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## **IN DEFENCE OF RATIONALISM.**

### **REFLECTIONS ON MICHAEL POLANYI'S THEORY OF KNOWLEDGE**

The main concern of my paper is to investigate the relevance of Michael Polanyi's theory of knowledge, setting the conceptions of "tacit knowledge" and "personal knowledge" in focus. This theory offers invaluable insights into the psychology of knowledge and the mechanisms of human behaviour but, to my view, fails to provide an acceptable theory of knowledge or philosophy of science.

Polanyi's work belongs to the antipositivist trend in the philosophy of science, which began in the late 1950s. One of its dominant strands was an antirationalism that entailed relativism. Here I start with a loose and weak definition of antirationalism, borrowed from an author, himself no participant in this movement, Friedrich von Hayek: "The antirationalistic position here taken" - wrote Hayek - "must not be confounded with irrationalism or any appeal to mysticism. What is advocated here is not an abdication of reason but a rational examination of the field where reason is appropriately put in control. Part of this argument is that such an intelligent use of reason does not mean the use of deliberate reason in the maximum possible number of occasions. In opposition to the naive rationalism which treats our present reason as an absolute, we must continue the efforts which David Hume commenced when he 'turned against the enlightenment its own weapons' and undertook 'to whittle down the claims of reason by the use of rational analysis'" (Hayek 1960, p. 69).

Hayek's antirationalism is combined with an empiricist position, while Polanyi frequently voices antiempiricist convictions. Ernan McMullin puts this sharply when he writes that Polanyi rejects both the L-thesis (namely logicism) and the I-thesis (namely inductivism) of neopositivism (McMullin 1985, pp. 121-122). In this paper, I confine myself to the question of antirationalism and leave antiempiricism aside, even though their combination is fairly common with antipositivists. To get closer to the special form(s) of Polanyi's antirationalism, it may be useful to distinguish various types of antirationalism. Let me state in a very condensed and, therefore, necessarily simplified form the main lines of argument used by antipositivists against rationalism. Some of them overlap, others either complement or contradict each other:

1. The **traditionalist** argument: The human intellect is incapable of testing all accepted knowledge rationally, and so most of our knowledge is backed not by reason but by the authority of tradition.

2. The **liberal** argument: Scientific knowledge grows best if the individual ingenuity of scientists is not hampered by strict rules and standards, the fixed standards of rationality included.

3. The **anarchist** argument: The need for rationality springs from the lower human instinct of craving for intellectual security, but the history of science shows that the only defensible principle under all circumstances is the principle that anything goes.

4. The **ethnological** argument: The cognitive standards of other (mainly primitive) cultures cannot be judged by those of modern scientific rationality. These are not inferior, they simply rely on other criteria and evidence of equal merit.

5. The **historical** argument: The historical growth of scientific knowledge is discontinuous, with sharply different and, sometimes, incommensurable theories prevailing in the various periods of its development.

6. The **sociological** argument: Since scientific research is a social activity, its internal cognitive constraints and decisions are shaped, respectively, by the interests of the scientific community and by those of individual scientists.

7. The **psychological** argument: Our explicit knowledge cannot be based on rational considerations exclusively; to a great extent it also depends on unknown and uncontrollable mental processes.

8. The **evolutionary** argument: The development of scientific theories is not the result of applying rational criteria but, like animal adaptation, the product of blind variation and selective retention.

9. The **personalist** argument: Knowledge is produced, accepted, or rejected by human beings whose cognitive judgements are inextricably bound up with their individual emotional, ethical, aesthetic, etc., commitments.

10. The **decisionist** argument: We can never explicate and test all the presuppositions and consequences of our theories. Thus their acceptance will always involve an arbitrary decision, an irrational jump into the dark.

11. The **aesthetic** argument: The formulations of scientific law do not obey the sterile rules of objectivity, rationality, testability, etc. They strive, instead, towards an aesthetic ideal closely akin to that deeper and never rigidly definable sensibility which governs the domains of art and art criticism.

12. The **fideist** argument: The ideal of science safely proceeding by explicit rules of scientific rationalism is absurd. All true knowledge contains an element of faith as its integral part. It is inherently hazardous and involves its own uncertainty. The difference between religious faith and scientific knowledge is only one of degree.

Without arguing for it in detail, let me simply state that I accept none of these positions in their strong form, even though they contain important insights into the nature of knowledge. My main objection is that they confuse the *limits* of the specificity and universality of rational criteria with their *absence*. As I see it, Polanyi availed himself of the personalist (e.g., Polanyi 1964, p. 27), the traditionalist (e.g., Polanyi 1969, p. 41), the aesthetic (Polanyi 1964, pp. 46-48), and the fideist (e.g., Polanyi 1974, p. 126) lines of argument. However, the most emphatic element in his epistemology, the conception of tacit knowledge, appears to imply the psychological argument. Here I will concentrate on this strand within his antirationalism.

My conception of rationalism differs both from that of the 17th century, where it meant the opposite of empiricism, and from that of the 18th and 19th centuries, which claimed reason was able to control the universe. I believe that the only knowledge meriting the adjective "rational" is that which is explicable, articulated, intersubjective, logical, supported by evidence, and testable. (One may ask if all or some of these features are not necessarily implied by all "knowledge" in the sense of "knowing what", whether "rational" or not.) As a matter of fact, Polanyi endeavours to show that precisely these features or conditions of rationality are either impossible to meet or unimportant.

Let me show how Polanyi develops the concept of tacit knowledge in this antirationalist direction. First I will recapitulate the solid core claims of Polanyi's idea. Then I will discuss the exaggerated inferences he tends to draw from them.

Polanyi finds that various domains of the human intellect are dominated by tacit knowledge. The practical knowledge of how to do something is the most fundamental among them. He reveals the operation of tacit knowing in the learning and use of skills, the recognition of physiognomies, the use of our limbs, of tools and language, and the act of visual perception (Polanyi 1969, p. 167). He points out the similarities in the structure of these processes, stressing how ineffectual the knowledge of the scientific descriptions and the following of explicit rules are in these performances. The main components of practical knowledge are essentially implicit, unarticulated, and unspecified.

In a subsequent step, Polanyi extends tacit operations to the domain of explicit knowledge, including cognitive and scientific knowledge. He cites convincing examples for the rule of the tacit dimension in the work of scientists, demonstrating that "tacit powers predominate in the very making of discoveries" (Polanyi 1969, p. 151; see also p. 138).

This claim is supported by considerations like the following.

(1) In speed and complexity, tacit integration far exceeds the operation of any explicit selection of supporting evidence or the operations of explicit inference (Polanyi-Prosch 1975, p. 42; Polanyi 1969, p. 144).

(2) The integration of clues to discovery proceeds in the same way as the tacit integration of a thousand changing particulars in perception (Polanyi 1969, p. 139).

(3) The training of perception underlies the descriptive sciences, as this can be seen in the teaching of students to identify cases of disease and specimens of rocks, plants, and animals (Polanyi 1969, p. 142).

(4) Neglecting the unspecifiable steps of scientific intuition, one cannot explain the production of discoveries (Polanyi 1969, p. 143).

(5) The creation of class concepts (along with the discovery of natural laws) is based ultimately on the operations of tacit knowing, since we do not follow explicit rules, but rely on our subsidiary awareness of the joint weight of thousands of memories at the back of our minds when we designate collections of objects by the same universal term (Polanyi 1969, pp. 165-167).

Polanyi concludes that *tacit knowledge* and *explicit knowledge* cannot be sharply separated. "While tacit knowledge can be possessed by itself, explicit knowledge must rely on being tacitly understood and applied. Hence all knowledge is *either tacit or rooted in tacit knowledge*. A wholly explicit knowledge is unthinkable" (Polanyi 1969, p. 144). Thus "any attempt to gain complete control of thought by explicit rules is self-contradictory, systematically misleading and culturally destructive. The pursuit of formalization will find its true place in a tacit framework" (Polanyi 1969, p. 156). Even "the pursuit of science is determined at every stage by unspecifiable powers of thought" and by non-explicit thought (Polanyi 1969, p. 155).

The importance of Polanyi's insights into the mechanism of practical knowledge and scientific discovery stands beyond all doubt. They have been fruitfully applied in several fields of inquiry, for example, by Richard Nelson and Sidney Winter in their fine-grained analysis of the organizational routines and economic behaviour of firms (Nelson-Winter 1982, Chs. 4-5). Moreover, what Polanyi describes as the tacit component of scientific activity is experienced by everyone who tries to think about a problem or write an article and confronts the inexhaustible forms and enormous strength of such tacit components. In the beginning we only *feel* our way towards new ideas, we use many *unthought* presuppositions or premises to reach a conclusion, we mostly store and even use our explicit knowledge in a mode similar to a *disposition*, we test a lot of possible steps in framing an argument *before explicitly formulating* them, we cannot find our evidence without *unsystematic or even unconscious* searching processes.

Yet, I find Polanyi overstates the case. In comparison to the role of the tacit dimension, explicit knowledge seems almost insignificant in his analysis. But one might as well emphasize the focal items of knowledge, at least in science, and insist

(1) that a new idea is not really grasped unless it is formulated in an explicit and communicable form;

(2) that an inference is incomplete without a list of all its premises;

(3) that every item of the tacitly stored cognitive knowledge has once been known explicitly;

(4) that it is a deficiency in an argument if its main steps remain unrevealed;

(5) that we have to discover systematic ways when our spontaneous searching processes fail;

(6) that the impossibility to make all behavioural or theoretical presuppositions explicit at a given moment does not entail that we are unable or ought not to specify them one after the other.

We should realize that a totally tacit and irretrievable store of knowledge would be something like a telephone directory without alphabetical ordering: it would contain all the knowledge needed and still it would be useless. And some doubts may arise even in connection with skills. I have seen people prepare magnificent meals by simply following the explicit rules laid down in a cookbook. I also doubt that it would be possible to develop the high level skills performed at the Olympic Games without very explicit and detailed training programs.

In short, Polanyi's description of the role of tacit knowledge is part of the story, but not the whole story. In his effort to stress the role of unarticulated knowledge, he draws, moreover, some dubious conclusions. I cannot see how the demonstrated importance of tacit knowledge leads to the conclusion that "everywhere it is the inarticulate which has the last word, unspoken and yet decisive" (Polanyi 1964, p. 71). Another of his unconvincing or, at best, trivial conclusions runs like this: "though our powers of thought be ever so much enhanced by the use of symbols, they still operate ultimately within the same medium of unformalized intelligence which we share with animals" (Polanyi 1964, p. 82). In these and many other similar, explicit or implicit, claims Polanyi seems to commit an inferential error. From the fact that the lower levels of knowledge serve as a basis for its higher levels, it does not follow that the latter is determined by the former or loses its specificity. This is a very crude form of reductionism, firmly refuted by Polanyi himself when he perceived it in other topics of his interest.

But my main objection is that Polanyi offers a *psychological* conception of knowledge and science with little relevance to the *philosophy* of knowledge and science. Although I could collect a lot of evidence from his frequent references to psychological observations and to the theory of Gestalt-psychology, I need not stick to this terminology which has, in fact, been refuted by Polanyi (Polanyi 1969, p. 173). I can formulate my objection without using the term "psychological". Polanyi's theory of tacit knowledge is about acts, operations, and mechanisms of knowing, but not about the criteria of judging the content of knowledge. He speaks of the *ways* our mind works, but not about how we are to *select* among its products. To quote one of his neopositivist opponents, Herbert Feigl, "no amount of evidence advanced by Michael Polanyi in favor of the 'tacit dimension' is relevant to this issue", namely, the issue of "the grounds of validity of our knowledge claims" (Feigl 1985, p. 105). This issue is, however, the proper subject of the philosophy of science and of those scholars whom Polanyi violently attacks in his writings.

The contention that Polanyi is mainly concerned with the *ways* of coming to know needs no further argument. But I need to back up my claim that his thoughts on this subject have no relevance with respect to the questions concerning the *validity* of knowledge. Consider, for example, Polanyi's views on perception, which is his paradigm for tacit knowing. In describing perception, he frequently draws on the example of optical illusions. They are grounded in tacit knowing in the same way that correct visual perceptions are. But how could we distinguish an illusion from a correct perception, relying only on our tacit knowledge, if both are its products? The same applies to our forming an opinion of a person's character at first sight. Here again we rely on our tacit knowledge, and our judgment may turn out to have been either right or wrong. To put this generally: if all our intellectual achievements are rooted in tacit knowledge, then so are our errors, too. Tacit knowing cannot provide the criterion for the truth of our beliefs if it is also the source of their falsity. Polanyi himself does not leave it to us to decide on the basis of tacit knowing whether his statements are true or false, since he explicitly argues for them in many pages.

The impression could arise that I am defending the old neopositivist distinction between the *context of discovery* and the *context of justification*, rejected by so many recent philosophers of science. In a way, I am doing just this. Nevertheless, I agree that this distinction has unfortunate features, first of all a misleading name. For it is hardly deniable that both discovery and justification have an "external", that is, personal, psychological, sociological, etc., context that strongly affects their actual result. Indeed, we do not become another kind of creature and we do not change the working of our intellect when we step from the phase of investigation into that of justification. The antipositivist objections, in general, and Polanyi's position, in particular, are fully justified here. As Ernan McMullin interprets him, Polanyi claimed "that both discovery and justification in science demand intuitive and patiently-acquired skills of recognition that are in principle irreducible to itemization in terms of explicit criteria or formal rules" (McMullin 1985, p. 123). This admitted, I would, however, note that we cannot even speak of justification without having a notion of explicability and interpersonal standards, although it may be possible to do without them in the process of discovery.

An *inquiry* or *discovery* might proceed in a unique, unstandardized and unrepeatable manner, and yet lead to great achievements. This is admittedly so only in principle, for most scholars in the natural and social sciences can entertain no hope of either tangible results or recognition if they do not follow an extensive range of explicit rules and methods. Methodological research is not wholly futile: it does point out and explicate ways to reach some results faster, safer, or at all. The *evaluation* of results, the process of *testing* and *justifying*, however, can never be private, not even in principle. To assess the validity of knowledge claims we need shared criteria. One of the best and, in fact, indispensable ways to fix and communicate such criteria is to state them as precisely as possible.

Let me cut short this argument with an analogy. Making a great scientific discovery is, in some respects, similar to becoming a champion at Wimbledon. The champion must possess a very complex and unique set of special powers, abilities, skills, and techniques. This very personal configuration of largely tacit knowledge is what leads to victory. But the criteria for deciding who wins or loses a match are far from tacit or personal. They are explicit, detailed, transsubjectively fixed, interpersonally known and accepted. They cannot be changed or neglected by any single player or onlooker.

Polanyi's fight against scientific rationalism was spurred by his fears that the strictly formalized sciences would come to dominate all spheres of human endeavour. The chances of such a colonization are to my mind much slighter than Polanyi perceived them. But my disagreement with Polanyi is not about the question of how real that danger is. It is much more disturbing that Polanyi seems to perform the obverse of what he is fighting against. In defending the autonomy and specific values of the personal, ethical, emotional, aesthetic, religious, etc., spheres of our life, he denies the specificity, autonomy, and value of scientific rationalism in its own sphere. If I am right, then Polanyi's fight was not only misdirected but even contrary to his own liberal principles. For liberalism means, among other things, the right of scientists to follow the rules of their own disciplines.

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