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CONTENTS

Preface 2
Guidelines for Submissions for Publication 2
News and Notes 3
Against Dn Polanyi: Comments On Joseph Agassi’s Science and Society, John W. Apetzynski and Michael Chiaradillo 4
In the Shadow of the Enlightenment, The Flight of the Humanities in an Age of Scientific Objectivism, Donald L. Hall 19
‘Lord of Heaven and Earth,’ Some Reflections on Michael Polanyi’s Approach to Science and Morality, Terrence Kennedy, C.S.B.S. (from DIVFIVID) 26
Announcement: Upcoming American Academy of Religion Annual Meeting - Polanyi Society 37
More Hoorman Humor, Jare Hoorman 38
Polanyi Society Subscription and Membership Form 39
Publication Announcement of Everybody Enraptured, The Common Sense of Michael Polanyi, Drusilla Scott 40
POLANYI IN NOVELS

One of the benefits of being a general coordinator for the Polanyi Society is seeing the growth and vitality of Polanyi's influence. This summer in Chicago, we had an experience of 'inscribing' the thought of Polanyi in papers by philosophers, theologians, a writing and literature teacher, and a multidisciplinary business man. The project of papers covered computer science, ethics, pedagogy, mysticism, humor, and theology.

Four members of the seminar are or have been chairs of their academic departments and one is a dean of a school. The afternoons devoted to research in the Polanyi archives opened up new perspectives on the meaning and development of Polanyi's thought. Ten years earlier this exploratory experience would not have been possible to this extent. The University of Chicago archives were just starting to organize the Polanyi materials. The burgeoning of articles and commentaries on Polanyi was just appearing. By the summer of 1983, we find ourselves rich with quality scholarship and publications to the extent that we may need a complex organization to keep up with the pace of Polanyian scholarship.

Almost daily in a university context, one can encounter allusions in references to Polanyi's thought. Yesterday a colleague started talking about the use of Polanyi's concept of tacit knowing as a way of understanding our routines. This is a good example of the use of Polanyi's thought.

A few days earlier another colleague in sociology showed me the acknowledgment in his text that Polanyi's concepts are being used. The author, Andrew Crompton, says here about the acknowledgment of Polanyi's work:

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AGASSI ON POLANYI: COMMENTS ON JOSEPH AGASSI'S

SCIENCE AND SOCIETY

John V. APCZYNSKI and Michael CHIARIELLO

One element of Michael Polanyi's theory of personal knowledge is that one's antecedent assumptions and presumptions, one's operative oversights and insights, in short one's fundamental commitments shape a person's perception and understanding of reality. Hence what a person notices and fails to advert to, what counts as a meaningful datum and what is ignored as inconsequential, what the significant relationships of possible elements in one's perceptual field are, in short one's "picture of the world" or "vision of reality" are all determined by a person's prior commitments and experiences. While all this is practically a truism in the contemporary discussion of the philosophy of science, it is worth recalling that a major factor

in the recognition and acceptance of this insight has been the pioneering work of Michael Polanyi himself.

Joseph Agassi's Science and Society is a remarkable—or perhaps, in his terms, dislocating [91]—illustration of this commonplace, particularly insofar as it contends that there is a certain complementarity between Polanyi's portrayal of the workings of the scientific community and Karl Popper's version of "the logic of scientific discovery." Moreover, Agassi offers his analyses as a peculiar sort of homage to Polanyi, one that takes the form of an emetic dissent. I shall begin these reflections by taking up the former question regarding Agassi's dislocating reading of Polanyi, and shall return to his efforts to pay him homage later.

With respect to the former point, then, I mean that Agassi's reading is provocatively distorted. He reads Polanyi as a "sociologist of science" (the subtitle of the work is "Studies in the Sociology of Science"). This is, undoubtedly, an interesting perspective on Polanyi. But it is equally a truncated view which is signalled by Agassi's contention that Thomas Kuhn's view of science in a vulgarization and popularization of Polanyi's theory. I have no doubt that somewhere in the publicly acknowledged background of Kuhn's thesis regarding the "structure of scientific revolutions" lies the groundbreaking work of Polanyi. At this level Agassi is clearly correct, and it is to his credit that he is willing to declare this publicly. But that Kuhn has represented the thrust of Polanyi's theory of knowledge, even if concessions are granted for "vulgarisation," is not readily...
Why is it that Agassi reads Polanyi this way? Put very simply the reason is that Agassi's fundamental commitment is to a nonjustificatory epistemology, and he views Polanyi as attempting to ground science—in an epistemologically foundationalist sense—in the fundamentally held assumptions of any stage of the historical unfolding of scientific theories. If this is so, then it follows that whatever the leaders of the scientific community uphold as "reasonable" or "scientific" is to be accepted, even if only provisionally. To portray the "foundations" of science in such a way is descriptively accurate in Agassi's estimation but prescriptively wrong and even immoral (85-6) since it is nothing more than an appeal to extrinsic authority.

This reading of Polanyi is epitomized in Agassi's reflections on "genius in science" (ch. 15), which were stimulated by Polanyi's essay of the same name. I find it particularly revealing that Agassi sees the crux of the issue raised by Polanyi to be the sociological function of "genius," which he places in a Romantic understanding of history. For Enlightenment thinkers, genius had little place in science since it was assumed that everyone began de novo by doubting past assumptions and establishing reasonably what was to be held. The Romantic reaction, on the other hand, emphasized continuity with the past as the repository of the wisdom of the sages to which ordinary mortals must be subservient, while it simultaneously legitimized progressive innovation in the extraordinary case of the immortal genius. Even though he admits that Polanyi is anti-Romantic in his views of science, nonetheless Agassi contends that Polanyi's use of the notion of genius serves the same sociological function that it did in Romanticism, namely to provide some legitimacy for a severely restricted range of rebellion in an otherwise authoritarian system (201). From this sort of reflective process Agassi concludes that Polanyi grounds the rationality of science in a blind leap that consists in initiating oneself to a closed guild controlled by a group of ruling elders who preside over what is essentially an elitist, undemocratic, and authoritarian establishment. By contrast, what Agassi proposes is an egalitarian theory of genius (205-207), where all individuals act with full moral and intellectual autonomy in accordance with the degree of their abilities and circumstances.

I suspect that by now those familiar with Polanyi's essay, "Genius in Science," must be marveling at the kind of spectacles Agassi is wearing. Had Polanyi's aim there been to offer a dia
cratic sociology of science (as Thomas Kuhn arguably does), then there might be some discernable relationship between Agassi's reflections on Polanyi and his attempt to move beyond in a more democratic fashion. In actuality, however, Polanyi's aim in this essay is to point to the role of personal judgment relying on tacit powers of integration for the grasping and resolution of scientific problems, including the weighing of any evidence that might "refute" the proposed solution. "Genius" is introduced explicitly as an exemplary, though certainly not exhaustive, case of "perception" in science. The point, in other words, is that the general cognitive processes involved in the ability to learn how to recognize a good problem and pursue it to some sort of
resolution are highlighted in cases of recognized genius. The community of scientists never legitimately exercises control over the individual scientist's intellectual or moral autonomy. This stance is clearly expressed in Polanyi's writings from his early distinction between general and specific authority to his mature admission, in *Personal Knowledge* that all his cherished assumptions drawn from Western culture could be wrong. He did not in fact accept this possibility because by dwelling in many of these assumptions, that is by accepting their authority, he believed he had made a more profound contact with reality. Furthermore he believed he knew these realities on legitimate grounds, even though he could specify explicitly only some of these reasons.

It is precisely at this point that Agassi's Popperian allegiance to a nonjustificationist position comes into play. Nothing can count as the explicit, ultimate criterion for any knowledge claim. In effect, Polanyi has seen this, but Agassi believes he simply transfers the foundations of science from the individual scientist to the society of scientists. According to Agassi, what Polanyi should have done upon his recognition of the inadequacy of logical positivism to provide foundations for science is to recognize that science was composed of hypotheses which are at best on the way toward truth. That is, scientific theories must be accepted as hypothetical and open to challenge, and the scientific community ought to foster (on moral grounds) as much novelty as possible (83, 100).

Most students of Polanyi would recognize this sociological conflation of his thought as a half-truth which prevents Agassi from recognizing the more comprehensive elements of his theory. In our discovery of reality personal judgment operates in a historical matrix which includes, to be sure, the sociological context. For Polanyi literally everyone exercises such judgment, some more responsibly than others. In Agassi's reading of Polanyi, only the leaders of science do (76-77). Why such a discrepancy in interpretations of Polanyi? I would attribute it to my opening observations: Agassi's reading is so colored by a nonjustificationist epistemology that he sees any attempt to provide "reasons" for accepting the truth of some claim to be an implicit reversion to the illusory security of indubitable certainty sought by foundationalists of both the rationalist and empiricist stripe. This aim is not only impossible to fulfill, but of even greater consequence for Agassi is its tendency to stultify the growth of science. This moral commitment to radical openness, in other words, so colors his reading of Polanyi that he reads "authoritarianism" or "extrinsicism" everywhere any attempt is made to offer "reasons" for a judgment, even if those reasons are tacitly held by the person making the judgment. In the process of his argument, however, Agassi must gloss over his own recognition of the "necessity" for "some sense of discrimination" (49) over scientific claims. And in such glosses the clues appear which enable us to discern how Agassi tacitly honors Polanyi.

As we turn now to Agassi's attempt to pay homage to Polanyi, I should like to offer a reading of Agassi that may be as
dislocating as Agassi’s is of Polanyi. My proposal, offered simply as a conjecture of course, is this: Agassi’s homage to Polanyi is much more profound than he suspects. His fundamental stance on the issue of rationality is precisely the same as Polanyi’s with the exception that Polanyi’s position is more generally stated to take into account all human endeavors to relate intelligently to reality.

This can be indicated, I believe, by a consideration of Agassi’s response to the “tu quoque” argument in his defense of rationality. The argument runs that, since the rationalist must make a prior commitment to rationalism and since this prior commitment is beyond explicit justificatory procedures, even the rationalist must start out with an irrational choice. Hence the conclusion appears to follow that a commitment to rationality is no more justified than (or is just as irrational as) any other sort of commitment.

Agassi contends that Polanyi’s and Popper’s philosophies both accept this argument and that Polanyi opts for an irrationalist version of rationalism (465). This contention would be correct only if all knowledge were explicit for Polanyi. What Polanyi in fact holds is that by the time we can discover ourselves thinking we already have a fund of tacit assumptions for ordering our lives and relating to reality. And while we can question or even reject any explicit formulation of these assumptions, we can do so only in light of others that we are simultaneously assuming on the tacit level. Clearly one such tacit assumption might be formulated as a transcendental imperative, “Be reasonable!” To question this or to explore its implications is possible only on the condition of its prior and concurrent operation in our lives. Hence for Polanyi the tu quoque argument in its stark form cannot arise except in the illegitimate formulation which tacitly presupposes rationality while ostensibly and explicitly questioning it absolutely.

At its core Agassi’s response is identical, though expressed differently and with more limited application. He contends that rationality is a part of our lives and the more appropriate question concerns what we wish to do about it. He sees, in other words, that the bald statement of the question is artificial. “The very ability to ask it tells us we are [rational]” (475), he affirms correctly. Agassi’s major concern upon appreciating this insight is that we do not revert to some form of naiveté that rigidly ascribes to some dogmatic assumption an unquestionable status. While this may happen, it clearly need not, indeed ought not. Rather, to use Paul Ricoeur’s expression, what might emerge is a “second naiveté” purged by the hermeneutics of suspicion. This, I submit, is the intent of Agassi’s view of living in a tradition of critical inquiry. Such a process should turn into a life project or, as Polanyi would put it, a calling where freedom is in perfect service.

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John APCZYNSKI is disturbed by Agassi’s reading of Polanyi. I am, in turn, disturbed by APCZYNSKI’s reading of Agassi. I will return to the latter, but first I offer my own account of Agassi and his reading of Polanyi.
For Agassi, epistemology becomes sociology with the collapse of the radicalist program of classical epistemology. The latter, as advocated by such writers as René Descartes and Francis Bacon, urged each person to think his beliefs afresh, breaking with tradition and consensus, and to find the unbiased truth. Now, rather than ask "What should I believe?" the problem is better stated as "What should we believe?" Nonetheless, sociology is incomplete. It serves well enough to answer descriptive questions, i.e., what are the conventional norms governing belief in this or that community? Yet, unless the norms are looked at critically—should these norms be accepted? How may these norms be improved?—the individual within the community is left with a heterogeneous will. So, it is our moral responsibility, as members of the community of learning who agree to be governed by its norms, to raise critical questions (to preserve our autonomy) and to act on the basis of such criticism (to improve the positive norms of that community).

Before going further, let me point out that Agassi is a student and sometime follower of Karl Popper, as well as an admirer of Polanyi, and that he believes he has followed his teacher's advice to the bitter-sweet end, which is apostasy (18). And this is not surprising; the philosophy of the Open Society should encourage dissent among its followers. Indeed, says Agassi, dissent is a tribute (xvii). In this spirit, Science and Society is a tribute paid to Popper's respected intellectual adversary, Michael Polanyi.

Polanyi, says Agassi, shares the honors with Popper as philosophers of the avant garde who abandon the psychology of classical epistemology—especially empiricism and its heart, inductivism—and who break ground for sociologists approaches to science and knowledge (xvii & 85ff). Moreover, in many respects, Polanyi is correct in his description of the norms which govern the social reality of scientists and of all thinkers who seek a fair hearing for their views by the community (86 & 207). Yet these norms are far from ideal: they can and should be improved.

Agassi conceives that Polanyi would accept this while insisting that improvement only come from within the scientific community (123 - 125) and its leadership (97). But such a view is "self-verifying," to use Agassi's term, which means that its truth is established by its acceptance (111). At the same time, much of Polanyi's description ignores the degree to which defiance of the scientific leadership exists both inside and outside of the scientific establishment (205ff.). Yet we can and should reject this view and the injustices and conservatism which it justifies (131). Moreover, Popper's utopia can serve as a model towards which to move and, especially, where it might not (yet) correctly describe the community. (Again, this might even apply to the master's teachings [see xx, 76, 82-83, 205-208].)

Agassi's criticism of Polanyi's views, therefore, is at the same time a critique of science as it stands. The critique of science is, briefly, that it operates too often as a closed guild with all the authoritarianism and conservativism of its medieval antecedents. The criticism of Polanyi is that his theory of science tends to legitimate the guild system and protect it from
such criticism (70-71). Science is not open enough, not accessible to beginners, amateurs and the man and woman on the street (204). Nor does it respect the autonomy of its common practitioners, those followers of the scientific fashions which are dictated by the elite of scientific leaders (207).

We must now ask: Is Agassi’s criticism of Polanyi too harsh? Is the reading of Polanyi—am the ideologist of the scientific guild system—fair? I am no expert on these important questions, and I must admit that my own introduction to Polanyi’s views was as a student of Agassi. I was present when Polanyi first presented his paper, “Genius in Science,” to the Boston Colloquium with Agassi as commentator—at Polanyi’s request I am told, and I do not recall Polanyi complaining about being misinterpreted. So perhaps the greatest service I can provide the readers of this journal is to let Apczynski’s criticism of Agassi’s reading of Polanyi stand unchallenged except, I would trust, by our critical readers, and to direct my comments to his reading of Agassi.

Apczynski claims that Agassi’s Popperian spectacles distort his reading of Polanyi in a way which confirms the latter’s thesis of the theory-ladenness of observation. Such a claim, it could be argued, would corroborate Popper’s hypothesis that justificationism leads to “reinforced dogmatism” where criticism is explained in such a way that it is transformed into confirming evidence for the criticized view (12). Yet I would rather not pursue this intriguing variation of the tu quoque argument for reasons I hope will be apparent from the remainder of my note.

Rather, let me take up the question of Agassi’s nonjustificationism which is crucial for an understanding of his work, particularly his critique of Polanyi and of science.

According to Agassi, both Popper and Polanyi employ skeptical arguments against the radicalism of the Enlightenment epistemology (98). The latter, however, does not reject the very idea of justifying science. That is accomplished, at the level of the individual scientist, through a process of apprenticeship by which one becomes committed to the living tradition of scientific research. But such a theory, says Agassi, could be “short-circuited” if a tradition were created which disagreed with it. The “only alternative visible,” in Agassi’s words, is “the idea of science without a shred of justification, with no confirmation or corroboration of any kind, with no Archimedean point, no foundation, no anchor, in nature or man—in psychology or sociology—science as a search rather than as an achievement” (100). This is nonjustificationism.

So Agassi is a proponent of a nonjustificationist epistemology. This means that he advocates abandoning the futile search for the final truth in justified beliefs and replacing it with the search for errors in our beliefs through criticism while hoping for the progressive improvements of our always imperfect knowledge. Our focus here should not be on the skeptical rejection of justification. Admittedly, many people this rejection creates a barrier to appreciation which is difficult to overcome. Perhaps this is because of the uncritical assumption that the justification of our beliefs is a necessary condition of their rationality and that, in the absence of alternatives, the
rejection of justification is an invitation to irrationalism. Yet, I agree with Agassi that rather than discount the validity of the skeptical challenge to justification, we should seek rational alternatives. And this brings us to the proper focus of Agassi’s concerns which is with our moral responsibility: Popper’s identification of justificationism with authoritarianism prompts Agassi’s rejection of both as heteronomy or the violation of moral autonomy (207).

In the view of many critics, including John APCZYSKI, the above identification is narrow, and the moral judgment brought to bear upon it is blinding. There are, such critics contend, ways of supporting our beliefs which do not violate our autonomy, and therefore the identification is refuted. APCZYSKI argues that Agassi himself acknowledges such forms of justification, indeed even their necessity, yet fails to see the utopianism of his position. Thus is he blinded by his nonjustificationist biases.

Let’s look more closely at these arguments: Are there ways of justifying beliefs which leave intact the moral autonomy of the believer? Is the nonjustificationist morality impossible to abide? Does life force us to justify our beliefs on occasion? And would this gainsay the allegedly utopian standards of the nonjustificationist’s anarchism? In other words and finally, does Agassi’s work provide its own refutation?

In a later chapter, Agassi presents two theses concerning the rationality of belief which may be supposed to be an elaborated version of nonjustificationism or critical rationalism: “... we accept any doctrine which (a) admits the inability to support or justify any belief, and (b) allows any faith on the condition that it be held tentatively,\" which means open to a possibly fatal criticism (470). Two lines of criticism of these theses are considered: (1) Isn’t such a view as (b) too indiscreet? Aren’t there some views we should not hold, even tentatively, if we wish to retain our rationality? Agassi suggests that many beliefs, such as the fantasies of paranoids and certain religious doctrines, which may be “impervious” to criticism, raise such a problem, and he suggests Popper’s proposal that “publicly we should hold only the most criticizable theories” as an additional restraint while admitting this to be an “open question” for critical rationalism (ibid). (2) Yet, on the other hand, there are certain views which do not seem fatally criticizable in the sense that they are truisms of common sense or axioms, and which seem unreasonable to deny: Agassi’s own choice is the Biblical “I am a man born of a woman” (476). Does such an admission support the claim of critics who would deny either the possibility of a comprehensively critical attitude, or of completely dropping justification from our epistemology or both? Agassi rejects any such corollaries of these claims to certainty, admitting as correct only the following “last word” on the subject: “... that it is very difficult to criticize claims at certain times, but that we are in a tradition of criticism that at times makes progress and so raises the degree of rationality” (ibid).

Is this view incompatible with Polanyi’s theory of science? Agassi says it is, and both in theory and in blocking the social reforms which make “boldness and flexibility more acceptable and
experiment more rewarding" and "science [that is] free for all" (100). Moreover, it is ironic that although Agassi also sees two very different yet valid readings of Polanyi as possible (97), he claims they both attempt to offer a legitimization for science which is detrimental to its growth (82).

It appears that Agassi does polarize philosophies of science and brands "all justificationism as conservative" (100). If Apczynski's claims are true this polarization is falsified by the work of Polanyi which serves a more rational, democratic and progressive philosophy than Agassi can see. If so, I think Agassi would appreciate such a correction and I would join him in welcoming such a broadened base for the effort to democratize science and scholarship.

III

In light of this exchange, what, finally, might students of Polanyi find of value in this work dedicated to his memory? On a less direct level Agassi's tome contains a wealth of information dealing with the scientific and intellectual history of modern times, all of it spiced with his provocative analyses. In my estimation, however, the more immediate significance of Agassi's study is precisely his dislocating reading of Polanyi that pictures him as an irrational rationalist.

Why would this be so? Consider the following questions. Is it possible for a student of Polanyi to derive an extrinsicist or authoritarian reading of Polanyi's thought? If Agassi is any indication, then clearly this is a possibility. Would a student

of Polanyi be tempted to short-circuit his theory of personal knowledge? I think we must acknowledge the possibility, particularly for those of us engaged in developing his thought for philosophy and religion. There is more than a tinge of sideism in the academic climate of today and what amounts to variations of the to quire argument is rampant among our students and is found often enough even in the professional literature. I believe that when it is examined closely, Polanyi's thought never succumbs to the temptation that would truncate the quest for truth by the acceptance of an easy dogmatic posture. Joseph Agassi's tribute to Polanyi stands as a powerful reminder to assist us in our own reading of Polanyi.

IN THE SHADOW OF THE ENLIGHTENMENT

THE PLENT OF THE HUMANITIES IN AN AGE OF SCIENTIFIC OBJECTIVISM -
A CANTO TO A POST-CRITICAL RESCUE

Ronald L. Hall
Francis Marion College

We, even we who would fashion ourselves as "post-critical", are, like it or not, children of the Enlightenment. The Enlightenment, of course, is the name we give to that period of our history when human beings awakened to the seemingly infinite powers of the critical rational mind. Such an unbridling of rationality was made possible by a rebellion against what was taken to be the strangling bond of the regnant structures of religious authority. This break with religious authority, which was in effect a kind of Nietzschean delirium, gave way to skepticism and this in turn inverted religious moral passion into a secularized moral passion which ignited man's desire to take God's place and to assume the occupancy of an archedomed, universal stand, point from which to grasp the world omnisciently, sub specie aeternitatis, and control it with an omnipotent hand. It is not surprising that it was the Enlightenment that arrogantly called the Middle Ages dark.

Rationality's resurrection from darkness and its ascension to a universal standpoint from which to survey the world, tossed in the rise of modern science and its concomitant epistemological model of the rational inquirer as a cool, aloof, observer guided at every point by an ideal of strict objectivity. According to this ideal, scientific (that is, rational) method is an emotionless, logical, detached, disinterested, and mechanical process of sensory observation conceived basically as a passive reception of data striking open eyes. Modern science, then, began with the dual assumptions that experimental observation is the only source for gathering data and establishing truth, and the assumption that this process is strictly mechanical. These assumptions form the heart of what can be called scientific objectivism.
The heart of Michael Polanyi's philosophical agenda is found in his radical critique of scientific objectivism. An important consequence of this critique is that it provides the ground for healing the split between the sciences and the humanities. At the same time, the post-critical attempt to rescue the humanities from the shadows of the enlightenment bears a liability of falling prey to the lingering snare of enlightenment ideals. The ultimate aim of this paper is to point out and hopefully ward off one such snare.

The penultimate purpose of this paper is to present a brief intellectual gloss of the origins of scientific objectivism in the enlightenment, the consequences of that for the humanities as a discipline, the romantic reaction to the displacement of the humanities, and Polanyi's post-critical alternative. For Polanyi's, what I will say is familiar, but may be of rhetorical use as a way of introducing Polanyi's thought to the uninstructed; it has proven useful in that regard to me, especially in conversations with colleagues in the sciences.

According to the critical rationalism of scientific objectivism, no non-empirical knowledge of reality is admitted. Even though scientific method involves the non-empirical tool of mathematics, we must not be misled about its role. Identifying the scientific objectivist with a naturalist, Professor F. H. Adams says this about the role of mathematics in scientific method:

To the naturalist it is only a tool or instrument to be used in science and not itself a part of the study of reality. "Empiricism" (in the modern restricted sense) is one of the chief tenets of the naturalist's position. All knowledge of reality is via the external senses or introspection. What is not verifiable by data obtained in either of these ways is not knowledge; indeed, as enthusiasts would wish, it is not even thinkable. Meaning, or cognitive claims in general, are not merely knowledge, is restricted to the empirical. [Ethical Naturalism And The Modern World View (Chapel Hill: The University Press, 1960), p. 28.]

Polanyi has insightfully noted that the effect of scientific objectivism on the image of the scientist himself has been disastrous. On this model, the scientist has been reduced to a sort of calculating machine. Discovery can be a matter of routine and automatic process, carried out, he said, "as by machinery", only patience is needed, not difficult or abstract thought. [Issues In Science and Beligion (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1966) p. 25.]

As Polanyi notes in the opening pages of Personal Knowledge, the Copernican revolution had dislodged the earth from its center in the universe, but the rise of scientific objectivism had radically displaced man from the confines of his own incarnate, earthly perspective as well. The telescope had emancipated vision from its confinement in embodied eyes, what we call naked eyesight, and allowed us to have a discerning perspective much like the one we were all delighted at that Christmas a few years ago when the Apollo spaceship turned its cameras back on us revealing what we all "know", but secretly feared, that we were just a ball suspended in space. The irony of this liberation of man was that it opened the doors to his own self-actualization and destruction. But he was so intoxicated by this dawn of self-awareness, that he scarcely noticed the danger.

Newton and Galileo added fuel to the thusters of the enlightenment perspective, reducing man to an irrelevant spectator passively observing the great world machine. As J. Robert Oppenheimer has written: "The giant machine was not only causal and determinate; it was objective in the sense that no human act or intervention qualified its behavior." [Science and the Common Understanding (New York: Harper & Row, 1954), p. 11-12.] Galileo introduced a distinction between primary and secondary qualities which set for modernity the definitive conception of what is objective and by implication what is subjective. This distinction excrated man's conception of his own irrelevancy. Only primary qualities (number, figure, magnitude, position, and motion) are really "out there", independent of the influence of the observer; these qualities constitute what is real, what would remain if no observers were present. Secondary qualities, on the other hand, all else contributed by the perceivers do not "really exist" apart from the presence of an observer. The objective world, the world as it really is, the world of primary qualities is a world wholly determinate and independent of any qualifications by any observer. Objective knowledge, that is, knowledge of what is "really there" is ascertained by a passive spectator who has no constitutive role in the determination of what is known. All that is left for the knower to contribute, namely secondary qualities, is reduced to the realm of subjectivity and not accorded the status of reality, making man's place itself problematic. As Galileo puts it: I think that these tastes, odors, colours, etc., are nothing else than mere names, but hold their residence solely in the sensitive body; so that if the animal were removed, every such quality would be abolished and annihilated. [Quoted in The Limitations of Science by J.W.H. Sullivan, (New York: Viking Press, 1933), p. 130.]

It remained for Newton to remove the animal altogether in his attack on the cause of scientific objectivism. He removed the animal by turning it into an instrument, a mechanism, a replica as it was called by Descartes, the Father of Modern Philosophy. As E. A. Burtt has noted, the authority of Newton was squarely behind the view of the cosmos which saw in man a pupp irrelevant spectator...The world that people had thought themselves living in - a world rich with colour and sound, redolent with fragrance, filled with gladness, love and beauty, speaking everywhere of purposive harmony and creative ideals - was crowded now into minute corners in the brains of scientists and organic beings. The really important world outside was a world hard, cold, colourless, silent and dead. [The Metaphysical Foundations of Modern Science (Garden City, N.Y.: Doubleday Anchor Books, 1956), p. 104.]

The spirit of man could not long tolerate this self-imposed mutation and humiliation. Fired by a spirit of rebellion, a protest against the Enlightenment was launched by the nineteenth century romantics. The intonation fell as a result of the emancipation of man's reason had now abated and in the cold sobriety of the morning after, the effects of its rampage on the human heart being beginning to dawn. Science and scientific objectivism had spawned a subjective perspective much like the one we were all delighted at that Christmas a few years ago when the Apollo spaceship turned its cameras back on us revealing what we all "know", but secretly feared, that we were just a ball suspended in space. The irony of this liberation of man was that it opened the doors to his own self-actualization and destruction. But he was so intoxicated by this dawn of self-awareness, that he scarcely noticed the danger.
unreal, the whole array of human subjectivity, was precisely what the
romantics thought was most important in the life and experience of the
man, and the romantics sought to restore him again to his dignity and to his
proper place in the cosmos. In this rebellious protest against science,
I submit, our modern conception of the humanities is founded.

In a chapter of Science and the Modern World, Alfred North Whitehead
insightfully analyzes this "romantic reaction," as he calls it, to
Enlightenment idealism. Speaking of Wordsworth's Excursion and
Tennyson's In Memoriam he notes: "Wordsworth in his whole heart expresses
a passionate revolt against the mentality of the eighteenth century... He
felt that something had been left out, and that what had been left out
comprised the only thing that was important. And furthermore he says
that "he goes to the heart of the difficulty," for "it is the problem of
He quotes a line from Tennyson's poem, "The stars, she whispers, blindly
run," (p. 77) and a line from Wordsworth's, "Was summer, and the sun
had mounted high," (p. 81). Whitehead's comments about this last time
seems to apply to the romantic movement in general. He says:

Thus the romantic reaction started neither with God nor with Lord
Bolingbroke, but with nature. We are
witnessing a conscious reaction against the whole tone
that was the eighteenth century. That century approached
nature with the abstract analysis of science, whereas
Wordsworth opposes to the scientific abstractions his
full concrete experience. (p. 81).

The romantic proposal to correct the Enlightenment's denigration of
man was at best Kantian. Immanuel Kant's Critique of Pure Reason
was certainly a conscious attempt at articulating an epistemology and
metaphysics based on Newtonian mechanics. Yet Kant was interested in
morality, not just in physics. His critical idealism permitted a
distinction between experience and knowledge, between the world of
knowledge and the world of experience. Kant explicitly says that he wrote his First
Critique to make way for the Critique of Practical Reason, where he deals with
morality. The distinction we currently make between nature and
science, as the sciences of nature, and of the mind, the sciences of
the humanities, is based on nothing less than such a Kantian bifurcation
of the human world. In this scheme, the sciences deal with the objective world
of nature and human affairs are freed to deal with the subjective world
of spirit, and never the two shall meet. This is what the romantics failed to do, namely, undertake a radical criticism of
the assumptions of science concerning objectivity. The humanities can
no longer continue to claim their birthright in the wake of the growth of scientific objectivism; they can no longer rest content to simply
swallow, without question, the Enlightenment model of objectivity, for
as has been shown, if the humanities accept it, and fashion their
identity in terms of it and make it their model, they will sink into the
quagmire of objectivism.

How do we attack the Ideal of strict objectivity in science? The
best answer is, let science do its job the way it should be done, the
actual practice of science to see if its professed Ideal of detached,
mechanical, and impersonal observation is consistent with that practice.

In examining the actual practice of science, Polanyi, a scientist himself, was able to see that its averaged Ideal of strict objectivity
is more or less unattainable, and that the actual practice of science is to see if its professed Ideal of detached, mechanical, and impersonal observation is consistent with that practice.
tools and formalisms, and in the process, the scientist grapples through the maze of inquiry to discovery, guided by hunches, feelings, emotions, intellectual passions, commitments and decisions.

Polanyi finds that even in the methods of the most exact of the sciences, these elements of personal participation and judgment are indispensable. We can begin to grasp this when we examine the most basic of scientific tools, observation itself. Sensory observation, while it may become routine, is never simply a matter of just opening one’s eyes to become transparently aware of the facts as they are in themselves. In the first place, the very act of seeing something is a skillful act--children must acquire the skill of seeing things. Moreover, as a skill, sensory perception defies exhaustive formulation and mechanization; it is an art, the mastery of which must be acquired through practice. Scientific observation is an extension of the art of seeing things, though here the art is highly specialized and the required skill to master the art must be refined through routine practice. A scientist must learn to see things of scientific significance, and he must learn to use the tools and instruments of science to that end. It is common knowledge that observation through a microscope, or telescope requires a great deal of skill to be of value.

Not only does perception, like all skillful activities, involve unformalizable, tacit components, Polanyi claims that it also is guided by a passionate craving to see things correctly and as such sets standards of correctness to itself and appraises itself according to those accepted standards. Perception thus is not only a passive, passionless, and value-free mechanism as the objectivist would have us believe.

The picture of scientific inquiry that Polanyi presents us with is radically at odds with the Enlightenment picture. Indeed the picture that he presents of the scientist concretely participating in his inquiry is compatible with the picture we have of the self-involvement indispensable to poetic inquiry. By revealing the absurdity of the objectivist ideal of science without a scientist, Polanyi has provided us with a framework for unifying the sciences and the humanities, for on his view, both are inherently personal. In place of the Enlightenment ideal of objectivity, Polanyi introduces an idea of perspectival objectivity. Such an objectivity is personal, and qualifies the sciences no less than the humanities. Polanyi puts it this way:...

...as human beings, we must inevitably see the universe from a center lying within ourselves and speak about it in terms of a human language shaped by the exigencies of human intercourse. Any attempt rigorously to eliminate our human perspective from our picture of the world must lead to absurdity. (Personal knowledge, p. 3)

Hopefully, this sketch has some rhetorical merit for all of us who are concerned to rescue the humanities from their plight of having to live in the shadow of the Enlightenment. The post-critical approach Polanyi has provided is truly a profound and promising alternative to Enlightenment ideals.

And yet there is danger here, especially for Polanyians. Because we are all children of the Enlightenment, it is very easy to slip into a misinterpretation of Polanyi’s position. This misinterpretation is very likely and measures the extent to which the Enlightenment picture of objectivity continues to hold us captive. It is very easy to think that Polanyi unifies the sciences and the humanities by dragging the sciences down into the subjectivism of the humanities--sorry how it loves company! In other words, when it is realized that science involves indispensable personal elements, it might be concluded that the sciences are just as subjective as the humanities. But this brings the whole house of knowledge crumbling down around us. The problem with this interpretation is that it still clings to the Enlightenment ideal of objectivity. The only shift is that recognizing the personal elements of scientific inquiry, it is now held that that ideal is impossible to attain. One who says that even the sciences can’t be objective.

Polanyi is more radical than this. He does not wish to drag the sciences into subjectivism, but to redefine objectivity as perspectival, or personal. In this sense, he would have us recognize that both the sciences and the humanities are equally subjective. A key element in Polanyi’s position that keeps it from falling into subjectivism is the notion of universal intent. For Polanyi, all responsible claims, not only empirical claims. But value and intentional claims, whether made in the sciences or the humanities, are intended towards and, if true, reveal an aspect of a reality largely hidden to us, and forever showing itself to us in an infinite range of unpredictable ways. By trying to say something true about reality our commitments, evaluations, and observations are externally anchored in universal intent. Polanyi writes:

It is the act of commitment in its full structure that saves personal knowledge from being merely subjective. Intellectual commitment is a responsible decision, in submission to the compelling claim of what in good conscience I conceive to be true. It is an act of hope, striving to fulfill an obligation within a personal situation for which I am not responsible and which therefore determines my calling. This act of commitment and this obligation are expressed in the universal intent of personal knowledge. (Personal knowledge, p. 65.)

According to the logic of perspectival objectivity then, it is personal regardless of whether the inquiry is in science or in the humanities, who in relation to other persons take final responsibility in the acquisition and upholding of knowledge. Further, there is no knowledge without some actual knower who exercises the full range of his cognitive powers including his commitments, emotions, hunches, and intentions, who makes his claims to know with universal intent and who continues to bear witness to others in view of the ever present risk that he may be wrong. On these matters, the sciences and the humanities stand together on an equal footing: both the sciences and the humanities involve personal elements -- the tacit, the passionate, the evaluative, etc. and for both, these personal elements are modes of epistemic encounter intended toward an aspect of a temporarily unfolding reality and issue in claims in the humanities no more and no less than in the sciences that bear a universal intent.
The following article is from COUVIVIT, a six-monthly review of post-critical thought done by the Polanyi group in Great Britain. Joan Crevier, 125Acliff (Clon), Oxford, OX 2 7NL, England is editor. Subscriptions $6 (surface), $10 (air) sent only in sterling.

LORD OF HEAVEN AND EARTH

Some Reflections on Michael Polanyi's Approach to Science and Morality


Perhaps you have never asked yourself what part of the Creed is of greatest interest and importance to a scientist. Rudolf Bultmann has certainly taken possession of the popular mind with his de-mythology. He asserts that the classical model of a three storey universe - heaven, earth and the earth - is quite incomprehensible to the modern scientific mind. In other words, the myths that validated the classical world-view and along with it the language and expressions of the Creed, have long lost their powers of interpretation for the modern mind. The Creed, because it is a mythological formulation of belief, has simply become incredible. In particular, the Resurrection of Christ, His Ascension into Heaven, the descent into hell, and His coming to judge the living and the dead, all need de-mystifying and rephrasing in the terms of the modern positivistic approach to science.

I shall not argue Bultmann's case here, except to use the issues he has raised as a platform for my consideration of Michael Polanyi. Like Bultmann, Polanyi was thoroughly modern. Yet, in his last book, 'Meaning', his approach, without entering into polemics and apologetics, is just about completely contradictory to that of Bultmann. Most commentators on Polanyi would attribute this to the fact that his post-critical and therefore realist, as opposed to positivistic philosophy, has released him from the blind of faith versus science, that esteemed Bultmann.

But have we considered sufficiently what his personal way of knowing released him for: what was the new area or sphere of reality into which he entered? It was an intuition that transcended the usual world of science, and which could only come to expression through a symbol which somehow comprehended the space-time unity of the whole universe to which man belongs.

The Universe and Its Meaning. Now such an intuition is more a matter of mysticism, of the perception of truly ontological depths in our space-time world and its history, than of a purely scientific theory or hypothesis. Yet to Polanyi, without such a mystical fire guiding a scientist through the dark night of research, insight as an enlightening indwelling in reality would never be achieved (PK 64). Enlightenment needs more than scientific method for its illumination. It has been noted how Polanyi passes so easily from scientific to mystical language in order to give some verbal shape to his deepest convictions and experiences as a scientist. In 'Meaning' he invokes symbol as the only way of incorporating this experience of the awesome order of the universe in human language (M 178-9).

I believe that at this stage we do not have the end-point of his development. What we have is a revelation of the vision, the unifying experience that underlies all the tacit premises of his convictions.

So it is only at the end that the guiding hand of his development is revealed. Once this factor is recognised, all the previous stages of his development should be interpreted in relation to it. It is the end which determines the stages of development and uncovers what was implicitly and potentially contained in the starting-point or origin.

Polanyi discussed the representative power of religion in the chapter 'Meaning'. He shows that religion is accepted precisely on the ground that its myths, rituals, ceremonies and doctrines give a unified order and meaning to the whole universe, as well as inserting man into that order, thus endowing him with personal meaning (M 155). In one way these representations open the mind of man and point it upward in prayer, adoration and in a feeling of trust that makes us dwell in the Kingdom of Heaven. It is by prayer, reverence and by gratitude for the goodness we share, that man relates to God through an indwelling in His action in the world. The contents of a religion will have as their import the story of a fundamentally meaningful world (M 159). But since we find meaning in the universe, therefore religion is not only possible but real. Our experience does lend us to a relationship with God. "The whole experience of mankind has surely been that in general men do have such a will to believe" (M 160).

Science and religion are ultimately founded on acts of belief. It is here that the positivist view of the universe comes to grief precisely because it can not preserve the integrity of meaning. "We do believe in such a 'value-free' universe, then as James said, the 'religious hypothesis' is not a value for us and we cannot entertain it." (M 160)

What can we say then of a scientist's approach to religion and hence to God as set out by Polanyi in his post-critical philosophy? Firstly, he does not accept the rationalism of the proofs of God's existence - although it might be shown they are coherent with his own vision and even demanded by it. But the spirit of such proofs goes against the fiducial and Augustinian approach of post-critical philosophy. Secondly, it has experience as a pointer to meaning. Hence his conception of God grows out of the scientific myths that have taken possession of the modern mind. By breaking with positivism, Polanyi opened the way to scientific myths as the key to order in the universe, and order in the universe is the symbol that reveals God to us through worship, wonder, prayer and adoration.

We could say that Polanyi finds himself related to God through the givenness of the experiences that arise in him in the course of his work as a scientist penetrating into the structure and content of the universe which give it meaning. Since this is a given, it cannot be denied, but it can be understood - if we have faith. St. Augustine again: 'Religious belief cannot be achieved by our deliberate efforts and choice, but it is a
28 gift of God,' (M 180) Unless you believe, you shall not understand.

A properly formed scientific myth that embodies the order of the universe, seems to be a necessary condition for the gift of faith today. Without such a myth the mind cannot make enough sense of our type of world to make contact with God. Polanyi proves this assertion by a negative strategy - by showing how its denial destroys the religious experience that is the form of our involvement with God.

It is beyond much doubt that this representational content of the religious myth is at least one of the serious stumbling blocks to the acceptance of religion in our day. So much is this so that a whole school of theologians has become busily engaged in demythologising our religions. But, if it is true that myths are an essential part of any religion, the success of such a movement can mean only the total demise of religion. (M 150)

In the end it is the ecstasy and mystical experience of religious celebration that validate our approach to God - not a rationalistic and absolutely coherent conceptual proof of His Being and Existence. This is normally involving - through a personal acquaintance of religion - and shows that God is personally involved with us through his gift. This insight is no way original, and Polanyi finds no need to dwell on it at any length.

However, if we make a comparison with other scientists who have treated the same issue some remarkable results appear.

Werner Helsenberg has emphasized how the abandonment of the positivist concept opened up the question of God for physicists in a way that the real and its profundities has forced physicists to interrogate the structures that bear the real. So far Helsenberg what was formerly understood under the rubric of God is considered under the key term of 'central organization' and behind this tentative conception lies the question: Is this organization capable of asserting itself beyond the fact that it exists? Is this organization a quality that should be thought of in a manner that is analogous to how we perceive the human person? 'Can you - or can we - approach very closely the central organization of things and facts whose existence we cannot doubt at all? Can we enter a relationship with it as closely as we can with the soul of another person? If you ask me this question, I shall reply, Yes,' (TO 293) It follows that to reject creation as meaningful is to reject the Creator.

Helsenberg described the central organization as a magnetic compass that provides the pathway through life that we seek (TO 291, 294). Here he re-echoes Polanyi's abhorrence of nihilism:

Once the magnetic attraction that has guided the compass comes to a halt - and it is clear that such an attraction can only arise from the central organization - I fear that dreadful things may take place, things that go beyond even the concentration camps and the atomic bomb. (TO 299)

So Christian faith is not against reason, but protects reason from manipulation and exploitation by any philosophy that would empty it of content. At the same time faith forms a synthesis or a symbolic whole with

29 scientific reason by placing this central organization within the Christian Mystery. The central organization then becomes transparent to this higher light that incorporates it into the story of Creation and Redemption in Christ. The Creed may be considered as a myth that integrates the three great symbols of the Christian religion - the Father as absolute source and Creator: the Son as the Incarnate Image of the Father and embodiment of His Love and the Spirit as the Unifier or Integrator of the Trinity's inner life. It seems that the intellectual life of the scientist is appropriated by and embodied in our faith in God the Father who, as absolute origin is Creator of heaven and earth, of all things visible and invisible.

The Structure of Symbols. Polanyi has noted what this religious integration does for scientific beliefs. The intellectual life of a scientist brings an integration to the ego that is self-centred. Scientific language indicates objects by their proper qualities. Perception, for instance, is of things seen from the self as a centre. The self is never left out in the equation. It is never surrendered or given to the object ... indications are always self-centred. (M 74)

The Creed and religion act otherwise by forming us into part of a higher meaning - in this case the Christian mystery. The point of using symbolism to represent mystery is that it can fuse incommensurable elements into a higher meaning without contradiction. This is done by an embodiment of meaning in a wider frame of reference which relates all the subsidiaries to one focal object. The relation between the subsidiary meaning (the scientific world-view) and the focal object (in this case the Christian mystery) remains tacit; and so need not be articulated in explicitly logical relationships.

Symbolizations are self-centred. That is, the symbol, as an object of our focal awareness, is not merely established by an integration of self. It was directed from the self to a focal object; it is also established by surrendering the diffuse memories and experiences of the self into this object, thus giving them a visible embodiment. This visible embodiment serves as a focal point for the integration of these diffuse aspects of the self into a felt unity, a focal grasp of ourselves as a whole person, in spite of the manifold incompatibilities existing in our lives. Instead of being a self-centred integration, a symbol becomes rather a self-giving one, an integration in which not only the symbol becomes integrated but the self also becomes integrated as it is carried away by the symbol - or given to it. (M 74-75)

The key question for a scientist is: what or to whom is he giving himself by the exercise of his science? In other words, what is his ultimate commitment? Science of itself cannot rise above itself, although it has an inner drive and orientation to fuller meaning. This orientation is fulfilled only in a new frame of symbolic reference, whose focal point is the self-giving of the scientist. One of the clear conclusions from this
line of thinking in Polanyi is that science cannot stand alone as a complete system in itself, since there is nothing within it that justified this self-donation. Positivism, as soon as the adoration of the scientific method as self-sufficient is inherent is self-contradictory, it can never rise to the level of the truly personal which is only grasped in a symbolic mode of thinking.

This paper suggests that for a mind that experiences a sense of wonder and adoration when it contemplates the universe, there is a spontaneous integration of the scientific world-view into the symbols of the Christian Creed. The key to this integration is faith; the recognition of God as the Lord of heaven and earth, to whom we give ourselves in an act of worship.

Any symbol, and the Creed par excellence as the Symbol, postulates an unbreakable unity among its parts. One part is contained in another by a force greater than logical coherence.

The parts interpenetrate by a necessity arising in the realities themselves. It is quite impossible to abstract parts and propositions out of a symbol, without denying the unity underlying the symbol, which contains the reality as one whole and simultaneously brings it to expression. Joseph Ratzinger in a masterful discussion of the Christian belief in Creation says that this belief is our posture or approach to reality here and now and not the memory of some long past divine deed. He continues:

For Christian faith in creation, it is decisive that the Creator and Saviour, the God of the beginning and the God of the end, should be one and the same God. Wherever this unity is broken, hereby is born and the faith is shattered in its basic aspect. (J.R. 34, cf. M 152-148)

What does a symbol do for a person who gives himself to it in an act of personal commitment? The person enters into the realities held in a unified whole by the frame of reference that defines the limits of the symbol. We may say that by giving himself to it he brings them to life with his own spirit and vitality. Polanyi’s term for this mutual sharing of life forces is “indwellings”. Thus the myth of creation opens to its followers a certain view of the universe and makes them feel at home in it. (M 147) Is it any wonder that hereby is best described as a malicious turning of one’s back on the household of the faith?

Given the Unity of the Creed, we can enquire how do we see God not just as Object but His inner life and activity, let us restate Polanyi’s starting-point:

It is therefore only through participation in acts of worship—through dwelling in these—that we see God. God is thus not a being whose existence can be established in some logical, scientific or rational way before we engage in our worship of him. God is a commitment involved in our rites and myths. (M 150)

The inner reality of God is revealed solely by its action and presence in our world; the inner reality unites itself to our eyes when it clothes itself in history. Here symbolism becomes incarnation: God is embodied in human existence. In this way, Christian faith sees Christ as a living coming from God into our world. Polanyi would approach this same reality of Christ communicated through the Creed and Christian worship as communion that enfolds our existence within the frame of reference of Christ as Saviour, the story of whose life now becomes normative for our personal existence and moral living.

Here is how he represents this situation:

Our Existence embodied in a story frame (M 88)
In Holy communion the myth, of course, is the story of the Last Supper in the upper room in which the Lord himself instituted the rite, to be performed until he should return in remembrance of me.

Added to this meaning through its mutual embodiment in this myth, is the further metaphorical meaning of the satisfaction of a spiritual hunger and a re-purifying of the spiritual life through the ritual assimilation of the body and blood—the substance of the Son of God, which the bread and wine are. (M 153). The meaning of this and similar passages has been disputed. It is obvious that myth and reality are not exclusive terms."

The effect of the Eucharist, therefore, is communion with God and a brotherhood among men. For the intellectual community this brotherhood is described as conviviality. It is treated at length in the second section, of ‘Personal Knowledge’ as the sharing not just of knowledge, but of life itself. It is a project of understanding which means living within and indwelling the household of the truth. The principle symbol of human togetherness is the Eucharist. Thus conviviality would be its realization among the intellectual community. This is an example of the use of Polanyi’s hierarchy of meaning whereby a lower level remains open to a higher level which acts to regulate its entry into a higher integration. (M 88). This principle is known as ‘dual control’ and is inspired by Einstein.)

Faith and Science. Polanyi sees the development of science in Western Europe as occurring precisely within the context of a Christian culture which was too snugly, concluded that consciousness, or better awareness is directed outward toward reality, the mind does not exist as a point without extension, but as a human spirit in a body which is precisely the contact of mind and extra-mental reality. Man is essentially and inseparably involved in his knowing through his bodily being. There is no doubt that if a scientist cannot trust his own body, he cannot achieve understanding. Polanyi treats this idea at length under the rubric of the body/mind problem. This is a significant affirmation of the need for faith on our part and for the incarnation on God’s part as His way of making contact with us,
Polanyi did not articulate his convictions in this theological form. He took his point of reference from the practice of scientists themselves. The net result was a liberation from the prison of the self-contained Cartesian ego, and a return to faith as a trust in the intellectual premises which guide critical research. It cannot be passed over that here we have a return to Christian intellectual ideals by a re-evaluation of faith and the body.

Polanyi's life was, according to his repeated assertion, an attempt to re-establish the foundations of faith. Looked at from the point of view of the Creed as a guiding symbol, this project could be described as the redemption of the mind.

Corresponding to the redemption of the mind itself is the perception of the Radaun, of Christ who took a body in order to save man in his total personality, body and mind. Salvation from Cartesian dualism means the preservation of the dogma of Christ the Saviour. By introducing scepticism into the Christian conscience, Cartesian philosophy invalidated our moral and religious traditions. Polanyi saw this state of affairs as a 'fall', a sort of intellectual sin where the mind became sufficient unto itself.

'The modern critical movement destroyed the communion between the Christian conscience and the person of Christ,' (JP 453) Rationalism not only devalues all personal relationships by denying the 1-Thou structure of personal knowing, it makes any personal contact with God unthinkable.

Redemption comes to science as a grace whereby it breaks out of its old mold to make fresh contact with reality. Religion (PK 199) in this conversion happens as an illumination, discovering a new vision fostered by the beauty, symmetry and profundity of the reality touched, felt and perceived. It is no wonder that he viewed the darkness of the modern mind as a 'fall' from which it could only be redeemed by grace: 'so we are freed from worry about our insurmountable limitations'. (M 157)

In fact, Polanyi proposes grace precisely as the answer to the human paradox found both in religion and in science. Grace is a human necessity where our human resources fall short and call to be transcended by a greater power. This greater power, however, is not something operating outside us, but from within us. And he evokes the memory of St. Paul who felt the tension of being bound to an ideal he could not achieve.

The simplest expression that I know of the scientist's obligations can be stated in terms of the Christian paradox, that man is called upon to try the impossible but is not expected to achieve it. As scientists we must seek a truth which is unambiguous and universal, even though at the same time we must recognize this is impossible. (STR 77)

The source of this impossibility and indeed meaninglessness is the naturalistic conception of the universe. It is grace that opens the premises of this naturalistic conception to the sphere of ultimate meaning. This is the work of grace which acts not through a chain of logical necessity but by inbreaking this commitment into a set of ultimate beliefs. A commitment has two poles - the personal or subjective and the universal or objective. Science is ultimately a set of beliefs to which we are critically committed.

Hence we can now discern the fundamental fallacy of the positive model of science. It tries to construct a machine which will produce universally valid results, but universal validity is not a concept that applies outside the commitment situation. Any reference to it is merely a manner of expressing our submission to an ultimate obligation and can appear only as part of a fiduciary declaration. The attempt to construct something universally valid, prior to any belief, is logically nonsensical. (STR 80)

Faith, which is scientific thought to make contact with ultimate obligations through commitment, follows that scientific premises are open to obligations that go beyond the sphere of science, i.e., obligations on which they might not logically depend but to which they are open and in no way repugnant. Here is the radical possibility of religion as an integration of all aspects of life including the scientific work of the mind. If science is a penetration by intuition and critical reason into the structure and content of the universe, it must lead to a religious commitment in faith or collapse into a heap of meaningless details because there is no ultimate that holds it together in synthesis. Polanyi would say that this is the choice before our culture. It is grace that lifts the gap between the plausibility of a religious account of the world and actual commitment to it. We cannot live in an eternal uncertainty of 'if not this, then what?' (M 159-160) Religion both transcends science and integrates it into ultimate meaning in the universe. Grace, for Polanyi, is not abstract but seems to reside in the tacit dimensions of religious experience.

We can assert quite confidently that religious symbols are the way grace acts to integrate scientific meaning into ultimate purpose in the universe. There is no need to emphasize that here we are well beyond any natural cosmology or ontology that leads to a natural theology. This is a celebration of the ultimate reality of life itself, to quote Polanyi at some length again:

We dwell in the hope that we may, by the grace of God be able somewhere, somehow, to do that which we must, but which we can at this moment see no way to do.

Dwelling in this religious frame of mind, we have not lost the tension, but it does not worry us nor do we become complacent. Our myths tell us of the Fall and of how and why we are excluded from Paradise, ... but they also tell us of the Redemption and of the power and grace of God that is to be dispensed to us as need arose ... We are humbled before God in the recognition of our utter dependence upon him for the ultimate victory through Christ. (M 157)

That an intuition of God, Creator and Saviour, is necessary to uphold scientific enquiry into the universe as a whole, is confirmed by a study of scientists and how their minds work in practice. Christianity stands on its own premises of God's Revelation in Christ. In our culture it is the Christian framework or myth that makes this intuition of the Creator possible for the scientist. It follows that Christianity by upholding reason has been very fruitful in the development of science as we know it. It is
only in a universe redeemed and graced by Christ that it is possible to believe in a heavenly Father who preserves and supports a rational order and purpose embracing the whole universe. Stanley L. Jaki bluntly asserts: "History clearly shows that it was only a Western world steeped in Christianity that was capable of creating science, economy and business on a scale never witnessed before." (TBE 151)"

The road of science becomes a way to God. Faith and science continue as a tradition down the centuries of mutual help that is fruitful in new understanding of men and the universe. This tradition creates new insight from age to age because of the grace of the Spirit."

The Crisis of Culture. Science is a moral activity involving conscious commitments and deliberate decisions. If men create his life project through his moral decisions, then our culture is the creation of the modern mind whose greatest boast and achievement has been the development of science. In fact science more than religion is the undisputed authority in Western culture.

The Cartesian model of self-consciousness has already been described. So has Laplace's mechanistic universe of atoms in motion. This is the scientific universe of the positivists that is closed both to God and real meaning, it cannot achieve truth as a conscious contact that grasps reality in its essential features.

Man's motives which move him in all his moral activities are described by Polanyi as moral forces or energies (PK 234). Their usual manifestation is a moral passion which guides our search for truth. They have direction and universal intent and are essentially heuristic.

Cartesian consciousness and a mechanistic world-view together serve to reduce moral values and passions to nothingness. Man is expelled from the world and science becomes a pattern of relationships without content. It is this reduction, 'this assent, more than anything else one intellectual factor that has not science and religion in opposition to one another in the contemporary mind'. (M 162)

A meaningful universe full of purpose implanted and embodied in it by the Creator has already been treated. But what of moral man? What price does he pay in this reduction? How is purpose and meaning restored to his life? He stands in need of a redemption from the intellectual framework in which man can live at peace within his own mind.

The first step has been a revolution from within science itself. T.S. Torrance has described how Einstein, Bohr and Gödel inspired Polanyi with an ideal of science as contact with the real world, a penetration into its inner structures (FTT). Within this model of science as 'Personal Knowledge' man's passion for knowledge can find a new home. The main postulate of this personal model of knowledge is that everything we know is full of meaning and leads to greater meaning. There is as Polanyi puts it a 'gradient of meaning' (M 128) operative in the Universe. To fail to grasp this is to fall into absurdities.

The second stage is to analyse the moral failure that spreads glosously from a false ideal of science through every level of our culture. Polanyi's reasoning is direct and startling. If positivistic science achieves recognition as the ideal of knowledge, as in fact it has, then scepticism reigns over all our values, traditions and social institutions. Scepticism can dissolve values and valid the edifices of authority, faith and tradition as indefensible acts of trust. The end result of this movement cannot be better than nihilism. 'Man are living in a spiritual desert' (PK 256) becomes the sad state of a culture where the ethical role of science has been misdirected.

If the moral passion for knowledge is displaced away from the truth, we have to ask where does its howl on energy go and what damage can it do? Moral passion becomes the fantastical tides that inflame immoral purposes. Polanyi lists many examples that convince him that the 'pathological morality of our time' (KB 1B) is the attempt to remake society after the ideals of positivistic science. He cites the violence of Robespierre and his followers in the French Revolution, the Russian Revolution, Hitler and the modern totalitarian state as examples of this fanaticism (SFS 71-73).

Nihilism for Polanyi is the wholly marriage of positivistic scientific ideals and homeless moral aspirations and the union becomes a mechanism of destruction since the sceptical scientific mind turns men's vital moral impulses against himself.

In other words while a radical denial of absolute obligations cannot destroy the moral passions of man, it can render them homeless. The demand for justice and brotherhood has turned into no more than a new self for what it is, but will seek fulfillment in some other form of salvation through violence. Thus we see arising those sceptical, hard-boiled, allegedly scientific forms of fanaticism which are so characteristic of our modern age, (LL 47)

It goes without saying that any organisation of the state based on a deterministic model not only has no space for liberty in theory but must result in contempt for freedom, both personal and social.

The immoral form of existence that corresponds with this denial of liberty is called moral Inversion. The traditional form of holding moral ideals has been shattered and their moral passions diverted into the only channels which a strictly mechanistic conception of man and society left to them. We may describe this as a process of moral Inversion. (LL 106)

Moral Inversion is the direct result of inverted consciousness. It is the consequence of the application of the Cartesian model of thought to our moral drives. Those forces have their direction set by the intentionality of consciousness. The scientific revolution of the twentieth century initiated by Einstein, Bohr and Gödel, caused Polanyi to rethink the direction taken by consciousness, or awareness as he prefers to call it. He postulates a vital trust in knowing from the subjective pole to the objective pole. Awareness is directed outward, therefore, so that the subject and object become an inseparable unity in Personal Knowledge.

Our awareness of ourselves and our knowledge as directed outward to the rest has momentous consequences for morality. It is the redemption of
the mind as it breaks through moral inversion. Our moral energies are then
attracted to their true home - the universal values we believe in and to
which we commit our lives.

Knowledge by participation, so firmly grounded, makes a clean sweep
of the claim that in order to be valid, knowledge must be established
objectively without relying on personal judgments. This restores
our confidence in moral principles that are ultimately known to us by
our commitment to them. (PK 235)

A personalist view of science restores the worth of absolute obliga-
tions both in the life of the individual and the society. It preserves
the relationship between Christian conscience and the person of Christ. Our
moral desires are once again open to eternity (JP 43, 8, 9, 10). The
Christian hope of life everlasting does not have to be reduced to social
liberation and economic betterment. Radical secularization becomes quite
an impossibility. Our concern for historical progress through political
and social reform is now guided by a 'firmament of values.' (SM 41) Truth,
love, beauty, honesty and justice become guiding stars that call men out of
himself towards the absolute. This vocation finds its sole adequate and
satisfying embodiment in the Christian mystery. There is a 'gradient of
meaning' immanent in creation that leads us from lesser to greater truth.
It is this spontaneous force that at once reveals an order founded on
higher than that purpose forever pointing to unity in diversity and
grace greater than the human mind must be at work in the world. For the
believing Christian this grace can be nothing other than the Spirit who
reveals Himself in the tacit dimension of all meaning. Polanyi never quite
articulated his conviction in this form. It is an insight that is not only
coherent with his thought but readily flows from it.

Polanyi had a mind naturally bent on synthesis, that is, on bringing
divergent truths into unity. Science, faith and religion all find their unity
in the great symbols of belief. Without a god who is Lord of heaven and
earth, faith has lost its object and science becomes a set of empty mathema-
tical relationships without a soul. 'A society refusing to be dedicated
to transcendent ideals chooses to be subject to servitude.' (SFS 78-9)

Father Augustine Regan in his doctoral dissertation described the
Trinitarian relations, and how the Divine Persons have a mission to us and
our world. This essay shows that Christian faith in the Divine Persons can
lead science to a meaning that it contains only tacitly, implicitly and in
symbol. The illumination that overpowers the mind of the scientist and
sets him afloat with expectation is indeed a 'clue to God' (PK 324) that is
necessary for the children of this scientific generation.

Abbreviations:

J Jewish Problems by Polanyi in The Political Quarterly XIV. 1944.

The American Academy of Religion has again this
year granted the Polanyi Society a three-hour
pre-session meeting to be held on the opening day of the
AAR Annual Meeting. The Polanyi Society meeting is
scheduled for Nov. 23, 1985, at 9 a.m., in Conference
Room 9 of the Anaheim Hilton and Towers (Anaheim, Ca.).
Professor Walter Gallick of Eastern Montana College will
present this year's major paper titled "Critical and
Post-Critical Correlations and Conundrums."

About half of the session will be devoted to
Gallick's paper. In order to use time efficiently, it is
very important that session participants read the paper
before the meeting. The paper can be ordered for $2.00
(duplication and postage fees) from the address
listed below. I expect to mail papers around Nov. 1,
1985.

The last half of the session will be scheduled
again this year to allow participants briefly to discuss
writing-in-progress or other papers and publications
related to Polanyi's thought. If you wish to make a
brief presentation (10 minutes), please notify me
immediately. I will schedule presentations on a first
come, first served basis. In the past, it has proven
helpful if presenters provide session participants with
a brief written (no more than 3 pages) summary. Those
who write such summaries should duplicate 20 copies for
distribution.
By Jere Horman, author of A HUMOROUS DICTIONARY OF THE TACIT, Box 90155, San Diego, CA 92109.