personal knowledge as fallibilist, his idea that knowledge establishes contact with reality in part through its anticipation of as yet unknown true implications, and his concep-

tion of science as attempting to discover the rational structure intrinsic to reality. This last point also suggests how Polanyi wished to link his epistemology and his ontology. For Polanyi, the structure of knowing is mirrored in the structure of what is known: 'what is comprehended has the same structure as the act which comprehends it' (*The Tacit Dimension*, p. 55).

One reason Polanyi gives for the irreducibility of personal nature of knowledge is that knowledge is irreducibly tacit. In its most mature development, Polanyi explicated the notion of tacit knowing, borrowing from C.S. Peirce's notion of logical triad, in terms of a tacit triad. This 'consists in subsidiary things (B) bearing on a focus (C) by virtue of an integration performed by a person (A) ... in tacit knowing we attend from one or more subsidiaries to a focus on which the subsidiaries are brought to bear' (*Knowing and Being*, 1969, pp. 181-207). An example of tacit knowing is the use of an instrument, a metal probe, to explore a cavity. One is subsidiarily aware of the metal probe in one's hand, but, to the extent that one is skilled in its use, one is in fact focally aware of the attributes of the cavity that one is exploring. In being used by us, tools, like the metal probe, become a part of us - in Polanyi's terminology, we indwell them. Indeed, by indwelling tools, we may become aware of the features of our environment to such an extent that we indwell these features as well. This interiorization of the environment through tacit knowing Polanyi terms tacit integration.

Tacit knowing is ineliminable. Any attempt to train one's focal awareness onto a phenomenon of which one is normally merely subsidiarily aware will result in a failure to continue to perform adequately. Thus, a skilled musician who trains her attention on the movements of her hands will become confused and have to stop. Or, as Polanyi notes, subjects wearing inverting eyeglasses may learn to stop attending to their visual images, instead attending from them to the world, and thus cope with the world around them. However, as soon as they refocus their awareness on their visual

images themselves, they will again fail to cope. Polanyi recognizes this phenomenon of tacit knowing everywhere: in perception, in linguistic communication, in face recognition, in skilful action. Further, since the actions one takes in tacit knowing are not themselves reducible to the following of an explicit set of rules, the phenomenon of tacit knowing provides further evidence for the irreducibility of the role of the personal in knowledge.

Indeed, for Polanyi, the stamp of the personal is everywhere on knowledge. Its very structure, which Polanyi sees as involving two 'poles', is a linkage of the personal, belief, with the objective, truth. This linkage itself, however, is also the result of a person's action, an intellectual commitment, or 'fiduciary act'. It is for this reason as well that the intellectual passions, further evidence for the ineliminability of the personal, are central to scientific knowledge. These passions play a crucial selective role, leading to one's judgements of the scientific value of a particular result or the intrinsic interest of a particular line of investigation. They have a heuristic function, linking the appreciation of the scientific value of a question to a certain vision of reality, and thus guiding the way to a solution, to the crucial spark of intuition. It is this function that also convinces the scientist to abandon received ways of thinking and to commit to her own vision. The appreciation of intellectual beauty also has a heuristic function, making the intuitive leap to a radical new theory, once performed, irreversible. Finally, the intellectual passions play a central persuasive role, inducing the scientists' colleagues to appreciate as well the value of the endeavour, and of the radical theoretical result, for themselves. Thus, Polanyi shows the role that sympathy and trust between scientists play in the dissemination and acceptance of new theories.

This last element of the role of the intellectual passions in the advancement of science is particularly significant in the relationship between master and novice. In learning from a master, according to Polanyi, the novice necessarily

surrenders himself to his teacher, for, in acquiring the standards by which to select lines of inquiry and to seek innovative theories, the novice must simply adopt those standards inculcated in him by his teacher. To do otherwise, to subject the teacher's standards themselves to critical inquiry on the basis of the novice's current standards, would be impossible for two reasons, Polanyi notes. First, the novice cannot judge the teacher's superior standards on the basis of the student's own current ones. Second, we cannot subject standards themselves to the same critique to which, by means of those standards, we subject other questions. Rather, the adoption of standards of judgement is the result of a reaction of the intellectual passions.

Thus, adoption of the standards of scientific investigation is not itself the result of a reasoned decision on the part of the novice; rather, it is like being induced into a guild, or society, by the authority governing that society. Indeed, for Polanyi, it is clear that the 'republic of science' is governed by authority, for example in the awarding of degrees, grants and positions or the refereeing of papers. However, this authority is a General Authority dedicated only to maintaining existing standards and the general consensus concerning the current state of the art, as opposed to a Specific Authority that imposes upon its subjects a particular set of beliefs or theories. Furthermore, it is a society based on tradition, both of the art of scientific research and of the respect for scientific standards and the goal of truth. It is a 'society of explorers', dedicating themselves to its aims and not forced to bow to an externally imposed will.

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Joseph H. Shieber

POLE, David Lawrence Shmarya (1923–77)

David Pole was born on 6 December 1923 and died in London on 29 April 1977. He took a BA in modern history from Oxford (1949) and another in philosophy from London in 1953. He took his PhD in philosophy from University College London (1956), studying under A. J. Ayer. He was appointed first assistant lecturer (1955), then lecturer (1958) in philosophy at King's College London and remained there until 1977.

Pole was interested in a wide range of philosophical areas, including aesthetics, ethics, WITTGENSTEIN, the concept of rationality, and ancient philosophy. He is probably best known for his work on Wittgenstein and aesthetics. His book, *The Later Philosophy of Wittgenstein* (1958), was one of the first studies of the philosopher's later writings. In the book Pole introduces readers to central topics in the *Philosophical Investigations* and *Remarks on the Foundations of Mathematics*, and in particular to Wittgenstein's thought on linguistic method, language-games and the private language argument. He raises a number of objections to Wittgenstein's approach to language, arguing, for example, that Wittgenstein 'presents in terms far too negative the part that intentional and psychological factors play in language' (*Later Philosophy of Wittgenstein*, p. 90). A feeling of strangeness or fitness in relation to some course of reasoning may be important to following or not following that course, yet Pole claims this would be discounted by Wittgenstein, and he is disgruntled, generally, with the implications of Wittgenstein's understanding of language for the practice of philosophy. In the light of subsequent work on Wittgenstein's later philosophy, Pole's interpretation has been criticized, most notably by Stanley Cavell, who argues that Pole was not sensitive enough to Wittgenstein's distinctive philosophical style, and therefore misconstrues many of his ideas.

Pole's *Conditions of Rational Inquiry: A Study in the Philosophy of Value* (1961) brings together his interests in ethics and rationality. The book is an examination of the place of evaluation in rational inquiry. It includes an extensive treatment of the concepts of decision and inquiry, and of the process of inquiry in relation to values. His discussion includes an interesting analysis of the development of judgement as such and the nature of moral judgement.

Before his death Pole selected a set of his essays and reviews that he would have liked reprinted. The papers and reviews in aesthetics

from this selection, spanning roughly twenty years, were published posthumously in a collection entitled, *Aesthetics, Form and Emotion* (1983). This third book reflects Pole's wide knowledge of aesthetics and the arts, especially the arts of literature and architecture. In the book he declares his firm belief in the centrality of aesthetics within philosophy, as opposed to the peripheral position it had been assigned in the first half of the twentieth century. The essays range across a variety of topics, including the problems of aesthetic experience, form, expression, literary criticism, aesthetic judgement, art and morality, representation and interpretation. The collection was praised by aestheticians, especially for its original contribution to understanding the concepts of form and expression. The originality of Pole's writings in aesthetics is clearly evident in his interesting discussion of disgust, a topic that has received attention in aesthetics only very recently. These essays are refreshing to read for the lively, clearly argued style that was characteristic of Pole's writing.

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Emily Brady

POMPA, Leonardo (1933–)

Leon Pompa was born in Edinburgh in February 1933. He was educated Bournemouth School and at the University of Edinburgh, where he gained an MA in history and an MA and PhD in philosophy. His academic appointment was as a lecturer in Edinburgh, a post which he held from 1977. He was then appointed as Professor of Philosophy at Birmingham University, a position which he held until his retirement in 1991, when he became emeritus professor. He was a member of the Council of the Hegel Society Great Britain; of the editorial board to *Journals New Vico Studies*, *Collingwood Studies* and the *History of European Ideas*; and of the *British Journal for the History of Philosophy*, the Aristotelian Society and Academic Standing Committee at Edinburgh University.

In the Preface to one of his early works, *A Study of the 'New Science'*, Pompa states that Vico, apart from the constant liturgy aroused by his doctrines in his native Italy until relatively recently been largely ignored in other countries in the Western world, is reason for this neglect is not because Vico nothing of importance to add to the philosophy of history and the social sciences, but because of the obscurity of his style. Patrick Gardiner in his article on Vico in *The Encyclopedia of Philosophy* (ed. Paul Edwards, vol. 8, 1968) states that Vico's 'style is often obscure, scholastic', but his prediction that 'the [Vico's] undoubted genius, it seems unlikely that he will ever be widely read' has proved untrue. Much of Pompa's work in his distinguished philosophical career has been remedying the neglect of Vico in the English speaking world, and, particularly with translation of Vico's *New Science*, he has succeeded admirably in his task.

In his many commentaries Pompa presents Vico as having denied that there is a 'fix' transcendental, transcultural human nature essence. Instead, Vico stressed that human