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The relation of Thomas Kuhn's concept of paradigms to Michael Polanyi's thought is an underdeveloped issue. Most Polanyi scholars readily see the connection between Kuhn's notion of paradigm and Polanyi's contention that all scientific knowledge is personal and functions within a framework of socially conditioned beliefs. Polanyi always contended, however, that Kuhn did not go far enough in the concept of paradigm. Kuhn's work is important in establishing the role of historical belief systems that function to guide normal science and in recognizing the difficulties of changing such a belief system. But if paradigms do operate in science, why do great discoveries such as Copernicus go beyond the limits of the current paradigm? Why do other paradigms such as Einstein's and Schrödinger's also fail to do so? In addition, what kind of knowledge is produced by the changes that led to these paradigm shifts? These are some of the questions that Polanyi posed, and the answers may be found in his work.

We also welcome in this issue other major concerns: the relation of Polanyi to Kant, Polanyi in Poland, analysis of Kuhn's view of Polanyi, and a very helpful glossary for reading and teaching Polanyi. This variety indicates the continuing liveliness of our Society.

Richard Galvich
The relation of Thomas Kuhn’s concept of paradigm to Michael Polanyi’s thought is an essential part of the discussion in this issue. Kuhn’s view of paradigm and Polanyi’s concept of normal science occupy different positions in the history of science. Kuhn’s paradigm is a relatively stable and well-defined model of the world, while Polanyi’s concept of normal science is more dynamic and evolves with the progress of knowledge.

Polanyi always contended, however, that Kuhn’s paradigm did not go far enough in the concept of normal science. He argued that it was important in establishing the role of historical belief systems that function to guide normal scientific practice in recognizing systems that function to guide normal scientific practice. But if paradigms do operate in science, why do they not discover such systems more efficiently? Why do Kuhn’s paradigms fail to go beyond the limits of the current paradigm? Why do they take such risks to depart from the paradigm of their time?

To answer these questions, Polanyi felt we must consider the epistemology of science. We must consider the nature of knowledge and how it is acquired. This involves the understanding of how knowledge is constructed and how it is transmitted. Polanyi’s view of normal science is a way of thinking about science that is not limited to the discovery of paradigms, but rather encompasses the continuous evolution of scientific thought.

Richard Gelwick

Contributions to this issue:

The Religious Studies section of the Polanyi Society met during the annual meeting of the American Academy of Religion in Anaheim, California. David Oyler of Phoenix, Arizona presented a paper called "The Intentional Narcissism of Religious Self-Transcendence." Coordinator H. Hullings gave an update on the project and presented "Polanyi and Peirce: Some Points of Comparison." Both papers evoked a good discussion; we will hope to see them published.

The session held at the Modern Language Association meeting in Denver on December 8, 1983 on "Polyamorphic Perspectives on the Teaching of Literature and Composition" has been edited and prepared for publication by Elizabeth Wallace of Western Oregon State College. We hope to have it in the next issue of TRADITION & DISCOVERY.

William T. Scott is reported to have reached the period of Polanyi’s Gifford Lectures and expects to have completed the biography in time for the Polanyi centennial.
The Heuristic Circularity of Commitment and the Experience of Discovery

A Polanyian Critique of Thomas Kuhn’s Structure of Scientific Revolutions

Dr. Aaron Milavec

My essay will be divided as follows: (I) Kuhn’s analysis of the dynamics underlying scientific revolutions; (II) Critical soft spots found in Kuhn and Polanyi alike; and (III) Upgrading Polanyi’s analysis of the reliability of scientific knowing.

PART I: KUHN’S ANALYSIS OF SCIENTIFIC REVOLUTIONS

A. KUHN’S ANALYSIS OF TACIT KNOWING: COMMON GROUND WITH POLANYI

When Kuhn first published The Structure of Scientific Revolutions in 1962, he coined the term “paradigm” to refer to the habitual operative perceptions and operations which distinguish the scientific community at any given time. In his extensive postscript of 1969, he amplified the use of the term and explicitly acknowledged his indebtedness to Polanyi for the notion of “tacit knowledge” (K:191). In this postscript, Kuhn emphasized that a paradigm is not a theory (as understood in the philosophy of science) but some of that “disciplinary matrix” (K:102) imposed upon novices in science which enables them to routinely perceive and judge according to the shared patterns which define the existing scientific community. In their training, for instance, novices reproduce for themselves a classical set of laboratory and pencil and paper problems.

After the [student of science] has completed a certain number of these problems, he views the situations that confront him as a student in the same Gestalt as other members of his specialists’ group. For him they are no longer the same situations he had encountered when his training began. He has been assimilated into a time-tested and group-licensed way of seeing (K:109).

Once the initiation process is completed, Kuhn emphasizes that neural patterns have been established which insure certain habitual recognitions. These recognitions, Kuhn claims, “must be so fully systematic as the beating of our hearts” and “may also be involuntary, a process over which we have no control” (K:194). Thus, Kuhn emphasizes that the trained scientist perceives the world differently than does the layperson:

Consider the scientist inspecting an anemometer to determine the number against which the needle has settled. But he has seen the meter (again often literally) in the context of the entire circuit. … For the layman, on the other hand, the needle’s position is not a criterion [i.e., a clue] of anything except itself (K:197).

In sum, Kuhn notes that the tacit knowing powers of the trained scientist, as he perceives scientific work, operate instinctively and stubbornly. And, since this knowing is locked away within the knowing organism, Kuhn acknowledges that, in the end, “we have no certain access to what it is we know, no rules or generalizations with which to express this [tacit] knowledge” (K:196). Kuhn’s self-expression here is sometimes awkward and unrefined; yet, the common ground shared with Polanyi is quite evident.

B. THE PROBLEM POSED BY THE HEURISTIC CIRCULARITY OF SCIENTIFIC COMMITMENTS

Once one allows that tacit powers of knowing operate habitually and stubbornly, one is inevitably faced with the heuristic circularity that surrounds every scientific commitment. There is no hiding place. Rational appeals serve to draw attention to what pass for “reasonable” within given circles of commitment. Pragmatic appeals, meanwhile, fail to note that every belief has some degree of workability in the eyes of the believer. Appeals to given authorities disfigure the fact that one’s prior apprenticeship serve to accredit certain authorities to the exclusion of others. Appeals to the mutter, the virtue, the passionate sincerity of our mentors cannot disguise the fact that systemic errors are compatible with any and all virtues. Even such phrases as “responsible conviction” and “warranted assertability” (K:194) cannot disguise the fact that our particular tacit commitments shape what we habitually perceive as “responsible” and “warranted.” In the end, to assert something as true is to be caught red-handed affirming what one has been trained to perceive within a commitment situation.

Polanyi’s solution to the heuristic circularity of the scientific enterprise is found principally within his phenomenology of discovery set within a sociological matrix. Kuhn’s solution to the same difficulty is found principally within the sociology of discovery set within a historical matrix. What this means in practice will gradually become clear.

C. KUHN’S AGREEMENT WITH POLANYI ON THE INEQUITY OF EXPERIMENTAL TESTING

Kuhn joins with Polanyi in calling upon the history of science by way of demonstrating that the scientific community does not change its mind on the basis of any single set of rules governing prediction and experimentation. In Kuhn’s own words: “There is no neutral algorithm for theory-choice, no systematic decision procedure which, properly applied, must lead each individual to the same decision” (K:200). In practice, this means a repudiation of the normative that are widely accepted by positivist philosophers of science relative to the unique role which experimental verification and falsification played within the scientific enterprise.

D. KUHN’S GENERALIZED ANALYSIS OF SCIENTIFIC REVOLUTIONS

For Kuhn, the history of science demonstrates that the growth of knowledge does not take place by virtue of the steady accumulation of more facts and theories. From time to time, the stubborn
instincts of scientists are changed and their operative paradigms changed. In this process, new theories and their attendant facts displace formerly held theories and their attendant facts. In so doing, scientific knowledge improves, i.e., the understanding and control which scientists' exert over natural processes advances.

A scientific revolution has three phases. In the initial phase, Kuhn analyzes what he calls "normal science" within the framework of an initiation which trains the participating members to uphold a set of commitments which are functionally circular and provide "considerable resistance to paradigm change" (K64). The accumulation of anomalies (i.e. instances wherein theories fall to account for some of the experimental data) within the conduct of normal science leads to the transitional stage wherein the sense of intellectual crisis prompts some members of the community to shift their energies away from modifying an existing theory so as to explain away anomalies to groping about for a viable alternative outside of the normative system. Kuhn uses the term "paradigm shift" to describe the alteration of commitments and habitual perceptions which the discoverer of a novel theory undergoes as the intellectual disaffection connected with the "crisis" is relaxed. In the final phase, the community is ideologically split by the existence of two incompatible modes of understanding -- both functionally circular and both determined to persuade the other side of their truth. This revolutionary situation only subsides when one side succeeds in converting the other and the return to normal science is again possible.

E. KUHN'S ANALYSIS OF THE COPERNICAN REVOLUTION

Before going on to identify the soft spots within Kuhn's analysis of scientific revolutions, I want to briefly elaborate upon these three phases using the Copernican revolution. Since both Kuhn and Polanyi have repeatedly used this instance as the principal case study throughout the book, I shall not go into detail to illustrate and confirm, but rather, the use of this material helps to reveal both their common ground and their differences.

How does Kuhn account for the Copernican revolution? The remote cause, for Kuhn, was the sense of "crisis" which circulated within the community of astronomers as they became increasingly aware of inconsistencies between prediction and actuality in the Ptolemaic system. The immediate cause, however, was the activity of a small group of astronomers who tried "to push the only solution that would also be the easier to see, in the area of the difficulty, just where and how fast they can be made to work" (K87). Relative to the Ptolemaic system, this consisted in the attempt to adjust or to add epicycles in order to achieve a better fit between predicted and actual sightings of the planets.

Given a particular discrepancy, astronomers were invariably able to eliminate it by making some particular adjustment in Ptolemy's system of compounded cycles. But as time went on, it became increasingly clear that no amount of such research effort of many astronomers could observe that astronomy's complexity was increasing far more rapidly than its accuracy and that a discrepancy corrected in one place was likely to show up in another (K46). Faced with such a situation, some scientists despaired of ever attaining a perfect fit and decided to tolerate the discrepancies (K81). Others, however, convinced that the key had not yet been found to correctly situate the revolving spheres, redoubled their efforts to find a solution. When success was not forthcoming even after many generations, what had previously been only a vexation turned into a "crisis" (K82). Kuhn identifies the crisis mentality as weakening the hold that the tradition has upon the intuitive powers of the researcher at just the time when he has set his mind to deliberately "magnifying the breakdown" (K87). The scientist in crisis will constantly try to generate speculative theories that, if successful, may disclose the road to a new paradigm (K87).

Out of this situation, the discovery of Copernicus is born. For Kuhn, "the decision to reject one paradigm is always simultaneously the decision to accept another" (K77). Which other? That which relieves the "crisis" which brought the discontented Copernicus to grope around for an alternative in the first place. As soon as such a viable alternative is worked out by one of their members, the general strain within the community surrounding the old system functions to prompt others to accept the Copernican alternative and simultaneously let go of the Ptolemaic bridge which originally brought them to it. In Kuhn's own words:

Copernicus' more elaborate proposal was neither simpler nor more accurate than Ptolemy's system . . . . provided no basis for a choice between them. Under those circumstances, one of the factors that led astronomers to Copernicus was the recognized crisis that had been responsible for the crisis in the Ptolemaic system. (K76).

A community in crisis, however, does not immediately embrace an alternative system which demystifies some marginal uses at the price of upsetting long-standing presuppositions regarding the place of the earth in the cosmos. As a consequence, there was a split between those who continued to stubbornly believe those who committed themselves to perfect and to prove the worth of the new system. Since each side of the debate embraced incompatible systems, there was no neutral ground to which either side could appeal by way of convincing those who perceived the reality of things from the other side.

Like the choice between competing political institutions, that between competing paradigms proves to be a choice between incompatible modes of community life. Because it has that character, the choice is not and cannot be determined merely by the evaluative procedures
characteristic of normal science, for these depend in part upon a particular paradigm, and that paradigm is at issue. When paradigms clash, they enter into a debate about paradigmatic choice, their role is necessarily circular. Each group uses its own paradigm to argue in that paradigm's defense (K194).

Under such circumstances, Kuhn comes to the conclusion that the grounds whereby each astronomer makes his choice are "ultimately personal and subjective" (K199). Hence, one must wait for the verdict of history to reveal which side of the debate will win out over its contender.

PART II: CRITICAL SOFT SPOTS

A. FOUR SOFT SPOTS IN KUHN'S ANALYSIS

From the vantage point of my personal immersion within Polanyi's thought, I would identify the following soft spots within Kuhn's analysis:

1. Kuhn provides no satisfactory explanation as to how or why a crisis situation weakens the hold that the normative paradigm has upon the knowing apparatus of the inquirer.

All crises begin with the blurring of a paradigm and the consequent loosening of the rules for normal research (K194).

Crisis simultaneously loosens the stereotypes and provides the incremental data necessary for a fundamental paradigm shift (K195).

Most probably, Polanyi's own critique of doubt (PK:269ff) moves him away from giving any formal role to "disenchantment" within the discovery process. I will come back to this later.

2. Kuhn offers no explanation as to how an explorative quest can turn up attractive alternatives without being sent off into a maze of dead ends. At one point, Kuhn suggests something akin to a phenomenology of discovery.

The new paradigm, or a sufficient hint to permit later articulation, emerges all at once, sometimes in the middle of the night, in the mind of a man deeply immersed in crises. What the nature of that final stage is -- how an individual invents (or finds he has invented) a new way of thinking about the world -- remains" (K195).

3. Kuhn seems quite satisfied that "perceptual transformations" which take place in Gestalt experiments have something to indicate about (a) how the existence of one paradigm blocks its alternative and (b) how the jump can be made from one paradigm to another (K124ff). He rightly notes that paradigm shifts are irreversible (K114ff) but does not have the analytical apparatus to determine precisely why this should be so. As Kuhn himself suggests, somewhat like conceiving oneself to be reduced to party over another, in this case, persuasion seems to be reduced to the support of who can manage the media most effectively and gain the support of others. Over the other is simply a matter of personal taste or, as Kuhn himself suggests, "... something like convincing oneself to be reduced to party over another" (K109ff). In this case, persuasion seems to be reduced to the support of who can manage the media most effectively and gain the support of others. Over the other is simply a matter of personal taste or, as Kuhn himself suggests, "... something like convincing oneself to be reduced to party over another" (K109ff).

Perhaps it is with this in mind that some philosophers have exaggerated this point and accused Kuhn of supporting the use of irrational but rule in science.

B. POLANYI'S APPEAL TO THE DISCOVERY PROCESS AS "REVEALING A HIDDEN REALITY"

When Polanyi spoke of "knowledge" in association with a theory of which I rely, "philosophers of science like Einstein and Popper, and perhaps Kuhn, could hardly object. But Polanyi raised the question of the nature of the process of knowledge in general and, more specifically, the nature of the process of science. He argued that scientific knowledge is not simply a matter of collecting data and deducing conclusions from them. Rather, it is a matter of constructing a framework within which the data can be understood. This framework is not simply a set of rules for manipulating data, but is a way of looking at the world.

The pursuit of discovery is conducted from the start in the sense of these terms: all the time we are guided by sensing the presence of a hidden reality toward which our clues are directed, but the search for this reality is still sustained by the same visual direction which leads us to make contact with reality; a reality which may not even be perceived, as having an internal direction.

Here Polanyi's analysis of how deliberate striving, imagination, and guiding intuitions function within problems solving, and the decision process can be exhaustively shown that even though the creative process cannot be exhaustively shown even if it can be perceived as having an internal direction.
C. INADEQUATE INTERPRETATIONS OF POLANYI'S INTENT

Even though Polanyi used phrases such as "contact with reality," he never wanted to imply that the discoverer has some sort of direct or indirect access to reality as epistemological realists have their post-critical philosophy in the clothes of criticism. Nonetheless, one finds interpreters of Polanyi who draw up a picture of him as a "tacit foreknowledge of yet undiscovered things" (B223) or as "illuminating" (B23) and, in contrast, to dub the Johnny-come-lately as "reality,"

This [universal intent] means, on the one hand, that the scientist conducts his inquiries in acknowledgment of the universal jurisdiction of reality and that his contact with reality necessarily but, on the other hand, it means that the conceptions that he forms and the statements he formulates under the authority of reality he must affiliate with a claim for universal recognition from all others ... (Torrence126).

R.J. Brownill effectively interprets Polanyi's "truth" tends to be equated with the sociological consensus with which numbers of new theories are accepted which alter that sociological consensus, he effectively interprets Polanyi to be saying that a "new interpretative framework" recommends itself in so far as it is "its eventual solution" (Brownill1370). This notion of "contact in clothes which are better worn by Ernst Nagel, Gilbert Ryle, and Stephen Toulmin.

John Brennan interprets Polanyi with great sensitivity and insight. Yet, even he tends to link "contact with reality" closely with prophetic confirmations and to overdraw the contrast between reality and illusion. In fairness to his whole argument, I present only a telling conclusion:

That Copernicus had not been led to an aspect of reality, whereas the Ptolemaic cosmos was illusory, is evident to us now ... [But no!] The Copernican system of circular motions, he would have strictly rejected Kepler's view of elliptical motions and Newton's theory based on these laws (Polanyi, 1967:1190).

In the end, therefore, Polanyi's appeal to "contact with reality" appears to have vanished. Polanyi's Allegro was accepted by 11th century European scholars after it was discovered among Arab manuscripts on the grounds that it opened up a "fruitful solution" to the problem of the uniformity and the scientific options of the planets. A good theory is objective because of its intrinsic structure in nature -- to have made contact with reality (B119). If this is the case, Polanyi's system was surely "objective" and could claim to have made contact with reality. At
On what grounds can "more objective" be claimed? Is it that Copernicus "removed us to a greater measure on theory" (PK:5)? Is it that Copernicus demonstrated larger "prophetic powers" (PK:5)? Yes, but isn't it entirely specious to project "intimations of an indeterminate range" upon the winners and to withdraw such claims for the losers? Chesterton said to his contemporaries, "Christianity has not been tried and found wanting; it has never really been tried."

Anyone could have made a similar claim for Ptolemy; had it been tried more earnestly, its true worth would have overwhelmed all contenders.

E. THE CONSISTENCY OF KUHN'S ANALYSIS OF REALITY CLAIMS

In some ways, Kuhn is more consistent than Polanyi. He would allow that scientists habitually make reference to Copernicus as having made some "fresh contact with reality" or as being "closer to the truth"; yet, in point of fact, every affirmation of "truth" or "reality" is bound up with the theoretical commitments that each has accepted as one's own. In Kuhn's own words: "There is, I think, no theory-independent way to reconstruct phrases like 'really there'" (Kuhn:206). In the case of the Copernican revolution, the paradigm of the winner is habitually used as the criterion for judging the loser; hence, Ptolemy will always be instinctively judged as wanting. But had it been otherwise...

PART III: UPGRADING POLANYI'S ANALYSIS

A. BRITISH EMPIRICISM AND POLANYI'S LEGITIMATION OF PROJECTED MEANING

The empirical school of British philosophers took great delight in underlining the reliability of the senses. They did if one is to understand correctly how the senses, they declared, are to be accredited or discredited. In this sense, the nature of reality. According to this norm, the senses all suffer the terrible inadequacy of projecting bodily sensations onto things to which they do not properly apply. The vineyard is not "sour"; the acidic interaction on the surface is merely the sense of the tongue simply registers the "more" sensation. The bottom of the well is not "black"; the absence of reflected light makes any object appear black.

Polanyi allows that all bodily perceptions are projections of intermediate states but, at the same time, he insists that such projections are spontaneous, necessary and appropriate. Heuristically, such projections are sense-knowing and not projecting entities. Working scientists who project the meanings they discover while projecting, in their paradigms are similarly functioning spontaneously, necessarily and appropriately. Due to the "semantic aspect" of embodied knowing, the integrated meaning of the clues which originates within the where the clues are originating. Hence, every semantic integration, like its perceptual counterpart, discloses what appears to be really "there at hand" quite independent of my knowing of it.

Already in Personal knowledge, Polanyi had devised the rule that all knowing relies upon the organismic integration of particulars into self-satisfying wholes. Only at the time of preparing The Tacit Dimension, however, did Polanyi fully explicate the "semantic aspect" of this process most important.

To see more clearly the separation of a meaning as the integration of bodily clues from that which has this meaning, we may take the example of the use of a probe to explore a cavern, or the way a blind man feels his way by tapping with a stick... Anyone using a probe for the first time will feel its impact against his fingers and palm. But as we learn to use a probe, or to use a stick for feeling our way, our awareness of its impact upon our hand is transformed into a sense of its point touching the objects we are exploring. This is how an interpretative effort transposes meaningless feelings into meaningful ones, and places them at some distance from the original feeling... (TDS:2).

Polanyi chooses the term "semantic aspect" because he rightly notes that anyone who hears or reads a message rightfully projects the meaning arrived at internally onto the source of the clues. The same thing happens when "souvene" is projected as being in the vineyard or when the use of the Copernican paradigm, "movement" was mentally projected onto the earth (even when, in sensually and experimentally, for more than three centuries, no such movement was registered).

B. THE KINSHIP BETWEEN A SCIENTIST USING A THEORY AND A MOTORIST USING A MAP

The nature and function of theories within the scientific enterprise needs to be understood correctly. First, bodily and mental indwelling will be compared and then a theory-using scientist and a map-using motorist will be compared and contrasted.

Bodily indwelling functions analogously to mental indwelling. By virtue of indwelling in our bodies, the clues provided by sensory interaction are integrated and enhanced in order to provide meaningful human perceptions which enable us to function in our environment (e.g., making a cup of coffee or soldering a resistor into an electronic circuit). By virtue of mentally indwelling in our scientific paradigms, the clues provided by our experimental observations are integrated and enhanced in order to provide meaningful scientific understanding which enable us to function in our specialized environment as working scientists (e.g., isolating a malfunction in an electronic circuit or designing an experiment to confirm an expected pattern in proton-proton interaction).

Upon reflection, however, mental indwelling has features which distinguish it from sensory perception. Sensory perception is a first-order integration. Theoretical understanding is a second-
order integration which begins with a particular set of observational data obtained through first-order integrations. Such sensory perceptions may be gathered by the unassisted use of the senses or, what is more usually the case, observational data is gathered by scientific instrumentation which extends both the precision and the range of naked bodily perceptions.

When theoretical understanding is recognized as a second-order integration, then a scientist using a theory book is akin to a motorist using a map. Accordingly, by examining the more familiar cases, one can come to understand important elements respecting the reality claims and testing which are appropriate for theories. Typical insights would be as follows:

(a) Maps, like theories, can only be properly understood when they are in use. When a skilled map-reader commits an appropriate map in order to navigate his car to a given address in an unfamiliar part of town, this is akin to a trained scientist making use of specialized theories for the adjustment of an electronic circuit or the design of an experimental apparatus. Both maps and theories are oriented toward human action and, as a result, the correspondence between theoretical anticipations and practical consequences serves to accredit both the map and the map-reader at the same time. This is why only trained scientists can use and test properly theories which are designed by other scientists.

(b) Maps, like theories, cannot be directly evaluated on the basis of some "correspondence with or approximation of reality." In the first place, maps are designed by human conventions and rules of logic which are distinctively different from the chemical and engineering principles governing road construction. In the second place, a focal inspection of the "reality" of the map (i.e., lines on a sheet of paper) is distinctly different from a focal inspection of the "reality" of the road (i.e., a band of asphalt with scattered potholes). Finally, when maps are in use, the lines on the map function subsidiarily as clues which enter into the focal intent (namely, to get to the address in question).

(c) Maps, like theories, also have a limited scope of application. Each serves to integrate certain signs while leaving the driver equipped to handle others. Prior to this, however, "Neptune" had been observed by many astronomers, but it had been mistaken for a bizarre, extra-high load needs a specialized map designed for his specialized need. In parallel fashion, theories of chemical valence are very helpful in predetermining what substances react and what proportions; yet, such theories are quite blind to melting points or color. As a result, a scientist has to cultivate the skill of rightly selecting the "map" which fits the phenomenon under investigation.

Map-reading is different from theory-using in a decisively important aspect. Map-readers can always dispense with their maps and drive successfully. Polanyi made use of simple gestalt experiments to demonstrate this. For example, when the edges of two partially overlapping squares are joined with a straight line (as shown), bodily enhancement quickly recognizes the design as that of a transparent cube. The corner with the heavy dot appears either on the forward or the rear malfunctioning, he cannot even begin to meaningfully connect his meter to the circuit unless he has first gained an theoretically inferred perception of how the maze of parts before him provides a nexus of functionally integrated electronic pathways. In this regard, Einstein is quite correct: "Whether you can observe a thing or not depends on the theory which you use. It is the theory which decides what can be observed."

The parallelism between maps and theories is defective in yet another way. Maps can always be suspected as merely summarizing, in codified form, an immense amount of empirical data pertaining to the length and disposition of streets relative to each other. As a result, they can, in principle, be tested exhaustively (e.g., by driving to unknown addresses in every part of town). Theories, in contrast, do sometimes summarize some limited data but the integrative meanings that they offer always outstrip the given observational data and, in principle, an exhaustive testing is not only impossible but not even desirable (since it would be a routine waste of time).

Finally, maps differ from theories relative to the degree to which they exhibit a "surplus of meaning" (Brennamann) or "paraphrastic power" (Piaget). Maps have a well-defined capacity to lead to exploration and discovery. As an example, consider how a map-reader can easily determine a novel alternative route to his or her destination when a known route is blocked by fire trucks. Theories, in contrast, exhibit a more complex relation to a deeper reality and, as a consequence, their capacity to lead to exploration and discovery is generally much more complex and much more rewarding. Consider, for example, how astronomers were aware of perturbations (i.e., periodic straying) in the orbits of the outer planets for sixty years before Leverrier finally recognized that these minor disturbances were caused by a planet outside the orbit of Neptune. Leverrier used the calculations of Laplace, and theoretically predicted the size and orbit of "a hitherto unsuspected planet." Using observations made by Galle in 1846 successfully sighted and tracked the new planet, which came to be called "Neptune." The story is familiar to others. Prior to this, however, "Neptune" had been sighted by numerous observatories, but it had been mistakenly classified as a star. Galle was able to recognize "Neptune" for what it really was than he was looking for (Poinclev, 1954:18). In the end, therefore, it becomes apparent that map-reading can serve only to approximate the processes involving the use of theories by scientists.

C. HOW PRESENT INTELLECTUAL SATISFACTION RESTRICTS PIONEERING EXPLORATIONS

Once a given recognition is developed, it positively impedes an alternative. Polanyi made use of simple gestalt experiments to demonstrate this. For example, when the edges of two partially overlapping squares are joined with a straight line (as shown), bodily enhancement quickly recognizes the design as that of a transparent cube. The corner with the heavy dot appears either on the forward or the rear.
afforded far outweighed the satisfaction afforded by his former commitment to the Ptolemaic system. Kuhn's analysis in The Copernican Revolution brings this out quite clearly and is the better guide here. Polanyi asserted this initially in Personal Knowledge, but, in his later writings, he favored such troublesome concepts as "a constant change of yet undiscovered things" and "a constant presentiment" (TD/78), and "gradient of understanding" (TD/81) -- notions which I have now come to regard as obscuring what he ought to have developed by way of affirming the comparative intellectual satisfaction which the pioneer uses to accredit his novel insights.

E. HOW "TRUTH" AND "CONTACT WITH REALITY" ARE TO BE INTERPRETED IN SCIENCE

At the end of this endeavor, what sense does it make to speak of the pursuit of truth within a community which experiences a growth in understanding through intellectual revolutions?

[a] In the first place, truth needs to be recognized as a relational "act of asertion" (PK/255) which only finds itself correctly understood and evaluated by those who share the same community of inquiry. This is not to advocate pure relativism, for each one is bound to the operation of bound to the truth by virtue of being bound to the operation of his/her particular body. From within the committed situation, Copernicus could rightly say, "Here I stand. I can do no other."

[b] When Copernicus published his theory of the universe, he fully expected that those who shared his "crisis" situation would find the same superior intellectual satisfaction within his system that he himself had found. He had to acknowledge, however, that his system would be considered as "absurd... by those who know that the opinion that the Earth rests immovable in the middle of the heavens... . had been confirmed by the judgment of many ages" (URR/258, preface). Meanwhile, it would have been prediction and no more than Ruhn's vague "expectations" that could even generate a "crisis" before commitment to the prevailing paradigm was sufficiently "tactile". Once the "crisis" is felt, growing for a more satisfactory alternative is evoked, then Polanyi is our best guide. Guiding intuitions assure that this groping is not indulgent in itself, i.e., trying everything which is imaginable. Meanwhile, heightened standards assure that nothing less than a better solution will be allowed to count as an alternative.

[c] In the end, the discovery process itself stands as a sober witness that a rigorous and prolonged initiation into science does not at all condition one's knowing powers as to render them immune to perplexity or thinking oneself as disengaged from the duration of one's life. Moreover, the fact that scientists do change their minds and do so assiduously, they themselves did not discover stands as a witness to the fact that the community of scientists has the practical art of tempering the enforcement of conformity with the inducement to dissent.

D. NEW COMMITMENTS ARE EMBRACED DUE TO THEIR SUPERIOR SATISFACTION

When Copernicus first acceded his solution, it must be granted that this was the intellectual satisfaction that it
evaluation exhibited by his or her living masters as normative. The
novice assimilates the current scientific worldview as to what is "true" on the "hand" worthy of his attention and dedication even while the history of science clearly demonstrates that the current consensus in science was arrived at through historically and culturally determined processes in which human weaknesses, power politics, and ideological biases played some role. The presumption is that scientific knowledge has improved over the course of time since existing theories are credited with affording a superior understanding and experimental control than those upheld by past generations of scientists.

(f) The detection of anomalies (i.e., clearly defined areas wherein theoretical expectations do not match experimental observations) indicates to scientists that their theoretical "maps" are inadequate to and transcended by what is "there at hand." Kuhn is correct in noting that the intellectual dissatisfaction which attended upon the presence of stubborn anomalies leads to investigations directed toward altering the theoretical "map" so as to remove these inadequacies. Since scientific theories are second-order intellectual integrations, no amount of direct inspection of the first-order observational data (e.g., the planetary tables) can serve to reveal how to correctly integrate the clues into a more satisfying whole. Hence, the investigator must deliberately grope toward reconfiguring his theoretical "map" until such time as it affords some expanded satisfaction at accounting for the troublesome data at hand.

(g) Polanyi can speak metaphorically of this groping process as being "guided by sensing the presence of a hidden reality" (Tb. 24); yet, it would do just as well to note that Copenicus was guided by a supreme confidence that the planetary configurations were obeying some mysterious systematic mathematical patterns which, if he applied himself to it, he would be able to discern just what they might be. In any case, both Polanyi and Kuhn agree that almost any amount of a discovery is confirmed by the intellectual or aesthetic satisfaction which releases the strain or crisis which preceded and sustained the pioneering investigation both toward and beyond the many false leads which were set aside during the process of investigation.

(b) The increased intellectual satisfaction which a new discovery affords an investigator serves to transfer the interest and commitment from the old to the new system. The new patterns appear in the eyes of the pioneer, to hold more promise for unlocking yet other mysteries of what is "there at hand" independent of the knowers. This prophetic promise may come to pass or, alternatively, the whole new system may prove to be an illusory projection. The human dilemma is that only by yielding to a new commitment, by habitually dwelling within it, can an investigator establish its true worth.

The anticipation of discovery, like discovery itself, may turn out to be a delusion. But it is futile to seek for strictly impersonal criteria of its validity... (Td. 25).

CONCLUSION

Epistemologically speaking, one can arde confidence in our senses in the way that the British empiricists did during the last century. On the same way, one can arde trust in theories on the ground that, after all, they are humanly designed instruments which allow us to project the meaning of clues upon an extramental world which can be regarded as quite indifferent to such projected meanings. Nonetheless, despite the anthropomorphic content which is present in every enjoyment of a flower and in every investigation of the planetary orbits, the truth remains that sensory and intellectual perceptions routinely must rely upon the bodily enhancement of clues, the bodily integration of these clues, and the projecting of the consequent meaning-for-us into the locus where the clues originated. As long as we continue to be embodied spirits, we cannot know things as they are for themselves. We know all things as they are for us—bound up within their skills which are historically, culturally, and organically conditioned. As such, Polanyi and Kuhn are effective guide in allowing us to both accept the heuristic circularity of all knowing at the same time that the phenomenology of discovery is offered as the route to change and, within the human condition, to improve our knowledge. Improved knowledge enhances the human powers to be and to do. But here again, what is worth being and worth doing changes both for individuals and for societies. Hence, even the phenomenology of discovery as put forward in this paper only serves those who have been previously lured by Polanyi or by Kuhn into a mindset of being satisfied with the time-honored solutions to the time-honored questions surrounding human knowing.

WORKS CONSULTED


Kuhn, Thomas S.
Kuhn, Thomas S.

Polanyi, Michael
1966, PK = PERSONAL KNOWLEDGE
TO = TACIT DIMENSION

Proesch, Harry

Torrance, T.F.
1975, "The Place of Michael Polanyi in the Modern Philosophy of Science," Unpublished manuscript for the Polanyi Society at its meeting in Chicago, 02 November 1975.

THE CONVIVIUM GROUP

R.T.A llen

As our subscribers know, Convivium has merged with Tradition and Discovery. This does not mean that the Convivium Group has been disbanded and its activities have ceased. While we no longer produce Convivium as a separate journal, we continue to meet as a committee and to pursue our aim of encouraging interest in Polanyi and post-critical thinking. As we have done since the group was formed in 1974. All that has changed is that our members will receive Tradition and Discovery, incorporating Convivium. Thus there will still be two organisations, one in the USA and one in Britain, but now sharing the same journal.

Having edited and published Convivium almost single-handedly for nearly ten years, Joan Creeden had to call it a day, and so, after asking for our subscribers' suggestions, the decision was taken to merge with Tradition and Discovery. (There was already a considerable overlap of content between the two journals). We all owe a great deal to Joan for her work during her editorship in keeping Convivium alive. As her friends know, that work was done at the expense of completing The Book, which, we hope, she will now be able to resume to finish.

The new arrangements for those who formerly subscribed to Convivium.

We suggest that those of you living outside Europe who formerly subscribed to Convivium should now write to Professor Oakwich, if you have not already done so, and arrange a direct subscription with him for Tradition and Discovery. If you also wish to keep in touch with the continuing activities of the Convivium group, please let me know and I shall put your name on the mailing list for the Newsletter which we hope to be able to send out at least once a year.

I now co-ordinate matters for this side of the Atlantic e.g. I receive subscriptions, items for publication, and distribute Tradition and Discovery.

You should already have received from me a copy of our questionnaire. Can you please complete and return it, if you have not already done so. We are especially looking for people willing and able to referee articles. As before, we will send articles, reviews, notes and news, for Tradition and Discovery and for our own Newsletter. We also need more subscribers. I have a short leaflet which I can send to you for you to distribute to friends, at conferences, among your colleagues, and so on. Please write to me for copies.

We hope to organise a conference to mark Polanyi's centenary in 1990, and welcome suggestions as to place and speakers.
Personal Knowledge in Perspective: A Reply to R.T. Allen's Questions

S. Palegujst

The October 1987 issue of Consciuum (25, pp. 44-56) contains an article by R.T. Allen entitled "Polanyi and Truth" (hereafter PT), in which the author claims to "take up the challenge posed by Mr. S. Palegujst's 'A Kantian Critique of Polanyi's 'Post-Critical Philosophy'" (Consciuum, 23, March 1987, pp. 1-11). In that article (hereafter KCP) I intended to "use Kant's philosophy as a sounding board to help pinpoint some unfortunate misunderstandings contained in PK (CP, 2)". It was presupposed, for the purpose of that rather modest task, an interpretation of Kant's philosophy which I had developed in full elsewhere. In deference to any readers who questioned or failed to understand this interpretation as summarized in KCP, I referred to the footnotes to seven of the articles I have written in its defense (see KCP, 10-11).

Mr. Allen states at the outset of PT that "I shall not content upon Kant but shall try to clarify what Polanyi said" (PT, 48). He does this by discussing seven of the "problems" which KCP raised about Polanyi's position. In the course of his discussion he addresses a number of questions directly or indirectly and calls for a public clarification of my position. I will do my best in the present article to respond to Allen's queries. However, I must make quite clear at the outset that he has to a certain extent asked for the impossible. KCP was openly and explicitly based upon Kant's critical philosophy, not on Polanyi's alleged postcritical philosophy. A full appreciation of the weight of my argument therefore requires some understanding of Kant. The role of Kant's ideas in my critique of Polanyi is not an optional extra that can be "bracketed out", even for the purposes of a reply. Such an illegitimate assumption is at the heart of my most weighty criticism of the very "postcritical" method which Polanyi and his followers advocate: it is the (quasi-positive) assumption that we can go beyond Kant merely by ignoring it (or them). Saying "I'm going to object to a Kantian critique of X without mentioning Kant" is like trying to explain our knowledge of objects without ever mentioning the participation of the subjects -- and this is something which neither Kant nor Polanyi would condone! My suggestion to Mr. Allen, then, is that if he says "my criticisms of Polanyi difficult to understand, he should read my published articles" (offprints are available upon request). This is particularly important because in the remainder of this article I will be unable (given the aforementioned intentions of KCP) to follow his lead; although I will concentrate on clarifying my attitude towards Polanyi, I will again be unable to do so without mentioning the above arguments. The following comments correspond to Allen's seven numbered sections (1-4 and 6-8; no section 2 appears in PT).

1. In KCP 2-3 I criticise Polanyi for failing to make an adequate distinction between "I believe p" and "I am true." I suggested that what is missing in his account is the recognition that, as Kant argued, objective criteria for truth do not preclude, but rather make possible, our personal (i.e., empirical) involvement in knowledge. Allen addresses this issue by noting the importance of recognizing "the difference between the abstract distinction between...truth and error, and the application of this distinction to oneself" (PT, 43). Against Russell, Polanyi argues (according to Allen) that science aims at a reality beyond itself, and that our beliefs are (or should be) anchored by a commitment to a reality beyond them (PT, 45). I quite agree with Allen that this marks an advance over the two alternatives: "all denial of the possibility of truth... all 'objective' claims that truth can be impersonally attained... without the exercise of our (largely tacit) powers of judgment and decision" (PT, 46). However, this in no way precludes or goes beyond Kant's position. On the contrary, a Kantian reference to non-empirical objective criteria is the only way such a position can be upheld consistently. Allen is right: Polanyi does say that science aims at a transcendent reality, and that beliefs are all grounded in our faith in such a reality. My point in KCP was that Kant says much the same thing, only he goes a step further! Polanyi's position just cannot stand on its own. If he says that science can actually reach its "aim" (which we can actually attain) because of our awareness of the possibility of truth -- then he would have to rely in Russell's B. But Allen rightly notes that this is not an adequate interpretation of Polanyi, and that such an interpretation of Polanyi, if taken seriously, would indeed call into question the possibility of knowing this transcendent reality, and hence that we are still left with the problem of distinguishing between knowledge (or truth) and belief. Allen says nothing (in section 1 of PT) about this issue.

Kant's solution is that "reality" can be viewed in two distinct ways: if we view reality empirically, then we can (and should) achieve a knowledge of it, knowledge which we can distinguish from mere opinion (or from mere opinion) by the agreement with certain transcendental conditions (or criteria for truth); if we view reality transcendentally, then it is unknowable, except that such a point of view enables us to establish just what the transcendental criteria for empirical knowledge are. (Note that these criteria, though "objective" when viewed empirically, are a priori criteria -- perhaps we could even say "categorical" when viewed transcendentally.)

2. Allen thinks Polanyi would probably admit "what some of the conditions for truth, i.e., for empirical knowledge, can be outlined," but not all of them (PT, 49). This is unobjectionable (see e.g., PK, ch. 5). But Polanyi's "conditions are one and all empirical" (see e.g., PK, ch. 5), and as such they are "the whole point of Kant's transcendental resolution: no set of empirical criteria, no matter how important a role they happen to play in the way we actually gain knowledge, can possibly define how we must gain knowledge. Allen also notes that Polanyi would insist that objective (empirical) knowledge is impossible because there is always, in every act of knowing, at least an "implicit exercise of faith," and because regarding something as true requires an explicit commitment to some system of beliefs (PT, 49). Once again, Polanyi and Allen fail to recognize the difference between two quite distinct types of beliefs and commitment. In fact, the very example Allen raises in objection to the notion of objective knowledge can illustrate the distinction between the
transcendental and empirical perspectives: "In using a calculator, computer or marking scheme, I commit myself to its truth... Of course, I can operate it mechanically and impersonally but not in order to make correct calculation, draw correct inferences and earn valid marks. Once I do that, I personally... commit myself..." (PT, 50). But the first commitment (i.e., to the system -- e.g., the marking scheme) is transcendental: without that commitment there would be no marks at all, to say nothing of valid marks. Such a commitment is a necessary condition for the possibility of using the marking scheme, i.e., space, time and the categories are for Kant necessary conditions for the possibility of experience (and hence, transcendental). But the function of my transcendental faith in such a system is to create a situation in which it is not just possible, but proper to view the results "mechanically" or " impersonally," insofar as their empirical validity is concerned. Everyone who has ever used a calculator would surely agree, upon serious reflection, that there is nothing morally, scientifically, or even epistemologically wrong with approaching it with implicitly mechanical intentions. After all, that's what it is for! Our faith is its accuracy is a transcendental presupposition of ever using it, not as empirically significant " fact" about how and why it works. Indeed, many a psychiatrist would be interested in talking to anyone who honestly believes that the correctness of the calculations done on a hand calculator are correct primarily because of the personal relationship which the person establishes with it! If this is not the sort of thing Polanyi means by "personal," then he should be more careful in narrowing down his use of that term -- or perhaps just choose a more suitable one.

This is the point being made in KEP: commitment to a system is fundamentally different from commitment to a fact implied by that system. The former is transcendental (and in a sense "personal"); the latter is empirical (and in an equally legitimate sense " impersonal" in KF). Calculations in science too is personal and it depends upon a transcendental foundation.

I trust this answers Allen's main query in section 2 of PT. With respect to the three specific questions he asks at the end of that section, I will add the following remarks: (a) I hope it is now clear that I do not think Polanyi is wrong in claiming that judgments are personal. Rather, he is wrong in not distinguishing between those personal judgments which are epistemologically "personal" (in a transcendental sense) and those which are not (i.e., those which are only empirically personal, and therefore irrelevant to the necessary conditions for knowledge). The fact that a scientist has to make numerous decisions in performing any experiment, for example, is certainly true. But for a good scientist such decisions will be irrelevant to the validity of the outcome (though, of course, if he had not made them, he would not have discovered that particular objective fact). One obvious proof of this is that other scientists, with different personal decisions, hopes, fears, etc., should be able to reach the same conclusions as to the validity of the purported fact. (b) Once again, Polanyi is very right about tacit knowledge, etc. But he is wrong in thinking that such "empirically" personal elements have anything to do with constituting authentically scientific knowledge; they may indeed regulate how we perceive such knowledge, but they do not define what it is that can be done only by transcendental conditions. (c) For anyone familiar with Kant, it goes without saying that "the authentic examples of strict criteria for knowledge" (PT, 50) are space, time and the twelve categories, united together by means of a transcendental synthesis of intuitions and concepts. (Incidentally, such criteria do not "release us from all responsibility for the holding of our beliefs" (PT, 52), as hinted at by Allen (PT, 23); rather, they merely enable us to view that responsibility from its proper perspective).

3. Allen points out, quite rightly, that for Polanyi a phrase such as "personal meaning" is "almost a tautology" because "all the meaning is a result of personal understanding." As a result Allen is unable to understand how the terms "objective meaning" or "personal meaning," as used in KEP, could have any sense. First, we must remember that KEP is a Kantian critique of Polanyi, not a commentary on Polanyi's position. This thesis frees us to adopt Kant's distinctions, such as that between transcendental and empirical. Even though Kant's "transcendental" conditions are not the same as Polanyi's "personal condition," they do serve a similar function (viz., that of defining fundamental presuppositions). The key difference (aside from the fact that Polanyi's above-mentioned failure to distinguish between empirical and transcendental types of personal involvement) is that Polanyi refuses to admit that the epistemologically interesting fact about the "personal condition" is that it enables us to act as if it were always present. That is, the personal aspect of our knowledge -- in particular, our set of personal (cf., transcendental) presuppositions -- is not always (and should not always be) the focus of our attention, nor is it always the key factor in what justifies us in regarding a given statement as true. Thus, when I imply in KEP, 9 that the physicist's description of a grandfather clock is "objective," I am talking about what the physicist does say about the clock, however inadequate it is for a complete description) will be true (or false) regardless of whether the clock was made by his own grandfather, whereas the physicist's knowledge of the clock obviously has a meaning. This very clear, mechanical meaning -- but the meanings of statements he makes about the clock are not validated or invalidated by the personal context in which he makes them (e.g., that he says it is to be used as an objective meaning). This element which inevitably plays a part in the physicist's knowledge cannot be said to have an "objective meaning" (in a non-Polanyian sense of the word). As I defined it in KEP, 10, objectivity is in this sense "true for everyone."

Allen defines "meaning" in PT, 51, as something which is "by or for consciousness" of some sort (i.e., for corresponding definition of "personal") rather, he seems to imply that consciousness in the same sense be defined both. Who, if he does not provide a consciousness, then obviously there can be no "empirical knowledge," since knowledge is expressed in propositions, which are always intended for consciousness use. Polanyi, clearly has something like this in mind. I would reject it, however, because of its misleading implications. Do you really want to say, for example, that logical truth is personal? That would imply (to anyone with little or no expertise in Polanyian thought) that a logical truth is valid because we believe it is valid. Now in one sense this is admittedly true. We believe (i.e., commit ourselves in an
act of transcendental faith in the supposition) that certain fundamental principles, such as the laws of identity and noncontradiction, are true. There is nothing that forces us to accept them (except perhaps that we'd have a hard time thinking without doing so), so in this sense they are personal. Yet when we examine a particular logical truth, such as "All bachelors are unmarried," do we really want to claim that we accept the truth of this statement because of our own personal involvement with it? No. If we know what the words mean, we would no sooner interview an easy bachelor as we can to see if they all turn out to be unmarried: we can be certain of its truth without taking into consideration anything else which could be called "personal" (i.e., anything besides our understanding of the words and our faith in logical structures). Such a statement therefore has an "objective meaning" because it is something which is "by or for a consciousness," and it has an "objective meaning" because its validity is in no way dependent upon which consciousness it is presented to (assuming, of course, acceptance of the presuppositions -- unconscious for most people -- of logical systems as such).

4. Allen reminds us that Polanyi's use of the word "personal" is an attempt to overcome the illegitimate dichotomy between "objective" and "subjective," viewed as exclusive categories (PT, 51; see also PK, 300, quoted in KCP, 61), and asks whether or not I accept such a distinction. Yes and no. I certainly reject the validity of any attempt to do away with these categories altogether by blurring them beyond any intelligible recognition. So in that sense I accept the categorisation. However, with Kant and Polanyi, I strongly disagree of the belief that this categorisation is anarchistic. For Kant, empirical objectivity is defined in terms of its participation in transcendental subjectivity; the two are inextricably intertwined and are both distinguished from transcendental objectivity (which is an unassimilated, empirical objectivity). This is the merely contingent element in our experience. (Ironically, Allen himself employs a fairly exclusive subjective-objective dichotomy in PT, 52).

The word "objective" implies for Allen a kind of guarantee of truth. Thus he says in PT, 51: "There is nothing that guarantees that we are correct in what we believe and judge and do, but we have argued above and in KCP) that this is not true! To think that guarantees that the calculations we make on our hand calculator are correct, or that the facts we ascribe to our own experience are true, are commitments to, or faith in, some higher-level principle. These principles, even though they are, or perhaps always, have a personal character, nevertheless define for us what we can in general regard as objectively true. Without accepting some view of this sort -- as Polanyi and Allen insist we must not -- I still (even after consulting the index to PE, as well as the dubious method of doubt).

6. Allen excuses Polanyi's emphasis on natural science and empirical psychology and his consequent neglect of transcendental inquiries by pointing out that Polanyi was describing science from within, from within the "commitment situation." Fair enough. But in that case Polanyi should not have claimed (e.g., in the subtitle of PE) to be doing philosophy and, in particular, should not have claimed for his conclusions the kind of universal validity that only transcendental empiricism can establish. Allen goes on to assert that Polanyi, "rightly," rejected "any attempt at transcendental criticism," because "we cannot but start with acceptance of the facts established by science" (PT, 53). Unfortunately, he never explains why this is true. Instead, he quotes a naive "standard objection to Kantian critique," namely that you cannot validate knowledge without first knowing something of what you seek to validate (PT, 53) -- a criticism which could only hold weight for someone who has not read (or at least not understood) the first two paragraphs of the Introduction to Kant's first Critique.

Allen concludes section 6 with a statement which uncharacteristically backs up my charge in KCP that PE adopts a kind of "personal positivism." He insists that Polanyi would reject "any criticism, justificatory or foundational" (PT, 53); yet Polanyi, himself attempts to provide such a justification in the form of a "post-critical" (personal) foundation for knowledge -- a predetermined prejudice not unlike the logical positivism's rejection of metaphysics by means of the (ironically, metaphysical) principle of verification.

7. By now I hope it is clear that by "objective knowledge" I do not mean "knowledge without personal involvement," as Allen assumes in PT, 53. Nor do I mean "knowledge without any possibility of error" (PT, 54). Rather, it is knowledge considered apart from that which our personal involvement supplies.

Allen complains (PT, 54) about my charge that Polanyi's "critique of doubt" ends up merely defending "a newfound version of Cartesian doubt" (KCP, 190). Nevertheless, Allen himself ends up implicitly substantiating my point. I did not say Polanyi adopts the same type of doubt, but a new version -- one which is in fact far more radical in some respects. Allen supports this when he affirms that, for Polanyi, "we have just as to accept the fact that we might...be mistaken, and not allow this in general to unsettle us. Yet it is unsettling to the philosopher to believe that nothing can be known for certain. Rather than passively and dogmatically doubt that certainty can ever be reached (as a la Polanyi), he has adopted an active method of doubt as an attempt (though perhaps unsuccessful) to find something which is certain. By contrast, Kempt's philosophy was, in part, an explicitly anti-Cartesian attempt to settle this question without appealing to the dubious method of doubt.

8. I was rather surprised to find that Mr. Allen is unable to remember any of the occasions in PE in which Polanyi says that his ideas should be read as his own opinions; perhaps it is time he refreshed his memory by rereading PK. Of course, I fully agree that Polanyi's use of the phrase "intended to be read as an 'invitation to the reader to verify' (Polanyi's personal position) in his own experience" (PT, 54). Nevertheless, his usage still exemplifies his tendency to shy away from the universal in favour of the personal.
The Janowice Conference
October 1-5, 1988
W. T. Scott

An International Seminar on the topic "Popper, Polanyi, and the Notion of Rationality" took place in Janowice, Poland, on October 1-5, 1988. It was organized by a committee of Krakow philosophers, J. Misie, J. Piat, J. Piatowsk, and J. Wolanski, and brought together 21 persons. Thirteen Poles attended, two Soviets, two Americans, and one each from India, Italy, Korea, and Turkey.

The aim of the conference was to evaluate the new perspective in the philosophy of science created by the work of Michael Polanyi in contrast to the traditional style of thought represented at its best by Karl Popper. The hope was to show that Polanyi's ideas can be instrumental in solving some notorious problems, particularly including the problem of rationality. Of the 13 papers presented, some attempted to use Polanyi's inspiration, and the others discussed particular problems in the traditional approach. Three participants were working physicists and six participants graduated in physics before switching to philosophy.

The lovely nineteenth-century manor house near the little village of Janowice was a charming and comfortable place for the leisurely conference. With the presentations spread out over five days, there was plenty of time for conversation and walking through the sunny countryside and for study and rest. The University authorities who owned the building and provided the room and board without charge to the attenders deserve the thanks of all concerned.

The List of Participants
1. Adelino Cuttano (Italy)
2. Jan Czerniak (Krakow, Poland)
3. Tarema Grabinska (Wroclaw, Poland)
4. Ahmet Inan (Ankara, Turkey)
5. Alexander Ivin (Moscow, USSR)
6. Wladyslaw Krajewski (Warsaw, Poland)
7. Josef Misie (Krakow, Poland)
8. Prabir Mitra (Krakow, Poland and India)
9. Edzislaw Piat (Krakow, Poland)
10. Igor Petroff (Moscow, USSR)
11. Thomas Placzyk (Krakow, Poland)
12. Janusz Placzyk (Krakow, Poland)
13. William Tausig Scott (Newark, USA)
14. Sang Young Song (Korea)
15. Andrzej Starowsiwska (Krakow, Poland)
16. Klemens Szaniwski (Warsaw, Poland)
17. Barbara Szkow (Silesian, Poland)
18. Jan Tarasi (Merkley, USA)
19. Jan Wolenski (Krakow, Poland)
20. Miroslav Tablarczak (Wroclaw, Poland)
21. Josef Tycinski (Krakow, Poland)

Abstracts

W. T. Scott (Reno, Nevada, USA), in "On Polanyi's Notion of Rationality", surveyed Polanyi's ideas on rationality in terms of General perception and the derivative concepts of embodiment, commitment, and trust, the central idea being belief in contacts with reality. The materialistic conceptions of deductivism and determinism are of limited value, and those of positivism and reductionism are wrong. Polanyi's view of stratification justifies the independent existence of the several sciences and a corresponding variety of rationalities. Overlapping judgments throughout science create a single great web of scientific knowledge, and scientific discovery generally consists of filling in gaps at the growing edge of the web in a rational fashion.

The paper was concluded with an account of Polanyi's development of the basis for chemical reaction rate theory, primarily in terms of a picture of the mechanism whereby reactions occur and some indication how approximate rates are found from this picture. Saturday evening.

J. Tycinski (Krakow, Poland), in "Tacit Knowing and the Rationality of Science," defended the search for rationality in science from the many efforts to treat scientific claims as relative to the social context. He discussed in detail the way in which the inarticulate beliefs that take part in tacit knowing form part of Polanyi's own critical realism. Sunday afternoon.

A. Inan (Ankara, Turkey), in "On the Character of Tacit Rationality," considered whether theories about rationality in science could be themselves rational, and argued that they must be non-rational. He spoke of limits of the logical extent of any theory and the value of the criticism of one theory by another in terms of illumination rather than inference. Several naxis were suggested for seeking more light on any given theory. Sunday afternoon.

J. Wolenski (Krakow, Poland), in "In Defense of Induction," gave a defense in Carnap's spirit of induction in opposition to Popper's position, combining standard logical arguments with some others borrowed from metatheoretics. Monday morning.

K. Szaniwski (Warsaw, Poland), in "Formal and Substantial Rationality," discussed the many different representations of rationality among philosophers and scientists which tend to be formally similar but to differ widely in substance. The speaker restricted himself to rational believing as contrasted with rational action, and in terms of classification rather than the metric of probability. Three properties are needed for rational acceptance of a belief: (A) articulation, (B) consistency and (C) validation. (B) is formal and easy, (A) and (C) are
contrroversial; different philosophies have different procedures, but in practice we accept on trust by personal decision. Monday morning.

J. Miszek (Krakow, Poland), in "Einstein's Method of Discovery," discussed Einstein's method of discovery that involves seeking to develop the "inner perfection of a theory before any substantial evidence was available for the innovation. According to the speaker, Einstein practiced his method from the very beginning of his research activity but attempted its description only in his later years. The use of this method clearly presupposes M. Polanyi's distinction between knowledge and tacit knowledge. In the technical part of his presentation J. Miszek tried to explain how Einstein's method worked in the course of discovery of Special Relativity. Monday afternoon.

H. Kraszewski (Warsaw, Poland), in "Rationality of Science and Irrationality of Art," discussed the topic in terms of the intersubjective criteria for rationality: communicability and testability. These do not apply to works of art, though the arts do try to convince and enlighten us concerning human motives and moral dilemmas. Comparisons were made in terms of what is advantageous and what disadvantageous for science and art. A comment was made on the central role of the person in art as compared to the role of the universal in science. Monday afternoon.

J. Plasowski (Krakow, Poland), in "The Mirage of Rationality," discussed the image of rationality in reference to the metaphysical outlook of rationalism from medieval times to the present. He suggested a Freudian scheme for science: Popper's third world of knowledge and culture represents the rational "ego" of science, Polanyi's tacit knowledge constitutes the "subconscious," and the metaphysical conception of rationality with its background of creativity and order represents the "super ego." Tuesday morning.

T. Plack (Krakow, Poland), in "The Myth of Rationality: Versus the Quest for Rationality," discussed M. Polanyi's philosophy in the context of the ancient myth of rationality (logos). He was able to draw some similarities between these. For instance, both philosophical theories maintain the personal instance, both theoretical principles maintain the personal instance, both physical principles maintain the personal instance, and the speaker tried to answer the extent Polanyi's philosophy could be seen as a solution of the contemporary problems of rationality. Tuesday morning.

W. T. Scott (Reno, Nevada, USA), in "On-going research Program on the Problem of How Rain Happens," presented an account of the study of how wars rain occurs as an example of an ongoing research program with successes and difficulties. In contrast to Lakatos' view, the program coheres out of attention to the reality of entities and processes now known to exist rather than to propositionally formulated theories under test. Verified data were described on the rate of condensation growth of cloud droplets, on the ratio by which larger droplets fall and collect smaller ones, and on the thermodynamics of cumulus clouds that prove the mixing of dry air into the clouds. Experimental evidence thus provides verification of formulas for the boundary conditions for the rain theory. An attempt at an analysis of both mathematical theory was described that predicted rain in an expected way but used inaccurate formulas. Accurate computer programs used the same background failed to give rain production, so that substantial theory modification became necessary. The only alternative appears to be drying and recondensation cycles caused by turbulence that could give the necessary widening of the droplet distribution. The present state is of a theory assuming an unverified mixing rate that even if producing verifiable amounts of rain remains uncorroborated in the absence of a believable and verifiable mixing mechanism. The research program hangs together in terms of many established facts. Tuesday afternoon.

A. Cattani (Padua, Italy), in "Polanyi's Enthymetic Rationality," developed and illustrated a parallel between Polanyi's view of argument in which much is tacit, and the classical enthymeme of rhetorical argument which omits expressing a readily taken-for-granted premise or a conclusion that would be obvious to the reader. An example would be directing attention to a choice of a balance among the scientific values of accuracy, systematic relevance and intrinsic interest, or the insights behind a discovery. Scientific rationality is always only partially proved and generally seeks enthymetic expression in rhetorical form. Tuesday afternoon.

A. Irving (Moscow, USSR), in "Universal and Local Rationality," gave an extensive analysis of types of rationality, putting the emphasis on rationality as a characteristic of scientific decision making rather than in particular features of theories. The focus was thus on the dynamics of science as contrasted with a static view. What is rational is a matter of historical relativism; which principal traditions are used, which axioms are involved. The tacit knowing of medieval scholastics is different from that of the classical period and from that of modern science; Irving said that in any case the tacit bears 9/10 of the influence on choice, and made the interesting comment that scholasticism has been present in modern times with Hitler and Stalin. Logic is the hard core of rationality, but the important criterion is whether the concept of making the best rational choice is reducible to the concept of truth. Persons like Kuhn who do not connect rationality and truth may be called irrationalists. While rationality is an aspect of truth, it is
not the same thing as the logical foundation of a body of truth.

To be rational is to belong to one's milieu and sharing a
non-explicit knowledge. Other components of rational choice are
the tacit knowledge of the scientific community, interdiscipli-

nary principles, and the requirements of definite paradigms or
individual theories. The concept of rationality in the ends-
means relation can be applied to the character of the end or to
the best choice of means. Wednesday morning.

I. Platek (Krakow, Poland), in "What Does It Mean That
Darwinism is a Metaphysical Research Program?" discussed the view
of Karl Popper that Darwinism is metaphysical because
species of bacteria, it would falsify the theory because of the
absence of the residues of millions of years that the theory says
not knowingly deal in trivia in disrespect to their intelligence;
that it work as a metaphor. Popper's view of explanation—
including its strictly creative character. Popper's insistence on
testing competing theories
cuts off study of the many implications of the theory itself.

Wednesday morning.

Harry Prosh's MODERNISM

Haben Walter Poirier

Those of us who have been following the controversy which has
developed amongst Michael Polanyi's followers since the publication of
Meaning in 1973 have been aware of the work produced by
Harry Prosh (and this is somewhat curious in the case of the latter)
or Gelwick (and this is somewhat curious in the case of the latter)
that Polanyi's thinking as such as that Polanyi has always been misinformed about the direction
of Polanyi's argument (misleading the argument made in Meaning).
Indeed, both understand Polanyi never to have deviated from his
initial intention, and hence from their respective interpretations
of his work.

Prosh, representing one side in the debate, criticized
Gelwick's work The Way of Discovery, in a review article appearing in
the Journal of Science (January 1979), for, amongst other things,
understanding the substance of what Polanyi had to say ab initio
about the nature of the subject matter of the arts, religion and the
article in the theological journal Ecclesia (March 1982), reproaching
epistemology as it bears on issues of a cultural and humanistic
character. In brief, it was Prosh's contention that Polanyi
attributed no real existence, that is to say, independence to the
humanities. Rather, it was his view that the known in these three
imaginative and creative intelligence of the thinker. Gelwick, supporting the opposite and, in some sense, more
traditional point of view, which saw Polanyi extending his belief in
the real existence of the object of knowledge in the natural
complete issue of Ecclesia, on this occasion, was devoted to articles
on the thought of Michael Polanyi. Also participating in this
debate, although at a very respectable distance, was the great
Polanyi interpreter, Marjorie Grene, as well as a number of other
interested scholars. (Cf. also Journal of the British Society for
Phenomenology, [October 1977].)

With these introductory observations in mind, one of the first
things which needs to be stated is Prosh's Michael Polanyi. A
Critical Exposition is not a work that is suitable reading for the
uninitiated reader. This is so for two reasons: Prosh has been aware of
the assumption that Michael Polanyi's and which made extensive
use of the material originally written by Polanyi as much as if it frequently explains the various elements of
this theory of knowing in an abbreviated and abstract fashion, and
Polanyi's (e.g., induction, objectivity) is essentially the argument
in Prosh's text. Prosh embarks upon what Polanyi, it will be recalled,
developed out of what some of Polanyi's disciples perceived to be a
shift in the direction of Polanyi's thinking in Meaning relating to
the question of the reality of the object known in the arts,
religion and humanities. This disagreement was broached in a
systematic fashion in a series of contradictory exchanges between
the philosopher Harry Prosh, and the theologian Richard Gelwick.
Parenthetically, it should perhaps be noted here that neither Prosh
nor Gelwick (and this is somewhat curious in the case of the latter)

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on the thought of Michael Polanyi. Also participating in this
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Polanyi. The key to understanding this work in a critical manner rests with the approach which Prosch has adopted. The author has premised his work upon the belief that Polanyi saw his theory of knowing as a therapy for the serious disease that afflicts modern man. For this, the author is to be commended. Indeed this, in our estimation, is how Polanyi is to be understood. But, of course, it remains to be seen whether Prosch's Polanyi understands the pathology from which man suffers in the modern world in the manner in which Polanyi himself understood it, and whether he is up to the task which Michael Polanyi set himself. Unfortunately, it must be said that we think not, despite the fact that Prosch deftly leads us through what he thinks are the various stages of the Polanyian curative process in the hope that he who emerges will be restored to health.

Michael Polanyi: A Critical Exposition is divided into four parts entitled, respectively, Diagnosis, Prescription, Treatment, and Evaluation. In the three chapters of Part One, Prosch is concerned essentially to describe Polanyi's understanding of the psychic pathology that afflicts contemporary man. We find the source of this pathological condition of the soul, Prosch and Polanyi tell us, in the history of modern thinking since the Enlightenment. Specifically, it is located in the growth of a form of corrosive skepticism which characterizes the modern era, and which, in the end, leads to nihilistic thinking. Prosch's development of this material, while somewhat condensed and refined, follows closely, and perhaps too literally, Polanyi's words on the subject. In Part Two, Prosch gives us a highly personal account of Michael Polanyi's theory of knowing, which touches base with all of the aspects of the theory. It is frequently a particularly sensitive reading of Polanyi's theory, but it is also at times curiously off course. In Part Three, we are given an understanding of the implications of this theory of knowledge for the study of certain problem areas within various disciplines. In Part Four, Prosch contrasts with evaluating the importance of Polanyi's theory of personal knowledge, it is in this Part that Prosch speaks of Polanyi's abandonment of the standard which he set for himself in the investigation of the nature of science when studying the arts, sciences, and humanities. Prosch refers to this as "Polanyi's Divarication." It is imperative for us to appreciate here that for Prosch this abandonment was not an unintended and hasty event, nor was it one which did not bear the issue of induction. It does, but it is not the aspect of his work which most interested Polanyi, nor is it one that bears upon the issue of induction. The feature of his work which most interested him was the fact that all knowing is anchored in the subsidiary and the personal, and hence, that philosophical-psychology is more important than logic in the development of a credible theory of knowing. Indeed, the greatness of Polanyi, in our estimation, resides in the fact that he reminds us of the preeminence of ontology over epistemology. Since the time of Descartes, philosophers have, as a rule, given priority to epistemology. Michael Polanyi returns us to the ways of the ancients. He informs us that knowing depends upon being, and not just any being, but human being. What we know, and what we are capable of knowing, as well as how we know, is suffused with knowing of being in the world, according to Polanyi. We cannot but conclude, therefore, that the problem which Polanyi addresses was much more serious than the issue of induction (important as this issue may be), or any problem in logic. In introducing us to Polanyi's thought by focusing on induction instead of the personal and psychological origin of knowing, Prosch has left himself open to the criticism which states that he misunderstood the severity of the disease which Polanyi's therapy sought to remedy.

Prosch's reading of Polanyi is frequently perplexing when seen from the perspective of the one who adopts a more traditional understanding of the material. There is no doubt that one can find confirmation of, or support for, what Prosch says about certain aspects of Polanyi's thesis in the writings of Polanyi. However, frequently one must wrestle with a Polanyian argument put forth in order for it to say what Prosch claims it states. Indeed, it is often the case that an aspect of Polanyi's thought which is viewed as pivotal by Prosch is seen as peripheral by Polanyi. This is not especially difficult to establish. In Part Two, which is divided into five chapters, Prosch is primarily interested in what he reads as an understanding of Polanyi's epistemology, and within the limits which he has chosen for himself, he has succeeded. Throughout his exploration of the thesis, he attributes to Polanyi a concern for logic and the problem of induction, which is important and perhaps even central to some aspects of Polanyi's thinking, was most certainly not the principle reason for which Polanyi sought to make known his theory of knowledge. In Chapter Four, entitled "A New Epistemology," for instance, Prosch reduces Polanyi's epistemology almost exclusively to an issue of induction and its attendant problems. "But, is this Polanyi?" we are inclined to ask. Was Polanyi driven to develop his epistemology as a result of a concern for the problem(s) posed by induction? Did he see his thought as an attempt to resolve the difficulties faced by the received-view in the area of induction? We think not. It should be noted that we are not claiming here that Prosch asserts that Polanyi was interested in induction in the way modern empiricists are interested in the issue. We are saying simply that in drawing attention to induction as an initial explanatory approach to Polanyi's epistemology, Prosch is inevitably deviating and limiting what he can propose as Polanyi's principal therapeutic concern, not to mention what Polanyi believed to have been the nature of the modern pathology. Furthermore, we must never forget that Polanyi was extremely critical of the received-view in all of its ramifications, and he ought not to be associated even inadvertently with it. On those occasions when Prosch saw fit to speak of induction, it was almost always to condemn the received-view's fascination with and misinterpretation of the issue induction. Now, this is not to imply that Polanyi's theory of knowing does not bear on the issue of induction. It does. But it is not the aspect of his thought which most interested Polanyi, nor is it one that bears upon the issue of induction. The feature of his work which most interested him was the fact that all knowing is anchored in the subsidiary and the personal, and hence, that philosophical-psychology is more important than logic in the development of a credible theory of knowing. Indeed, the greatness of Polanyi, in our estimation, resides in the fact that he reminds us of the preeminence of ontology over epistemology. Since the time of Descartes, philosophers have, as a rule, given priority to epistemology. Michael Polanyi returns us to the ways of the ancients. He informs us that knowing depends upon being, and not just any being, but human being. What we know, and what we are capable of knowing, as well as how we know, is suffused with knowing of being in the world, according to Polanyi. We cannot but conclude, therefore, that the problem which Polanyi addresses was much more serious than the issue of induction (important as this issue may be), or any problem in logic. In introducing us to Polanyi's thought by focusing on induction instead of the personal and psychological origin of knowing, Prosch has left himself open to the criticism which states that he misunderstood the severity of the disease which Polanyi's therapy sought to remedy.
The situation is much more serious with reference to the way in which Prosch chooses to treat Polanyi's interest in objectivity. On the subject of objectivity, Prosch appears to be of the belief that Polanyi stood upon the possibility of our acquiring objective knowledge. Repeatedly, Prosch insists that Polanyi's theory of personal knowledge privileges a non-objective type of knowing (whatever that may be), which Prosch seems to feel is superior to objective knowledge. Although Polanyi himself has never been found throughout Prosch's work, the clearest statement of this view is on page 98, where we are told: "...personal knowledge' bridges the gap...between subjectivity and objectivity. There is no purely objective knowledge, because nothing can be called knowledge that is not personally accredited as knowledge." We, of course, agree that personally accredited knowledge is important. In fact, it is central to Polanyi's thinking. But the question is: Is this entire statement consistent with Polanyi's position? Specifically, would his theory of knowledge be situated midway between subjectivity and objectivity, and mean what Prosch apparently means by these words? Would Polanyi have said that there is no objective knowledge as such, as Prosch seems to imply? As a statement of Polanyi's view on this question, this, we contend, is very misleading, and it will inevitably blunt the significance of Polanyi's contribution to the development of post-critical thinking. If Prosch is to describe Polanyi's theory of personal knowledge as he characterises it as a subjectivist. What Prosch should have said is that for Polanyi: "there is no purely explicit knowledge." The important point which Prosch fails to note here is that the distinction which Polanyi drew between what is explicit and what is tacit in the knowing process is not equivalent to the distinction which Prosch makes between what is objective and what is subjective. Put very simply, for Polanyi, what is objective is not synonymous with what is explicit, and what is subjective is not synonymous with what is tacit. The expressions tacit knowledge and explicit knowledge, in fact, mean different things to different people. Some people may find the ordinary meaning of tacit knowledge bears little relation to the idea of tacit knowing. The ordinary meaning of tacit knowledge refers to something which is not known. The genuine knowledge of meaning is not necessarily of the tacit kind. The question of what constitutes tacit knowledge is therefore a matter of debate. For some people, tacit knowledge is knowledge that is acquired without conscious effort. For others, it is knowledge that is acquired through experience. In either case, tacit knowledge is knowledge that is not explicitly stated. The idea of tacit knowledge is therefore not necessarily synonymous with the idea of explicit knowledge.

In our estimation, Prosch mistakenly uses the term "objective" in place of the words "solely distal" and/or "neutral." As a consequence, he frequently finds himself in the belief that Polanyi never attacked the belief that Polanyi never attacked the belief that Polanyi never attacked the...
Now, obviously we do not intend to discuss the question of whether this view is tenable in the abstract. It is, and, in a very important sense, it might almost be said to be the central issue today. However, this reading of Polanyi's thought converts him in a modern, and destroys the unity of the knowing experience as we move from the natural sciences to the humanities in a unity which Polanyi is deemed by many always to have defended. Hence, the question is: Is this Polanyi's view, and does Polanyi's behavior, as an instance, that the reality known by the religious person does not exist before the religious person discovers it? If this is Prosch's understanding, then it seems but one step removed from saying that it is the religious man who creates God. Can we accept this as Polanyi's stance? Clearly, if this is Polanyi's belief, then we have no alternative but to agree with Marjorie Grene who argues that to the extent that Polanyi held this point of view in later life, Polanyi was inconsistent with what everyone understood to be his original intentions. But does it make sense to say that this is Polanyi's position? We do not think so.

It seems to us that if this were Polanyi's understanding of these matters, he would have had either to disavow everything he stood for prior to the publication of Meaning, or to have experienced a terrible loss of direction towards the latter years of his life. Neither of these options seem credible in the normal run of events. Prosch himself provides us with the basis for doubting the verity of his thesis as it bears on what he calls Polanyi's divination. If Prosch is correct in claiming that Polanyi's epistemology is not a general epistemology, in the sense that different standards apply to the study of the natural sciences than apply to the study of the humanities etc., and that the reality which is known by the arts and the humanities is contingent and a creation of the remender, nor is it in the case of the natural sciences, then how can anyone believe that Polanyi's endeavour was therapeutic in any serious fashion? It would then be thought to be seen as a remedy for the pathology from which modern man suffers, when we are given to understand that he is synonymous with man's profound skepticism about his capacity to know the real, and the true in all spheres of life, ...not as it is imagined, but as it is, that contemporary men are the victims of a very mild and insignificant disease, in which case Polanyi's social thought is in the mode of an inflated moralizing, or the disease is serious, and Prosch, in his capacity as a social critic, or as a therapist, is misreading its character, and is suggesting an inapposite medicine.

However, Prosch holds that the entire structure of Polanyi's work was designed to demonstrate that Polanyi saw his theory of knowledge as therapeutic in that it was intended as curative for the serious affliction(s) which all(s) modern man. And, of course, in regard to this point, we believe that we must take Prosch seriously. Polanyi did think of his work as therapeutic. Consequently, it is not sufficient for Prosch to say that Polanyi's writings are therapeutic, and then imagine whatever he desires as the content of the prescription designed to bring about the cure. The prescription must be appropriate to the disease. Prosch must show how his understanding of Polanyi's therapy acts on the pathology, and how it is superior in its curative capacity to, for instance, Gelwick's understanding of Polanyi's therapeutic endeavours. For this to take place, Prosch must demonstrate to us that he has 1) a correct understanding of what Polanyi conceived to be the modern disease, and 2) the discernment therapeutic. Unfortunately, we suspect that he may have
THE POLANYIAN IDIOM: A GLOSSARY
Robert P. Inkester
St. Cloud State University

Introduction

Michael Polanyi was profoundly sensitive to the power of ideas in shaping our understanding. Indeed, the revolution of our ideas was one of the major areas by which he sought to help us revise our understanding of ourselves and our universe. "For," he said, "to modify our ideas is to modify the frame of reference within which we shall henceforth interpret our experience; it is to modify ourselves" (Personal Knowledge, 105). In an extended summary of the work of Leibniz-Fichte with the Husserl, Polanyi demonstrates how the idea in which a belief system is expressed is itself a powerfully conservative force, protecting the system from incompatible ideas by disabling the expression of these ideas. And he goes on to argue that the idea of objectivism has, like the Zen idea of emptiness, operated to discredit opposing views of the universe by paralyzing the vocabulary with which we may talk about the universe—specifically, by its intolerance of any declarations of faith in knowledge claims. Hence, Polanyi begins Personal Knowledge by redefining objectivity in a way that permits—in fact, demands—the personal participation of the knower in objective knowledge.

Objectivity, then, like so many of the other terms in this glossary, has a special, enriched meaning. This glossary undertakes to bring the most important in these "Polanyian idioms" in a concise and systematic way. It provides an introductory view of the complex landscape that constitutes the idioms with which Polanyi interprets the world. To the extent that this glossary reduces that complexity, however, it also presents the risk of a reductionist understanding of Polanyi's thought. That risk is mitigated, but not eliminated, by the length of the discussion of some of the terms and by the glossary's providing direction to still richer sources of understanding contained in Polanyi's own work.

The abbreviations of references to Polanyi's work are as follows:


Glossary

commitment: Polanyi asserted, "To accept commitment as the only relation in which we can believe something to be true, is to abandon all efforts to find strict criteria of truth and strict procedures for arriving at the truth. A result obtained by applying strict rules mechanically, without committing anyone personally, can mean nothing to anybody" (PK, 311). Farther in his frequent citing of St. Augustine's exalt to which we must first believe in order to know, in order to achieve any comprehensive view of all, we must have faith—a commitment to that vision as it emerges from the specific data at hand. Polanyi argues that commitment is bipolar: "reasonableness and truth are in fact two aspects of such a commitment: the act of judgment in its personal pole and the independent reality on which it bears as its external pole" (FL, 87). See also fiducial component, personal knowledge, and truth. For further discussion in Polanyi, see especially PK, Chapter 10, "Commitment," particularly 308-316, as well as FL, 64-65, 379-82, and 399-97.

comprehension: Polanyi's theory of the triadic structure of personal knowledge gives a new depth to the literal, etymological meaning of the word comprehension: a holding together. Meaning or knowledge, in Polanyi's epistemological theory, is an affirmative set of holding and holding together the discrete, atomized data in an emergent, comprehensive and comprehensible, meaningful pattern. For further discussion, see especially FL, 45, for an example of the loss of comprehension, see PK, 199.

conviviality: Polanyi's basic epistemological model postulates indwelling as essential to any knowing. In order to know any entity, we indwell its particularities, integrating these tacitly in order to know fully the comprehension of entity. When we seek to understand entities that are sentient creatures, our indwelling takes on the form of conviviality: we actually project ourselves into the being of the creature that we contemplate, judging that creature's behavior by rules of rightness that we infer from what we know about the creature. As we move up the biological scale of creatures that are increasingly like ourselves, this indwelling becomes increasingly convivial, until, with fellow human beings, our understanding of one another is profoundly convivial. Conviviality, then, like commitment, is an essential element of knowledge, particularly that knowledge which is embodied in the sphere. Polanyi devotes a chapter in Personal Knowledge (pp. 203-265) to conviviality. In brief, he defines
conviviality as *sentiments of trust and the persuasive passions by which the transmission of our articulate heritage is kept flowing... and the individual sentiments of fellowship that exist precisely to articulate among all groups of men and even among animals* (Polanyi, 209).

emergence: Emergence is an important concept in both the epistemological and the ontological theory of Michael Polanyi. For further references on this topic and on the discussion of ontology, reality, fault knowing, and the triadic structure of knowledge. According to Polanyi’s epistemology of personal knowledge, meaning emerges as a result of the heuristic effect of the knower in constructing or making coherent and comprehensive sense of the specific data to which the knower has access. Specific pieces of data are close to the comprehensive topography of an idea. Just as specific features of a physiology is close to the identity of a person. Polanyi further finds that epistemology, the structure of knowing, meaning ontology, the structure of reality. More comprehensive levels of reality emerge from lower, more explicitly determined, more tentative levels of reality. For example, the strategy of a chess game, which tends to be indeterminate and uniquely structured, emerges free of the rules for movement of the various pieces on the board, which are determinate and the same for all games of chess. In Polanyi, see especially 1979, 44-46, 55, and 87-88. See also 1983, 33-34, and 1986, 399-400.

fiduciary component: Polanyi’s epistemology of personal knowledge may be summarized in the assertion that all knowledge has an inescapable fiduciary component: all knowledge entails commitment and risk. One Polanyian illustration is the following: A child could never learn to speak if it were assumed that the words which are used in its hearing are meaningless or even if it were assumed that it saw a single word used as meaningless. And similarly no one can become a scientist unless he presumes that the scientific doctrine and methods are sound and that their ultimate premises can be unquestioningly accepted. We have here an instance of the process described epistemologically by the Christian Church Fathers in the words: *fides quarrant integritas intellectus.*

Polanyi summarizes his fiduciary component as follows: “I believe that in spite of the hazards involved, I am called upon to search for the area and the necessary fiduciary component is further illuminated in the following description of the relationship of knowledge and truth: *the assumption that the truth that we seek to discover exists by itself, hidden to us only by our ailed approach to it, represents correctly the feeling of an investigator pursuing a discovery which keeps eluding him. It may also express the ineradicable tension between our convictions that we know something and the realization that we may consciously be mistaken. But in neither case can an outside observer of this relation compare another* (Polanyi, 1946).”

bureaucracy: The word *bureaucracy* shares its etymological roots with the word *bureaucrat*, and both derive from the noun *bureau* meaning “desk” or “office.” The term bureaucracy refers to a style of management that is characterized by the use of rules and regulations, as well as the delegation of authority and decision-making to lower levels of the organization. Bureaucratic systems are often associated with large, hierarchical organizations and are often criticized for their rigidity, inefficiency, and lack of flexibility.

Indwelling: In Polanyi’s epistemological theory, indwelling is essential to any act of knowing. We know anything, he argues, by dwelling in clues to its meaning. This indwelling is a tool process. If we focus explicitly on the clues themselves, we distance them from us and lose sight of the comprehensive entity to which they point. Polanyi describes indwelling as follows: “Whenever we use certain things for attending from them to other things, in the way in which we always use our own body, these things change in their nature and thus we may be attending to the parts from which we are attending to them, just as we feel our own body in terms of the things outside to which we are attending from our body to include it—so that we come to dwell in it” (Polanyi, 1962, 16). For related terms, see conviviality, comprehensive, and especially fault knowing and personal knowledge.

nonosphere: Polanyi borrows the term nonosphere from Felix Hard de Chardins, who weay think of three spheres, all located topographically or physically in the same place, but conceptually concentric, with outer spheres emerging from the inner spheres. The inner sphere of the nonosphere is the geosphere, the physical world of nonliving things. The next sphere is the biosphere, life emerging from the geosphere and forming an ontological level of existence, the nonosphere articulate framework that constitutes our awareness and integrated way of individual human intellectual achievement. In Polanyi, see especially 1979, 392-90, 393-404. *Studies* 45-61.

objectivist epistemology: In Polanyi’s view, objectivism is a central term in an array of terms that are closely related to one another: *ontology, epistemology, mechanism, and reductionism.* According to Polanyi’s epistemology, a profound epistemological shift occurred during the sixteenth, seventeenth, and eighteenth centuries. New scientific views supplanted many of the older views, which were deeply interwoven with the Christian faith and ways, to a significant degree, contained by appeal to religious faith. By and large, the new views came eventually to be accepted because of appeal to empirical evidence. Successful counterexamples of mechanical interpretations of the universe—Newton’s laws are a prime example—served to demonstrate that all reality could ultimately be explained by a process of breaking down complex phenomena, reducing them to their most basic parts, and analyzing these parts.
empirically. Phenomena that could not be so reduced—abstract, intangible things like values or beliefs, for example—tend to be viewed with increasing skepticism. According to the objectivist ideal, knowledge, in order to be reliable, must be totally determinate, totally accounted for by empirical data. In this epistemological system, the knower's function is simply that of interpreting, clearly and logically the meaning that is found in the data. It is emphatically not that of interpreting the data, since interpretation entails a personal participation that contaminates the pure data with an unreliable element. Hence, the Royal Society took Sir Isaac Newton's *Opticks* (there is nothing in words—we accept no authority), and Newton retreived, "Sapientes non liquido" (It do not engage in speculations.). Two twentieth century manifestations of objectivism are positivism in the philosophy of science and related fields and behaviorism in psychology and its related fields. In Polanyi, see, Inter alia. PK, 127-132, 246, 285.

Meaning, 22-30.

Objectivity: In the first chapter of Personal Knowledge, titled "Objectivity," Polanyi redefines objectivity, stripping away the objectivist meanings that he has found distorting the proper meaning of the term. Objectivity, he insists, does not mean an utter dependence upon empirical data. The objectivity of Copernicanism, which objectivists hold up as a model of reliance upon empirical data, was not this kind of objectivity at all. In fact, the preponderance of empirical data supported the proposition that the sun orbited around the earth, not Copernicus' heliocentric theory. The objectivity that Copernicus modeled—true objectivity—is a knowledge which relies to a greater extent on theory rather than on mere isolated sensory experience (PK, 4). Objectivity is the capacity to make the creative imaginative leap that synthesizes the data into a comprehensive, rational theoretical structure that can be an entirely true from numerous perspectives beyond simply the local perspective that one has on the empirical data.

"Objectivity," Polanyi insists, "does not demand that we estimate man's significance in the universe by the absolute standards of his past history or his probable future career. It does not require that we see ourselves as a mere grain of sand in a million Sehers. It inspires us, the community he is a part of, with the possibility of his past existence, even to the point of conceiving a rational idea of the universe which can authoritatively speak for itself. It is not a counsel of self-effacement, but the very reverse—a call to the Pessimist in the mind of each" (PK, 5). In Polanyi, see especially PK: 2-17.

ontology: The same complementarity that exists between Polanyi's metaphysics and his behavioristic epistemology also exists between his ontology and his epistemological theory of tacit knowledge. Polanyi's ontology is hierarchical: he postulates ontological levels of reality that emerge from lower levels just as higher levels of understanding emerge from our subsidiary awareness. Each level of reality leaves open possibilities, or boundary conditions, that are constrained by higher levels. For example, at the most basic level of reality there exist matter and energy, behaving according to the laws of physics. At the next level, matter and energy are formed by particles of matter and energy, and so on. Each higher level is then more complex and its physical structure—chemical compounds—are possible. With the emergence of the biome—biotic existence—much more complex levels of reality emerge: centers capable of locomotion, reproduction, the various vital functions. The laws of physics and chemistry still operate at the biotic level, but they are not sufficient to explain biotic operations, except when there are biotic failures that have chemical or physical causes. Within the biosphere, sentience eventually emerges, and it still appears to be governed by the laws of physics and chemistry. This emergence of consciousness occurs within the biosphere, while the universe as a whole is still governed by the laws of physics and chemistry.

personal knowledge: The importance of the term personal knowledge in Polanyi's thought can be seen in the fact that he gave his essay the title Personal Knowledge. Polanyi says, "according to the theory of Personal Knowledge, all meaning lies in the comprehension of a set of particulars in terms of a coherent entity—a comprehension which is a personal act that can never be replaced by a formal operation" (PK, 49). The triadic structure of personal knowledge distinguishes Polanyi's epistemology from both objectivist epistemologies and subjectivist epistemologies. An objectivist epistemology accepts the role of the knower in interpreting or comprehending the empirical data. A subjectivist epistemology rejects the empirical data as contributing to any ultimate meaning. Personal knowledge is characterized by a bipolar commitment. This commitment has both a personal and a universal component. Polanyi says, "We have seen that the thought of truth implies a desire for it, and to that extent personal. But since much of such desire is for something impersonal, this personal motive has an impersonal intention. We should see this as a contradiction in terms of this personal commitment" (PK, 100). Polanyi finds the "universal liberating power in this dialectic between the personal and the universal, expressed in his next, 'The freedom of the subjective person to do as he pleases is overruled by the freedom of the responsible person to act as he must'" (PK, 101).

realism: Polanyi's metaphysics may be briefly described as follows. *Reality is something that attracts our attention by close which demands and requires our minds in viz., close to it, and which, since it draws us to it, attracts our attention to it. The reality is the existence of something.* This attraction, however, is not sufficient to explain the independent existence of reality. Polanyi argues that reality is mind-dependent and that the reality of the mind is the reality of the mind.
then, complements his heuristic epistemology of personal knowledge: just as
each healthy sentient organism in discovery in discover
ger richer and truer aspects of reality, so reality has what Polanyi calls an
ineasurably profound, an endless capacity for providing, with each new
insight, further clues and hints to yet further new insights. For further
discussion in Polanyi, see especially "Doxa of" and "IV 32-35.

subjectivist epistemology: like the term objectivist epistemology,
subjectivist epistemology carries with it, in Polanyian usage, an array of
terms that are closely related. These terms include holism, rationalism,
existentialism, radical individualism, and nihilism. All are characterized
by their rejection of an ultimate truth and universal meaning in which we as
knowers must submit. All share Polanyi's rejection of objectivist
epistemology, but all depart radically from Polanyi's epistemology of
personal knowledge, which posits a "knowledge which submits to requirements
acknowledged by itself as independent of itself" (Q. 300). Subjectivism
indicates that any intersubjective assertion is as valid as any other
assertion, because the individual judgment is the only measure of truth.
Paradoxically, Polanyi finds, subjectivists and its related concepts have in
even more been fed by the intellectual rubble left by objectivists.
The destruction of traditional belief in any ultimate cosmic purpose by the
acceptance and reductionism of objectivist epistemologies has left a nihilism
that has, in turn, paved the way for radical individualists and other
subjectivists to view Polanyi's discussion of these concepts and their
distinctions are legitimate. See, for example, L. J. 33-110; GCF, 1-246;
Meaning, 7-21; Why? IV, 74-81 and RK, 300-303 & 308-311; for discussions of
the distinctions among them.

tactit knowledge: a central proposition in Polanyi's philosophy of personal
knowledge is the assertion that we know more than can be told. Knowing, he
asserts, is a skillful act entailing the use of a multitude of senses,
experiences, beliefs, memories, and sensory operations. In any act of knowing, we
use this reservoir tacitly; we are indwelling this tacit knowledge. In any
situation that puzzles us, we direct our heuristic energy in search of
a fuller understanding, of what we know to know. Polanyi also refers to this
tacit knowledge as an interpretative framework, and the frame of a window is
a useful metaphor for understanding what we mean by these concepts. When we
are using our tacit knowledge as an instrument for understanding something
else, that tacit knowledge is virtually invisible--clear as a window.
Without it we could not see. But when we concentrate our attention directly on
what we have been using tacitly, it becomes opaque and we see it, as we
might concentrate on a scratch on a window and thereby lose focus on what we
had been seeing beyond the window. And when Polanyi discusses tacit knowing, he says especially "Tactit Knowing." Chapter 1 of The
Tactit Dimension, p. 3-12. See also Meaning, 30-38, 52-53, and 57; KCP, 136,
140, 171-72, 181-93, 195, 199-200, 212, 228; and Slipher, 1957.

triadic structure of knowledge: Polanyi asserts that all
knowledge--indeed, all perception, all discovery, all understanding--has a
triadic structure comprising the knowing, a subsidiary or proximate term
which the knowing necessarily and a final or distant term which
strives. Knowledge is an affirmative act performed Skillfully by the
knowing. Everything we know is known in terms of something else. Each thing

known to which we attend focally as the center of our attention, we know in

reference to our other knowledge, which we use subsumingly or tacitly in

our effort to understand that which is now the focus of our attention.

Because this tacit knowledge, or subsidiary term (which may be highly complex and

used as a mental sieve to explore what is the focus of our attention)

is other than that on which we focus. We use the proximate term
to, by making it a part of our tacit apparatus of knowing. For reference to
Polanyi's discussion of the triadic structure of knowledge, see the
references under tacit knowing.

truth: Polanyi's discussion of truth is intimately intertwined with his
discussions of commitment, comprehension, the fiduciary component in all
spheres. According to the logic of commitment, truth is something that can be
"pseudosubstitution" the objectivist definitions of truth such as the
definitions described as "permanence" of truth but fail to account for the inescapable
implication, that in this extent an approach to our own act of knowing, and the
criteria of our own act which cannot be formally defined. ... the ideal of an
inherently personal character of the act by which truth is declared (Q. 71),
the achievement of a contact with reality--a contact destined to reveal
(Q. 147), this definition resembles the correspondence theory of truth
represented by a wholly subjective, solipsistic view of truth. But Polanyi's
definition implies a more sophisticated role of the person and in rejecting the
objectivist reliance on the role of belief, in order to destroy all belief was to destroy the external
263). This bipolar, dialectical character of truth is perhaps most described of the
matter is by asking up of my own mind about one thing. In doing so I may rely
it, for my reasons, in either case my belief will be made with universal
tentative, as a clue to the truth, or else any discord from
intent, saying what I believe to be the truth, and what the consensus might
and though I as the only person who can speak of it in this sense, this is
based on belief in an external reality and implies the existence of other
persons who can likewise approach the same reality. Nor is it relativistic.

... These are Polanyi's only one truth to speak about (Q. 314).

Polanyi, see especially one the triad of truth and other
references under tacit knowing.
AN APPEAL TO HELP HUNGARIAN SCHOLARS

(The following letter from Professor Thomas F. Torrance was sent to the Polanyi Society General Co-ordinator. The need has not been met by an earlier appeal to members at the American Academy of Religion. We urge you to do what you can. In this time of dramatic changes in Eastern Europe, the thought of Michael Polanyi offers an important resource for hope and reconstruction.)

I have just returned from a visit to Hungary, to Debrecen, where a number of people asked me about the writings of Michael Polanyi. To my astonishment I learned that there were no copies of any of his works in the Lajos Kossuth University of Debrecen or in the Reformed College and Academy there! The Principal and Dean of the Reformed College is both a mathematical physicist and a theologian and is very keen to study Polanyi. Hence I am trying to find ways of supplying him and his colleagues with Polanyi’s books. Do you know of any who have spare copies of Michael’s works who might like to part with them in this way?

Do you think that readers of Tradition and Discovery might like to send copies of Polanyi’s works to Debrecen? If so, they should send them to:

Professor Dr. Botond Gazi,
Principal of the Reformed College and Academy,
Kalvin tér 16,
Debrecen,
Hungary 4004.

I know that this would be greatly appreciated. Personal knowledge and knowing and being, would be especially useful in the dialogue between Christians and Marxists in which Reformed Theology has been making a definite impact. But they need all of Michael’s works.

Thomas F. Torrance,
37 Braed Farm Road,
Edinburgh EH10 6LE.

...We cannot compare someone else’s knowledge of the truth with the truth itself, but only with our own knowledge of it.

(PP, 305)
SUBMISSIONS FOR PUBLICATIONS

As indicated earlier, The Polanyi Society in North America and the Convivium in Great Britain are seeking to join their common interests and publish a common periodical. We are painfully aware of our shortcomings and need very much the support of our members. There are a number of ways that you can help:

1. Send news items regarding relevant publications, conferences, and events but be sure to send complete information such as author, source, date, page numbers.

2. Send articles "camera ready," i.e., ready to be copied just as they are. Presently we do not have secretarial staff to do this. Photocopy them as they are received. Send two copies and a self-addressed envelope to acknowledge receipt of your manuscript.

3. Articles within ten pages, single spaced, 3/4 inch side margins and 1 inch top and bottom margins are preferred.

4. Put author's name under the title and enclose the way you want to be identified in the contributors' listing.

5. Besides articles, critical reviews of relevant books and articles are sought. The Convivium contributers are very good examples of reviews that are useful.

6. We are eager to try production from computer disks. If you send a disk, we can print your text more easily (we think). You will be glad to return your disk once we have copied it. Be sure to specify the program you are using, file name, etc. Our computer system is in the IBM family, and the program is WordPerfect 5.0. If you have questions about publishing on disk, contact Phil Nollini: (816) 271-4385.