

# Tradition & Discovery

The Polanyi Society Periodical

Incorporating

## Convivium

*The United Kingdom Review of Post-critical Thought*

Volume XIX

Number 1

1992-93

---

### In This Issue

#### Articles and Reviews

Preface .....	2
News and Notes .....	3
Toward the Recovery of Common Sense in a Post-critical Intellectual Ethos.....	5
Dale Cannon	
Michael Polanyi and the History of Science.....	16
Gerald Holton	
Polanyi and Post-modernism.....	31
Allen R. Dyer	
Book Reviews.....	39

*The Ethics of Authenticity*, by Charles Taylor

Reviewed by Walter Gulick

*The Problem of Universals*, Edited by Andrew B. Schoedinger

Reviewed by Philip A Rolnick

#### INFORMATION

Submissions for Publication .....	15
Contributors .....	42
Membership Information .....	43

# The Polanyi Society

# Preface

## General Coordinator

Richard Gelwick  
University of New England  
Biddeford, ME 04005  
(207)283-0171

## General Editor-Tradition & Discovery

Phil Mullins  
Missouri Western State College  
St. Joseph, MO 64507

## Book Review Editor

Walter Gulick  
Eastern Montana College  
Billings, MT

## Art Studies

Doug Adams  
PSR/Grad. Theol. Union  
Berkeley, CA

## Communication/Rhetorical Studies

Sam Watson  
University of North Carolina, Charlotte

## Education Studies

Raymond Wilken  
Kent State University

## Medical and Psychiatric Studies

Allen R. Dyer  
Quillen College of Medicine  
East Tennessee State University

## Philosophical Studies

Martha Crunkelton  
Bates College

## Religious Studies

David Rutledge  
Furman University

## Member At Large

Harry Prosch  
Skidmore College

## UK Editorial Committee

Joan Crewdson  
12 Cunliffe Close  
Oxford, OX2 7BL

Robin Hodgkin  
39 Holyoake Road  
Oxford, OX3 8AF

Drusilla Scott  
Ashe House, Aide Lane  
Aldeburgh, Suffolk

## UK Coordinator

John Puddefoot  
Benson House, Willowbrook  
Eton  
Windsor, Berks SL4 6HL

© 1993 by the Polanyi Society  
ISSN 1057-1027

In this issue, I am particularly pleased to include the paper developed from Professor Holton's keynote address at the February 1992 conference on Polanyi in Boston. You will also find a second contribution from that conference, Allen Dyer's essay which continues the discussion of Polanyi and postmodernism found in some other essays in recent issues. Dale Cannon's article is based on his Kent State paper; his examination of common sense also nicely fits into the context of discussions of Polanyi, contemporary culture and the university.

In the last issue, I noted that some members of The Polanyi Society were interested in setting up a "Polanyi discussion list" available to INTERNET/BITNET users. Discussions about this possibility are progressing. We will probably be able to provide instruction and an e-mail address for those interested in the next issue. Several interesting possible uses for electronic communications are already clear. It is likely that papers to be delivered at upcoming Polanyi Society meetings will be made available through FTP (file transfer protocol) to those who can receive copies without the help of the U. S. Mail. An electronic address will also probably be used to produce a updated bibliography of materials on Polanyi as well as disciplinary scholarship making significant use of Polanyi's ideas; such a bibliography will be available by FTP to anyone who wants it. If you have an e-mail address and did not list it in your recent membership renewal, please write to me at my e-mail address (mullins@acad.mwsc.edu).

Phil Mullins

*Tradition and Discovery* is indexed selectively in *The Philosopher's Index* and *Religion One: Periodicals*. Book reviews are indexed in *Index to Book Reviews in Religion*.

---

---

## NEWS AND NOTES

---

---

A new work by WILLIAM H. POTEAT, *A Philosophical Daybook, Post-Critical Investigations*, Columbia and London: University of Missouri Press, 1990 is making its way into the “muscular assumptions” of the Polanyi Society. References to it were plentiful at the recent meeting of the Polanyi group at the American Academy of Religion in San Francisco as we continued to pursue the implications of post-critical thought with its “mindbody” character as Poteat is exploring it. This work is a briefer and perhaps more “incarnate” work as it grows out of 15 months of journal entries composed after Poteat’s *Polanyian Meditations: In Search of a Post-critical Logic*. A line from the dust cover aptly suggests the appeal and importance of Poteat’s continued pursuit of the vital reality of being: “By every available rhetorical strategy, therefore, this must be an anti-book. It must strive to defeat our centuries-old habituation to the book as spectacle, in order that we may be brought to dwell in the immediacies of our lively selves in the world, as we do in our oral/aural life.”

DAVID RUTLEDGE, Coordinator of Religious Studies for the Polanyi Society is trying to arrange for meeting and talking with WILLIAM H. POTEAT at our next meeting of the American Academy of Religion

in Washington, D.C., Nov. 19 (Friday evening) and Nov. 20 (Saturday morning).

The 1991-92 Michael Polanyi Lecture at the University of North Carolina at Chapel Hill was given by NOBEL LAUREATE DUDLEY HERSCHBACH, Baird Professor of Science at Harvard University. His title was “Imaginary Gardens and Real Toads: Reflections on Science, Art, and Education.” This lecture series is made possible by an endowment from WALDO E. HAISLEY, Professor of Physics, Emeritus.

LADY DRUSILLA SCOTT, author of *Everyman Revived: The Common Sense of Michael Polanyi*, sends thanks to all those persons at the AAR Polanyi meeting who wished her a speedy recovery from eye surgery. She reports that she is getting better though still limited in her reading and writing.

An abstract of Robin A. Hodgkin’s article “Michael Polanyi on the Activity of Knowing - the bearing of his ideas on the theory of multiple intelligences,” *Oxford Review of Education*, vol. 18, No.3, 1992 has been received. It states: “Michael Polanyi’s philosophy of science and his corresponding ideas about how we act, perceive and know was, in part, a revolt against materialist reductionism. In its place he offered a

‘holistic’ theory (not his phrase) of personal knowing: we build up small skills and percepts into larger wholes - Gestalts. Polanyi showed that such ‘personal knowledge’ did not have to be subjective and arbitrary because its components and unifying patterns could reflect real patterns in the universe. Polanyi’s account of how two eyes present differing versions of the world is instructive. It can now be used as a model for understanding how the two parts of someone’s brain may integrate two versions of the world into one synthetic consciousness. Howard Gardner’s and the author’s versions of ‘the multiple intelligences’ theory of how we learn and also the Sperry-Gazzaniga picture of how two brain hemispheres cooperate actively in making sense of the world are surveyed under this Polanyian rubric. These writers highlight both the necessity of active learning and the disciplining, articulating importance of linguistic skills in giving coherence to any multiple intelligence version of how a person acquires and expresses overall competence.”

JOHN APCZYNSKI has a major article on “Belief in God, Proper Basicity, and Rationality” in the *Journal of the American Academy of Religion*, vol. LX, 2. While there are no explicit Polanyian references, the argument will be appreciated by members of the Polanyi Society.

Physicist W. JIM NEIDHARDT and theologian James E. Loder have published *The Knights Move, The Relational Logic of the Spirit in Theology and Science*. (Colorado Springs, CO: Helmers and Howard) "The relational logic of spirit is disclosed in the 'knights move' of discovery in both science and theology, whether in the leap of insight or in the leap of faith." Neidhardt also writes an introduction for THOMAS F. TORRANCE'S recent book, *The Christian Frame of Mind*, also published by Helmers and Howard.

ROBIN KASH, who assists with the preparation of *T&D* is editor and publisher of *Worship Works*, a monthly magazine for worship leaders and planners based on *The Revised Common Lectionary*. *Worship Works* consists of prayers, brief annotations on texts for each week, suggestions of hymns, anthems and organ music, material for use with children in worship, and selections of new and out-of-print books. He is seeking articles on worship, its theology and practice, as well as philosophical intersections and articles on worship and the arts. He is also interested in considering for publication book-length manuscripts on similar topics.

To submit material or to obtain further information write: *Worship Works*, P. O. Box 58, Topeka, KS 66601-0058, or call 913/232-0354. For returns, please enclose a SASE.

For the sake of keeping our network of communication, please send your news and notes to me.

Richard Gelwick,  
General Coordinator

# Toward the Recovery of Common Sense in a Post-critical Intellectual Ethos

Dale Cannon

## ABSTRACT

*The modern critical tradition's strategy for defeating the demon of self doubt and securing certainty, as Hannah Arendt has written, restricts serious candidates for belief to those whose conditions of truth can be rendered wholly immanent to focal consciousness within a point of view that is simply taken for granted. Thereby it forecloses the possibility of recognizing the partiality of its own perspective vis-a-vis that of others, taking into account the relevant perspectives of other persons, and reaching any kind of sense in common between perspectives. The institutionalization of this strategy in 20th century academic life is amply and insightfully documented in Bruce Wilshire's **Moral Collapse of the University**. Michael Polanyi, in his writings, adumbrates a post-critical intellectual ethos in which the making of sense in common between persons of differing perspective is central to the enterprise of teaching, learning, and research. Key elements of such an intellectual ethos are articulated and explored.*

My remarks here grow out of nearly a quarter century of wrestling with what Polanyi referred to by the phrase, “towards a post-critical philosophy,” in the sub-title of *Personal Knowledge*. Polanyi's words imply that he was seeking to articulate a post-critical **philosophy**, and that implication I have no wish to deny. However, it seems clear that it was not just toward a post-critical philosophy that Polanyi was aiming. Just as much or even more so, I believe, Polanyi was seeking to articulate a vision of **a post-critical intellectual ethos**, a context and style of intellectual life, a “convivial order,” that would be free of the inordinate critical passions and objectivist epistemology that plague the modern critical ethos and render it so problematic and unconvivial.

I should make plain at the start that my interest here is less with what Polanyi has said and written than with the enterprise with which I understand Polanyi was engaged and with which he solicited others' engagement: namely, fostering the emergence of a post-critical intellectual ethos.

My shift of emphasis from “a post-critical philosophy” to “a post-critical intellectual ethos” is meant to broaden the focus from the individual knower in the abstract to the knower in community with other knowers, and from a specific philosophical viewpoint that may or may not be shared by other philosophers to Polanyi's account of what it means to indwell a given theoretical framework alongside of others who may happen to indwell quite distinct theoretical frameworks. It strikes me that most scholarship on Polanyi has focused on the former to the relative neglect of the latter, with the result that little of Polanyi's work has been used to illuminate our own lives in the academy and the roles that

each of us play in our larger intellectual culture. In other words, my concern is to identify some of the implications of Polanyi's thinking for our practice as intellectuals in the academy.

I shall proceed to do this, first, by relating Polanyi's thinking to what Hannah Arendt has identified as "the loss of common sense" in the modern world. Second, I shall briefly draw upon one of the more impressive recent attempts to diagnose the current malaise of higher education -- namely, Bruce Wilshire's *The Moral Collapse of the University* -- to give the bones of this relatively abstract analysis some concrete flesh, particularly as it relates to our lives as members of the academy. Third, I shall briefly explain the differences between our critical intellectual ethos and a post-critical intellectual ethos. Finally, I shall attempt to identify some of the features of the post-critical intellectual ethos that Polanyi envisioned which, if more widely recognized and appropriated, could play a crucial role in the recovery of common sense in the academy.

## I

Political philosopher Hannah Arendt has argued (Arendt ch. 39) that the modern critical tradition is characterized (in part at least) by a Cartesian strategy it uses to conquer the demon of skeptical self-doubt: it restricts rational evidence to what is or can be made immanent to consciousness (clearly and distinctly) and knowledge to what the mind is able rigorously to infer therefrom. This is the source of the modern mind's insistence upon explicitness; by insisting on keeping all of its (focal) concerns explicit, it maintains strict control (at least it appears to maintain control) over the mind's natural credulity, its tendency to believe what cannot be proved, which is the source of its greatest fears. Whatever candidate for belief whose truth conditions cannot be made focally immanent to consciousness, especially one originating from an other, unfamiliar point of view (whose intimations are inaccessible from the given point of view), is accordingly not given a second thought. (This kind of response is virtually certain when the point of view taken for granted has the authority of established professional academic consensus and the point of view within which the candidate for belief has been expressed does not yet have such a standing.) The curious result of all this, which Arendt points out, is that this Cartesian strategy for securing certainty itself forecloses the possibility of common sense.

What Arendt means by common sense needs some explanation (Arendt chs. 7, 39, and 208f) First of all, she does not mean what we ordinarily take it to mean: namely, a collection of opinions about the world and things in general that ordinary people find obvious and take for granted without question. Nor does she mean the somewhat more sophisticated set of common sense beliefs that G. E. Moore took to be foundational for all our understanding of the world (see Moore). Nor, as she makes clear, does she mean by it the Enlightenment idea of a universal faculty of natural reason, possessed by each human being as such and by virtue of actualizing which a person is supposed to transcend animal nature and realize her humanity.

In developing her conception, Arendt makes appeal to Aristotle's definition of common sense as the faculty of mind whereby we integrate the deliverances of our five separate senses into a unified perception (a common sensing) of single realities whose different sensory aspects are picked up by the respective senses (Arendt 208f, 283). However, Arendt goes beyond Aristotle's notion to identify by "common sense" something quite distinct: she means by it a sense-ability that corresponds not to a human being as such in the singular but to human beings in the plural: the

capacity to make sense in common with other persons, the capacity to integrate into the recognition of a common or public reality between us the private experiences, imaginings and thoughts we respectively have of it as distinct individuals. Common sense is that in virtue of which we fit our private reasonings into a single world common to us all and by the aid of which we move about in it in relation to one another. By means of it we come to realize how our perspectives differ from and relate to each other. But it can only do this because it is precisely what enables the experience of mutual recognition between two or more independent persons: where I come to see that you see the same thing that I see and you come to see that I see the same thing that you see, each from our own distinct perspective. It corresponds not to our ability through some universal form of reasoning each to come up with the same answers (as when we each add  $2 + 2$  and all come out with 4) (Arendt 283). It corresponds rather to our ability jointly to recognize that we each are gathered around the same thing between us, each considering it independently from a different angle. **It is the ability to recognize something-in-common, not despite our different viewpoints but in virtue of those very differences.** It is the ability to catch on to how the same thing can be seen in such different ways. Hence it is much more a matter of “catching on to” what others are getting at from where they stand than it is a matter of following up and confirming their explicit reasonings. (Note that only the latter is accredited by the modern critical tradition.)

Arendt’s conception of common sense thus names **the foundational recognition**, regardless of whatever point of view or frame of reference we may be assuming, **that we are all embodied knowers alongside one another concerned with discovery of truths that transcend our respective subjectivities -- truths that we recognize do transcend our subjectivities in the measure that they are capable of eliciting mutual recognition between us.** We have reason to believe that we do transcend our subjectivities in coming to know the external world precisely as we achieve (and continue to achieve) sense in common with other independent knowers. (Polanyi’s differentiation of the personal from the subjective, marks this very transcendence, although it may not sufficiently highlight the respect in which such transcendence entails the possibility of mutual recognition with other independent knowers (Polanyi 252f, 300ff).)

However, as already mentioned, the modern critical tradition’s strategy for defeating the demon of self-doubt and securing certainty -- namely, the strategy of restricting serious candidates for belief to those whose conditions of truth can be rendered wholly immanent to focal consciousness (a consciousness whose distinctive point of view is simply taken for granted, though it attempts to escape “subjective” taint by universalizing its form (Cannon 157ff)) -- this strategy closes off the very possibility of common sense **between** persons, who necessarily embody differing points of view. Indeed, by restricting consideration to what can be made immanent to its own focal awareness, the point of view in question avoids appearing, or being acknowledged, as one perspective among others. For itself, it is disembodied. For itself, it is not in the world alongside of others. For itself, rational inference is restricted to linear moves within its own frame of reference; no dialectical shift to another perspective can be countenanced as rational. (I suspect that largely as a result of this restriction, the pre-modern study of dialectics has been eclipsed from consideration in modern logic as a matter of rational inference.) Indeed, for itself, there is allowed to be no **other**, no cognition of anything transcending itself. Consequently, for itself, there are no conceivable, legitimate points of access onto the matters with which it is concerned other than its own. Hence there is no need to explore any such alleged points of view and no purpose for empathy as a source of cognitive insight. (One is hard put to make sense of how empathy is even possible on its terms.) For itself, as Arendt makes clear, there is strictly speaking **no world in common at all** (Arendt 57f).

But what else could one expect, given the Cartesian inheritance of skepticism which renders suspect the very possibility of knowing other minds as well as the possibility of knowing an external world? Notice that the doubtfulness of each of these possibilities follows directly from the implicit Cartesian refusal to entertain as meaningful any point

of view but its own. (Within a strict Cartesian frame of reference, the very idea of different points of view becomes meaningless.) Thus, by its very nature, the Cartesian strategy entails the loss of common sense.

It should be clear by now to those familiar with the work of Polanyi that his work definitely addresses the range of issues posed by Arendt's analysis as I have presented it. (Those who know Arendt's analysis may recognize my implicit debt to Polanyi in unpacking what Arendt is getting at.) Polanyian themes directly relevant to Arendt's analysis include: the tacit, personal, fiduciary component and the from-to stretch of embodied tacit knowing that domiciles us all in particular points of view; recognition of the personal coefficient of the knower in community with other independent knowers in all intellectual endeavor; all explicit knowledge being necessarily rooted and grounded in tacit knowledge (i.e., all explicit knowledge, despite its focal appearance, as representative or propositional knowledge, of being domiciled in no point of view is in actual fact rooted and grounded in a tacit knowledge by acquaintance that is incarnate in a particular embodied viewpoint); our knowing of a comprehensive entity through indwelling and our knowing of other minds through indwelling, that taken together make possible a "meeting of minds" in convivial mutuality concerning the given comprehensive entity; higher order forms of knowledge being grounded essentially in a convivial order whose accreditation becomes the basis of one's self-accreditation of competence; reality as being inexhaustible to any one viewpoint, and as capable of revealing itself to an indefinite multiplicity of further viewpoints in unexpected ways; knowing as an adventure of following up intimations of hidden truth -- personal intimations of truth-in-common which call forth the services of the individual knower for revealing it and making it known-in-common; and the way in which our affirmations of our respective findings are always made with universal intent, appealing to a mutual, confirming recognition from future independent inquirers into the same matters. In view of these Polanyian themes, I consider Polanyi's work as contributing to the effort to re-establish, and provide justification for, our means of making common sense.

## II

Bruce Wilshire's recent book, *The Moral Collapse of the University*, traces how what Arendt refers to as the breakdown of common sense has become institutionalized in higher education -- a breakdown of common sense between one academic professional specialty and another, between faculty member and student, between professional and layperson, and even between colleagues within the same professional specialty -- all through the emergence and consolidation over the last century of academic professionalism. What Wilshire identifies is not new. His synoptic telling of the story in its moral pathos, so far as I am aware, is unmatched.

Bruce Wilshire is a professional philosopher, but his diagnosis of the malaise of the modern university reflects more than a superficial acquaintance with the discipline of cultural anthropology. His own work exemplifies the interdisciplinary research that he advocates (Wilshire 234ff).

Wilshire brings to light, behind and obscured by the idealized, foreground image of professional expertise and accomplishment in each professional academic field, an "archaic background" in which operate powerful, pre-rational purification rituals (Wilshire ch. VII). Through these rituals, recognition of the "purity" or "impurity" (and degrees thereof) of one's professional performance by one's colleagues in the professional discipline is bestowed. In this way, a sense of one's identity as a professional sociologist, say, is given shape and a professional conscience



is inculcated and reinforced. The “pure” are those who are judged to hue close to the professional paradigm. The “impure” are those who fall short in one respect or another. The remarkable thing is that all this goes on without the participants taking in rationally what is going on -- precisely because their conception of knowing is decisively informed by the Cartesian paradigm of so exclusively focusing on the explicit components of knowing that the enveloping tacit background is entirely lost to reflective awareness. In Wilshire’s words,

Combined with the need to achieve professional competence in order to be something definite--but typically hidden by this professional behavior--are archaic identity needs. These tend to go unrecognized. When they threaten to become thematic their shocking nature usually prompts their repression -- self-deception occurs (“Your dogs are barking in the cellars,” says Nietzsche). The result is that the ability of professional competence alone to form the self is overloaded, freighted with hidden baggage. The academic person all too easily pursues professional objectives compulsively -- frantically, numbly fearfully. He or she is in no position to see the “irrational” side of the pursuit--particularly that the need for recognition from the professional peer group is so immense that the group acquires the numinous authority of a tribe. One’s identity is engulfed in the identity of the group; those who fall outside it are *other*, and their presence within it contaminates both it and its members. Students are *other* (Wilshire 170).

Wilshire points out how it is precisely by excluding rapport with these *others* that such professionalism fails to make common sense and cuts itself off from the common world.

More specifically, Wilshire discusses the professionalization of the discipline of philosophy (ch. V) and how some purification rituals work within the American Philosophical Association meetings:

Some acute observers, such as Richard Rorty and Janice Moulton, have pointed out recently that the actual form of exchange between philosophy professors at these meetings fits no historical model of legitimate philosophical dialectic, but is rather modeled on the confrontation of lawyers in a courtroom. In the half century 1930-1980, they claim, philosophers have attacked each other’s positions in the manner of lawyers attacking each other’s briefs: the “adversary method in philosophy,” as Moulton puts it. An instant verdict is rendered thereby, and the contestant moves in one way or another in the shifting, breath-taking rankings of “professionals in the field.” But the self is not just the professional ego, and it remains burdened with unacknowledged aspirations, aversions, aggressions, anxieties, and various split-off states (Wilshire 123).

Although he does not say so in so many words, it doesn’t take much to recognize that such contexts are hardly places in which mutual recognition between persons of significantly different viewpoints is likely to take place.

All this might not be so bad if the consequences of these purification rituals were not so morally problematic. For what they largely take for granted and enforce -- without participants really realizing it reflectively -- is a scientific, technocratic, and bureaucratic conception of the university as a knowledge factory (Wilshire ch. III), in which each disciplinary specialty is supposed to tend to its own business of producing, by means of its professional expertise, its pre-assigned bit of useful knowledge for manipulating the world -- in blithe indifference to what is going on in any other specialty and in the world outside the academy.

I am not saying that Descartes' philosophical thought created the modern world. But in an uncanny way it reflects and focuses what was at work, and what was to be at work, in the culture at large. It also anticipates the contemporary research university and its master problem: despite its vast research capacities and its knowledge, it exists in strange detachment from crucial human realities, and perpetuates the implicit dogma that there is no truth about the human condition as a whole (e.g., the humanities merely express communal or personal sentiment, hardly knowledge). The university fails to understand what it is doing and what it is abetting, because in the dominant conception of knowledge, truth about ethical relations to others is blocked or obscured, as is also our involvement in the moody background world--matters crucial to who we are and to what education should be (Wilshire 40).

Professional recognition (or accreditation of one's "purity") is accordingly not given (or at most rarely given) for efforts or accomplishments which focus on questions of this nature that lie outside the paradigm of one's disciplinary specialty -- e.g., in interdisciplinary study, teaching, or research, in developing comprehensive or integrative understandings that span several disciplines, or in teaching (especially not in the research university). The extraordinary people who do devote significant energies and time to these "impure" enterprises accordingly go unrewarded; often they are censored. Yet it is precisely such activities that have always constituted the moral core of liberal learning in the university. Hence the title of Wilshire's book: *The Moral Collapse of the University*. The difficulties Polanyi faced with his work outside of physical chemistry are illustrative of what Wilshire speaks of as a professional scholar's work being stigmatized as "impure." Those involved with Polanyi's ideas and related things, undoubtedly, have stories to tell that illustrate Wilshire's point *ad nauseam*.

Regarded in light of my earlier discussion of Arendt's account of the loss of common sense in the modern intellectual ethos, the purification rituals described by Wilshire are perhaps the chief means of implementing what Arendt identifies as the Cartesian strategy for defeating the demon of self-doubt. They are the practical means whereby intellectual inquiry within a disciplinary specialty is restricted to what amounts to a single perspective -- which is taken for granted in an impersonalized form as somehow guaranteeing objectivity. Accordingly, they are perhaps the principal obstacle standing in the way of making common sense, of building up knowledge of a world in common, and of addressing with any effectiveness the large questions pertaining to the meaning and purpose of our lives. Wilshire's book is very rich, full of insights, pessimistic about any quick solution to these problems, and offers a few practical suggestions about what might be done in the short range (Wilshire chs. XI and XII). It is certainly a book with which any academic who identifies with the post-critical direction of Polanyi's work ought to become familiar.

### III

I have repeatedly alluded to a contrast between the modern critical perspective and a post-critical perspective, the modern critical ethos and a post-critical ethos. Although most anyone who is appreciative of Polanyi's work has a vague understanding of what is meant by that contrast, few attempts have been made to explain the contrast with sufficient clarity to give practical guidance for someone wishing to have it make a difference in his or her own intellectual work. I here offer my attempt to that end.

To have acquired a modern critical mind is to have been habituated, on the one hand, to distrust one's first and natural inclination to indwell the world believingly and, on the other hand, to entrust oneself to the attitude of critical suspicion as the cardinal intellectual virtue. This is because modernity is premised on the assumption that the root of all error is the inherent human proclivity to project into reality what is not there but only in oneself, in one's credulity and subjective bias. Our modern intellectual conscience insists that we will get at the truth of the matters that concern us only by divesting ourselves of subjectivity, by stepping outside of our merely personal, mindbodily perspectives and following impersonal, "objective" procedures. In consequence, on reflection at least, we moderns have difficulty believing in our own beliefs and trusting without defensiveness in any inward summons to venture beyond the safety of impersonally established truths -- unless it be critically to disestablish or deconstruct someone else's alleged truths. (This is not to say that such critical efforts do not have their rightful place. It is only to say that such efforts become the only encouraged -- indeed, the only "safe" -- creative work within the modern critical perspective.) Our modern minds largely disable us from venturing to construct or establish anything at all. If our own critical intellectual conscience fails to keep our subjectivity in check, we can be sure that our professional colleagues' critical faculties will be more than adequate for the job. (It should be clear from this that so-called "post-modern" perspectives that define themselves as deconstructive of any and all modern claims to have overcome subjectivity and arrived at objective truth are merely a continuation of the modern critical tradition.)

On the contrary, a post-critical perspective is one that, having passed through the baptism of fire constituted by the modern criticism of subjectivity, nevertheless retains (or regains) confidence in one's own personal, mindbodily perspective -- retains confidence in it not as truth itself (which would make it indistinguishable from an ideological commitment *per se*) but as one's own best avenue, or clue, or stage-on-the-way to discovery of, truth-in-common. To occupy a post-critical perspective is to recognize that **there is no other recourse**. It is there, in the very particular incarnate rootage of our mindbodily being in the world, with its very particular past, however seemingly narrow, deprived, and parochial it may appear to a deracinate critical perspective -- it is there, in being fully oneself, that the wellsprings of a sensibility and passion for an integrity of person in devotion to truth-in-common can be found.

A post-critical perspective thus re-appropriates the pre-modern confidence in methodological belief -- a chastened confidence to be sure -- to counter and complement modernity's methodological doubt. (For further explanation, see Booth and Elbow.) Whereas modernity's maxim has been "Doubt, unless there is good reason to believe," post-critical thought conjoins with it the pre-modern maxim, "Believe, unless there is good reason to doubt." In modern critical thought one needs justification to believe, but no justification at all to doubt; indeed, for it one needs justification not to doubt. But in post-critical thought, one needs justification to doubt no less than one needs justification to believe. But such justification may not be publicly discernible, at least not for the present. A post-critical perspective recognizes that and respects each person's ability to discern intimations of that justification for herself/himself.

## IV

What features of a post-critical intellectual ethos as Polanyi envisioned it are particularly crucial to the recovery of common sense? As I see it, there are four key features that are crucial, though they are not completely independent from each other. Although they are here expressed in a theoretical way, they each have eminently practical

implications. Note how each directly counters the modern critical strategy of restricting rational evidence to what can be made immanent to a single, taken for granted perspective (which remains a single perspective regardless of how universal its form may appear to be) and restricting knowledge to what can be strictly inferred therefrom within the same perspective. The four features of a post-critical intellectual ethos that I shall highlight are (1) mutual recognition between independent knowers -- i.e., common sense making -- is regarded as paradigmatic of the knowledge that is sought; (2) each person is regarded as having access to transcendent truth-in-common and the tacit knowledge-by-acquaintance through which they have that access is itself regarded as knowable in the experience of mutual recognition of the truth in question; (3) persons other than any given knower are recognized as having transcendental status in relation to that person's knowledge of transcendent truth-in-common; and (4) there is mutual regard for and trust in each person's capacity to participate for herself in discovering truth-in-common through following up her own intimations of that truth.

First, in a post-critical intellectual ethos, **mutual recognition (common sense making) between independent knowers is regarded as paradigmatic of the knowledge that we seek.** What does this mean? To begin with, it implies that any given knower's perspective is one perspective among others; yet that given knower's perspective is in principle open and accessible to any other perspectives on the same matter. But more importantly it means that knowledge is not conceived primarily as an individual matter that the knower can confirm on her own within a single, taken-for-granted perspective (or even as a cooperative endeavor where knowers cooperate closely within a single frame of reference as if they all shared a single point of view). Instead, it means always looking outside of and beyond current perspectives for confirmation of the objective reality of what is believed to be known (see Cannon 164f). It means building bridges of communication with those who do not share one's perspective to enable a meeting of minds -- i.e., mutual recognition between persons in different specialties within the same discipline, between persons in different disciplines, between professional academics and students, and between professional academics and laypersons, and, of course, between perspectives of gender and ethnicity as well. For this to take place, it requires of course building synoptic or integrative understandings between these different frames of reference, extending across whole disciplines and between disciplines; and it means no longer building up knowledge atomistically within a given specialty without regard for its connection with anything else. The point is that our respective findings should serve to build up and make known a world-in-common -- common not just to members of some disciplinary specialty, gender, or ethnic group, which is no world-in-common at all; but common to members of the wider human community. (Specifically, this would imply that one's scholarly responsibility should be understood to be at least as strong to the rest of the academy and to the broader public as it is to one's peers in the discipline.) To know entails a responsibility to make known. (For those of us in philosophy, it obligates us to call into question at every turn the individualistic and isolating Cartesian assumptions that continue to govern discussions of epistemology within the mainstream of professional philosophy.)

Second, in a post-critical intellectual ethos, **each person as such is regarded as having access, through tacit knowledge by acquaintance, to transcendent truth-in-common, and each person's knowledge itself is regarded as knowable by others in a mutual recognition of the truth in question.** Despite the cultural weight of three centuries behind the assumption, the mind is not a closed container, hermetically sealed off from things in themselves, such that its knowledge of what lies beyond itself is necessarily of a representative nature and which representative function is itself dubious. A post-critical intellectual ethos grants each person his or her own access -- by means of mindbodily knowledge by acquaintance -- to the being of that which mutually concerns us. To the contrary, the modern critical intellectual ethos discredits *a priori* the very possibility of anyone's direct acquaintance with what

lies beyond his or her mind. As a result, any appeal to that acquaintance, e.g., to get another person to “see the point” and “catch on to” something for herself, can get nowhere. But Polanyi’s tacit knowing by indwelling is a knowing by acquaintance, an acquaintance with reality that goes beyond immediate (outward or surface) appearance: it lays claim to knowledge of realities that transcend our immediate grasp. As Polanyi says, the mark of reality is its intimation of inexhaustible future manifestations. As transcending our own immediate grasp and our capacity for representation, such realities are accessible to points of view other than our own present viewpoint (other points of view simultaneous with and/or successive to our own present point of view). The very idea of the transcendence of reality in this sense is lost to consciousness when knowledge is thought of primarily, or only, as representative (propositional) knowledge, which is always limited to a single frame of reference. On the contrary, a post-critical intellectual ethos gives primacy to knowledge by acquaintance as the root and ground of knowledge by representation. Such an emphasis grants access to, and a basis for recognizing, reality-in-common. And only such an understanding will prompt a reader or hearer to seek to interpret explicit knowledge within its original living context of intimation -- intimation of aspects of reality transcending the specification in question. (Much of current post-modernist interpretation and criticism seems to me to take its license from just this divorce of explicit text from a living context of tacit intimation.) Truth, we want to say, is irreducible to, and inexhaustible for, any single perspective. Being so, it is transcendent in the sense just described: in its fullness or completeness truth-in-common transcends each and every finite perspective. But it makes no sense to say this if it is not simultaneously accessible (in however limited a respect) to each perspective and in a way that can be verified or confirmed in mutual recognition.

Third, in a post-critical intellectual ethos, **persons other than any given knower are recognized as having transcendental status** in relation to that person’s knowledge of transcendent truth. This is to say that they are necessary, in some sense *a priori* conditions for that knower’s laying claim to recognition of transcendent truth-in-common. Other persons are not merely sources of information that extend or supplement my own perspective. As such they (or their own unique mindbodily perspectives) cannot and must not be reduced to an extension of my own perspective. By “transcendental status” of other persons I mean to identify other persons as such as having access to -- and thereby affording me indirect access to -- irreplaceable, independent perspectives on the matters that concern me, perspectives in appeal to which I make my claim to transcendent truth-in-common with universal intent. Hence, I **need** other knowers to be there and be independent from me and I cannot afford to close myself off from any person whose perspective is relevant to the matters with which I am concerned. To the extent I close myself off to anyone, I close myself off to the dimension of transcendence in the matters that concern me that is uniquely accessible to that person’s perspective. Obviously the inverse holds true as well. Thus, we need to be in conversation with persons of different viewpoints from ourselves. The meaningfulness of the transcendence of truth and reality beyond our subjectivity is grounded in our access to perspectives onto that truth other than our own present perspective. Of course -- and here’s the rub -- for access to the other person’s perspective to become actual, an open receptivity toward the other and a truly empathetic exploration of his or her perspective onto the matters in question are necessary -- a receptivity and empathy which can, of course, be frustrated in so far as the other person is uncooperative or fails to develop and explore it himself. There are no sure strategies for overcoming these frustrations, although one of the better ones is to attempt an empathetic exploration of the other’s point of view onto one’s own concerns despite his uncooperative attitude and soliciting his recognition of the results of that exploration. Recognition of the transcendental status of other persons underscores and highlights that we are mutual occupants and explorers of a world-in-common, quite apart from the specific differences in our viewpoints. Even more: it is what makes there to be a world-in-common for any one of us.

Fourth, in a post-critical intellectual ethos, **there is mutual regard for and trust in each person's capacity to participate for herself in discovering truth-in-common through following up her own intimations of that truth, intimations that only she may be capable of following up.** This feature of a post-critical intellectual ethos is particularly relevant to the process of education. To educate is in this sense necessarily to draw forth understanding from within the student in the context of her ongoing experience and developing acquaintance with the world. This notion of education makes little or no sense at all on the basis of the modern critical assumptions that conceive of the mind as a closed container (with no direct access to reality beyond itself) and knowledge as primarily representative (explicit, propositional). On that model, education is principally thought to consist of conveying explicit information (both knowledge claims and their explicit justification). On the contrary, in a post-critical intellectual ethos, not only must there be a trust in each student's ability to come to discover further aspects of truth-in-common along with the teacher (and other students), but room must be granted her or him in the educational process to participate more and more fully in doing just that and plenty of opportunity to participate in experiences of mutual recognition in which each student's own mindbodily perspective makes a significant contribution. That, as Polanyi insists, we each know more than we can tell, behooves us to (a) give the other person the benefit of doubt when we fail yet to see what she may be getting at, and (b) make an empathetic effort to "catch on" to what she is trying to get at. To insist that the other person first make sense on our terms within our own frame of reference (however impersonalized they and it may be) in order to be taken seriously and her claims regarded as meaningful -- as the modern critical intellectual ethos would have it -- is to deprive ourselves not only of that person's insights; it is to close us off from reality in its transcendence.

These four features of a post-critical intellectual ethos would not be the only features of such an ethos. Yet they are perhaps the most important of its features relevant to the recovery of common sense. Apart from the emergence of a post-critical intellectual ethos, as Polanyi's thought anticipates it, I see no likelihood of the recovery of common sense as Arendt conceives it. I hope I have awakened in you enough of what that ethos amounts to for you to have a somewhat clearer sense of how to foster its growth in the context of your own work as teachers and scholars.

## WORKS CITED

- Arendt, Hannah. *The Human Condition*. Chicago, IL: University of Chicago Press, 1958.
- Booth, Wayne C. *Modern Dogma and the Rhetoric of Assent*. Chicago, IL: University of Chicago Press, 1974.
- Cannon, Dale. "The 'Primitive'/'Civilized' Opposition and the Modern Notion of Objectivity: A Linkage," *PRE-TEXT: An Inter-Disciplinary Journal of Rhetoric*, 2:1-2 (Spring-Fall 1981), 151-171.
- Elbow, Peter. "Methodological Doubting and Believing: Contraries in Inquiry," in his *Embracing Contraries: Explorations in Learning and Teaching*. New York and Oxford: Oxford University Press, 1986.
- Moore, George Edward. "A Defense of Common Sense," in his *Philosophical Papers*. London and New York, 1959.

Polanyi, Michael. *Personal Knowledge: Towards A Post-Critical Philosophy*. Chicago, IL: University of Chicago Press, 1958.

Wilshire, Bruce. *The Moral Collapse of the University: Professionalism, Purity, and Alienation*. Albany, NY: State University of New York Press, 1990.

---

---

## Submissions for Publication

---

---

Articles, meeting notices and notes likely to be of interest to persons interested in the thought of Michael Polanyi are welcomed. Review suggestions and book reviews should be sent to Walter Gulick (see addresses listed below). Manuscripts, notices and notes should be sent to Phil Mullins. All materials from U.K. contributors should first be sent to John Puddefoot. Manuscripts should be double-spaced type with notes at the end; writers are encouraged to employ simple citations within the text when possible. Use MLA or APA style. Abbreviate frequently cited book titles, particularly books by Polanyi (e.g., *Personal Knowledge* becomes *PK*). Shorter articles (10-15 pages) are preferred, although longer manuscripts (20-24 pages) will be considered.

Manuscripts should include the author's name on a separate page since submissions normally will be sent out for blind review. In addition to the typescript of a manuscript to be reviewed, authors are expected to provide an electronic copy (on either a 5.25" or 3.5" disk) of accepted articles; it is helpful if original submissions are accompanied by a disk. ASCII text as well as most popular IBM word processors are acceptable; MAC text can usually be translated to ASCII. Be sure that disks include all relevant information which may help converting files to Word Perfect or ASCII. Persons with questions or problems associated with producing an electronic copy of manuscripts should phone or write Phil Mullins (816-271-4386).

Insofar as possible, *TAD* is willing to work with authors who have special problems producing electronic materials.

Phil Mullins  
Missouri Western State College  
St. Joseph, Missouri 64506  
Fax (816) 271-4574  
e-mail: (mullins@acad.mwsc.edu)

Walter Gulick  
Eastern Montana College  
Billings, Montana 59101  
Fax (406) 657-2037

John Puddefoot  
Benson House, Willowbrook, Eton  
Winsor, Berks. SL4 6HL  
United Kingdom

# Michael Polanyi and the History of Science

Gerald Holton

© 1992

Mallinckrodt Professor of Physics and Professor of History of Science  
Jefferson Physical Laboratory,  
Harvard University  
Cambridge, MA 02138

*Editor's Note:* The following article was developed from Professor Holton's invited keynote address at the Polanyi centennial conference at Harvard Divinity School, February 28, 1992.

## ABSTRACT

*This essay is a study of Polanyi's career as scientist and philosopher from the point of view of the history of science, starting with the first step in his academic career helped by an intervention of Albert Einstein. Polanyi's ideas are better understood if placed against the background of then-fashionable philosophical movements, including logical positivism, and his disagreement with Bukharin in 1935. The essay studies the sources and ambitions of Polanyi's notion of the tacit dimension, his attitude to evolution and "emergence," and his contribution to the search for the origins of Einstein's Relativity Theory. His success in the last of these is shown to be an exemplar of Polanyi's own philosophy.*

## Biographical Background

I have been asked to talk about Michael Polanyi's career as a scientist and philosopher from the point of view of history of science, and also his contribution to the history of science. But in order to arrive at my conclusions, I shall have to make some excursions also into other fields, such as the branches of politics and epistemology that were fashionable during his career. For it is fair to say that Polanyi, or as he was named at his birth in March 1891 in Budapest, Mihaly Polanyi, was a unique person in the history of science, not least in the spectrum of his interests. The *Dictionary of Scientific Biography* lists his professional fields as chemistry, philosophy, and sociology.

The early family upbringing must have counted greatly in the eventual choice of his ideological direction. His parents' home was a place for "regularly held literary gatherings that attracted the leftist intelligentsia, some of them Marxists."<sup>1</sup> Moreover, the three children of the family joined left-wing youth movements at an early age. But as in the



case of so many central European intellectuals, the subsequent course of history radicalized Michael against authoritarian political movements.

He went on to study medicine at the University of Budapest, graduating just a year before World War I. Even before obtaining his diploma, he was publishing in chemistry, and although qualifying as a physician, he also earned a Ph.D. in chemistry with a thesis on thermodynamics. In the Albert Einstein Archives is a considerable amount of Einstein-Polanyi correspondence. It begins with a letter of January 30, 1913 from Zürich, by Einstein to Professor Bredig in Karlsruhe, who had been unable to judge Polanyi's thesis on entropy at high pressures, and who had sought advice on it from Einstein. The latter responded, "The publications of your Herr Polanyi please me very much." Einstein had checked them and found them altogether useful and full of fortunate thoughts. (He only wished that it had been done at less length.) Then follows a series of handwritten letters to Polanyi, in which Einstein does find some points of disagreement on matters of thermodynamics. But they clearly speak as equals. M. Polanyi's son, John C. Polanyi, later noted that Polanyi's first scientific paper was published on Einstein's recommendation, adding, "it really marked the first step in my father's academic career."<sup>2</sup>

Polanyi's interest in the history of science was perhaps triggered by the personal experience of many historic episodes. When he presented his theory at a meeting in Berlin, at which Einstein was another participant, his theory was rejected, and it took more than a decade until his views began to gain acceptance. Eventually, Polanyi became a researcher at the Kaiser Wilhelm Institute for Physical Chemistry in Berlin, where he developed his best-known work on dislocation theory. Leaving Germany when the Nazi party seized power in 1933, he became Professor of Physical Chemistry at the University of Manchester, where he continued a period of high achievements in physical chemistry. But perhaps under the pressure of contemporary history, his interest turned to the social sciences, and he resigned his professorship in 1948 to move to a chair in social studies. After his retirement in 1958, he continued his researches in the sociology and philosophy of science at Merton College, Oxford.

## **Two Sources of Polanyi's Approach**

To understand the animus of his philosophical-sociological views, one must remember that throughout most of his career as a scientist, a main model for philosophy of science for the scientific community came from the writings of logical positivists or logical empiricists, who in their most extreme writings seemed to say that science is based only on sense data and that all questions that cannot be subjected to tests in the laboratory are meaningless. But Polanyi's own work had convinced him that while objective knowledge is the basis of science as transmitted within and by the scientific community as a whole, during the nascent period of the individual scientist, he or she draws on resources quite different from those that follow the logic of justification of proven achievements. Some prominent philosophers thought otherwise. Thus in a passage quoted by Polanyi, Hans Reichenbach, in the essay "The Philosophical Significance of the Theory of Relativity," had written that "the philosopher of science is not much interested in the thought processes which lead to scientific discovery; he looks for a logical analysis of the completed theory, including the relationships establishing its validity. That is, he is not interested in the context of discovery, but in the context of justification."<sup>3</sup> To be sure, Reichenbach at once modified this severe judgment by adding "but the critical attitude may make a man incapable of discovery; and as long as he is successful the creative physicist may very well prefer his creed to the logic of the analytic philosopher." Yet, one should also note that no sooner had he made this generous

gesture he followed it up by writing: “The philosopher has no objections to a physicist’s beliefs so long as they are not advanced in the form of a philosophy.”<sup>4</sup>

To all this, Polanyi opposed the value of what he called “tacit knowledge,” the “personal notions and concepts” that are essential for progress and motivating, but that may be neither sanctioned by the scientific theories of the moment nor even always fully known to the creating scientist. I shall have much to say about this later, including the surprising test of the concept. But Polanyi went further by also opposing reductionism, the widely-held conviction that ultimately all biological and social phenomena will yield to the primacy of explanation in terms of mathematics, physics and chemistry--and one should add that since the triumph of quantum mechanics most physicists would say that chemistry itself is just that part of physics which really works.

Another, if I may say, radicalizing event in Polanyi’s life appears to have been his visit to the Soviet Union in the mid-1930s, where, he later wrote, he first encountered questions of philosophy. During a discussion with Bukharin in Moscow in 1935, Polanyi was especially appalled by the concept of “planning and guidance of scientific research,”<sup>5</sup> and returned from the trip eager to devote himself to work on behalf of the freedom of scientists to choose the content, subject and means of their work. Thereby he ran head-on into the opposition from the then strong movement in the United Kingdom, led in the opposite direction by such well-known scientists as J. D. Bernal, J. S. Haldane, and P. M. Blackett. The Society for the Freedom of Science, which Polanyi founded and which attracted many adherents in this country also (for example, P. W. Bridgman at Harvard), was no match.

In fact, with the explosion of research opportunities in the post-World War II era, the support system in most countries in the West showed itself capable of providing scientists with the necessary elbow room for the pursuit of their own ideas. But during the pre-World War II period in Britain, the prevalence and distinction of ideas expressed by scientists with Marxist leanings was reinforced by a famous conference on the history of science held in the early 1930s, in which a number of Soviet scholars made presentations. The most impressive and memorable among them was Boris Mikhailovich Hessen, who published a work entitled “The Social and Economic Roots of Newton’s *Principia*.” In it, he followed the demand of Friedrich Engels, whose views on the history of science were the most commanding element in his whole approach. I should inject here that when I visited China a few years ago to give some lectures on the history of science under the auspices of the Chinese Academy of Sciences, I found that for most Chinese scholars the one basic work in the history and philosophy of science was still the set of notes Engels had prepared for himself in the period between 1873 to 1882, published in 1927 under the title *Dialectics of Nature*. To Engels, in his words, “A single achievement of science like James Watts’ steam engine has brought in more for the world in the first 50 years of its existence than the world has spent on the promotion of science since the beginning of time.”<sup>6</sup> Science itself should thus be examined in the light of Marx’s theory of historical materialism. As Engels had put it, “It is not the consciousness of men that determines their existence, but their social existence that determines their consciousness.”<sup>7</sup> And Engels added, “From the very beginning the origin and development of the sciences has been determined by production.”<sup>8</sup>

In this spirit, Hessen, on British soil, attacked the very icon of abstract science in the form of Sir Isaac Newton, and proclaimed, as he put it, “the complete coincidence of the physical thematics of the period, which arose out of the needs of economics and technique, with the main content of the *Principia*.”<sup>9</sup>

## Toward the Tacit Dimension

Opposition to such currents of thought, accepted in the 1930s more widely in the West than we now may believe, surely determined Polanyi's motivation in large part. His visit to the Soviet Union, of which I spoke earlier, provided a force in the same direction. To document this, I can do no better than quote a part of Polanyi's introduction to his book, *The Tacit Dimension*, which he completed while a visitor at the Center for Advanced Studies at Wesleyan University in April 1966. There he bared to us his soul in these words:

I was struck [during the discussion with Bukharin] by the fact that this denial of the very existence of independent scientific thought came from a socialist theory which derived its tremendous persuasive power from its claim to scientific certainty. The scientific outlook appeared to have produced a mechanical conception of man and history in which there was no place for science itself. This conception denied altogether any intrinsic power to thought and thus denied also any grounds for claiming freedom of thought . . . .

My search has led me to a novel idea of human knowledge from which a harmonious view of thought and existence, rooted in the universe, seems to emerge.

I shall reconsider human knowledge by starting from the fact that *we can know more than we can tell*.<sup>10</sup>

You see here in the italicized phrase the head-on attack against the instrumentalism of the positivists who, since the time when Galileo made the division between primary and secondary qualities, declaring that we can know for certain only what can be rendered in quantifiable, shareable terms. And it is also a confrontation with the Wittgensteinian positivism which, in the last sentence of the *Tractatus* declares that whereof we cannot speak, thereof we must be silent--the implication being, of course, that such things are not worth talking about.

Perhaps I should be permitted here a brief digression of a personal nature. I came to know and like Michael Polanyi during the last two decades of his life, when he often visited the United States. He was of course always very gracious to younger colleagues; but we also shared a reaction against the more extreme form of positivism--although in those post-World-War-II decades, the Vienna Circle type of positivism had become ameliorated by taking interest in sociological, psychological, and historical components, and had moved away from the strict form that characterized its early phase. Although I was a doctoral thesis student of Bridgman who was often called the father of operationalism, and also was then a younger colleague and teaching assistant to Philipp Frank--the biographer of Einstein and one of the main movers of logical empiricism--I discovered through the study of the history of science that the model of science in terms of observable phenomena and the logic of analysis and mathematics alone by no means accounts for creation, discussion, acceptance, rejection, and ultimate fate of any scientific advance. There is a distinction between two meanings of science: science, let us call it  $S_1$ , which is the personal stage of science; and science  $S_2$ , that part of science which becomes the corpus that gets into textbooks as current, public science.

This distinction became particularly clear to me while assembling and studying the archives of Einstein at Princeton, from the mid-1960s on. Therefore in my experience I found myself also needing to go to a way of thinking about the growth of science which would add a dimension to the logical-analytic and the phenomenomic dimensions. In my case I opted for including a third dimension in the study of the origins of scientific thought, the thematic one.

That is not the subject of my talk; but it indicates why I had sympathy for Polanyi's wish to escape from a two-dimensional view of science.

But to return to Polanyi's presentation of *The Tacit Dimension*. Immediately after the passages which I quoted, ending with the point that "we can know more than we can tell," he adds, "This fact seems obvious enough; but it is not easy to say exactly what it means." And he gives the example of pattern recognition--for example, the recognition of somebody's face-- which, he might add nowadays, clearly is so idiosyncratic an activity that we can't teach it (yet) to a computer.

Polanyi tries to make it plausible that one can know and act on what one cannot tell by referring to Gestalt psychology. He refuses to think that Gestalt psychology can be reduced to the disposition of impressions on the retina or the brain. Rather, to him Gestalt is "the outcome of an active shaping of experience performed in the pursuit of knowledge. The shaping or integrating I hold to be the great and indispensable tacit power by which all knowledge is discovered, and once discovered is held to be true."<sup>11</sup> And it is not only perception which is an instance of tacit knowing. More generally, "our bodily processes participate in our perceptions";<sup>12</sup> and once we understand that this is the case one can "throw light on the bodily roots of all thought, including man's highest creative powers."<sup>13</sup>

This is analogous to Dilthey's and Lipp's teaching that there is an empathy or in-dwelling required for a proper knowledge of man and the humanities, an aesthetic appreciation that may not be possible to render directly in language. Polanyi believes the same to be the case for the natural sciences also.

To rely on a theory for understanding nature is to interiorize it. For we are attending from the theory to things seen in its light and are aware of the theory, while thus using it, in terms of the spectacle that it serves to explain. This is why mathematical theory can be learned only by practicing its application: its true knowledge lies in our ability to use it.<sup>14</sup>

Formalizing all knowledge, "to the exclusion of any tacit knowing," which is the aim of those who hold to the model of "strictly detached objective knowledge...", is "self-defeating, for in order that we may formalize the relations that constitute a comprehensive entity, for example the relations that constitute a frog, this entity, i.e., the frog, must be first identified informally by tacit knowing."<sup>15</sup> And Polanyi adds that the most "striking concrete example of an experience that cannot possibly be represented by any exact theory" is simply "the experience of seeing a problem, as a scientist sees it in his pursuit of discovery."<sup>16</sup> What you need most at that stage is "the intimation of something hidden, which we may yet discover." It is this "tacit foreknowledge of yet undiscovered things"<sup>17</sup> which provides the sometimes passionate motivation to uphold a direction of work or a theory against heavy pressures from the outside.

## **Elaboration and Responses**

This approach has two results. One is that he is in head-on conflict with Karl Popper, by severely disagreeing with Popper's doctrine that "The scientist is not only indifferent to the outcome of his surmises, but actually seeks their refutation."<sup>18</sup> Polanyi responds, "This is not only contrary to experience but logically inconceivable. The surmises of a working scientist are born of the imagination-seeking discovery. Such effort risks defeat, but never seeks it. It is in fact his craving for success that makes the scientist take the risk of failure. There is no other way."<sup>19</sup> Obviously, a working scientist is speaking here.

The second result is that Polanyi touches here, without saying so, on the very old problem of how major discovery is possible in the first place, given the obvious, severe limitations of the human mind, faced with the infinitude of natural phenomena and their connections. Einstein himself tried to answer it in 1918 with the daring suggestion that our minds are guided by “what Leibniz termed happily ‘the preestablished harmony’.”<sup>20</sup> You will recall that Gottfried Wilhelm Leibniz had postulated that our ability to discover the laws concerning material bodies is one aspect of the unity from which God created the two apparently separate entities of the universe, the spiritual and the material. Each of these obeys its own laws, but they can interact in sympathetic unison, somewhat in the way one string instrument goes into resonance and picks up the sounds made by a second one which is tuned to it. Or to use Leibniz’s own words to explain this possibility of harmonious interaction, in which he uses an image that must have delighted Einstein, “the souls follow their laws and the bodies follow theirs, but nevertheless these two beings of entirely different kind meet together and correspond to each other like two clocks perfectly regulated at the same time. It is this that I call the theory of preestablished harmony.”

In the early 19th century, the Danish physicist Hans Christian Oersted also struggled with this problem; in his way of reading Immanuel Kant, which was typical for the *Naturphilosophen*, Kant’s insistence that phenomenal facts are not things in themselves but mere appearances, culminated in the warning that the study of these appearances and the connections between them are an interaction not with nature but with one’s own mind. As Kant had put it in the *Critique of Pure Reason*,

That nature should direct itself according to our subjective ground of apperception, and should indeed depend upon it in respect of its conformity to law, sounds very strange and absurd. But when we consider that this nature is not a thing in itself but is merely an aggregate of appearances, so many representations of the mind, we shall not be surprised that we can discover it only in the radical faculty of all our knowledge, namely in transcendental apperception, in that unity on account of which alone it can be entitled the object of all possible experience--that is, nature.<sup>21</sup>

Oersted, and I think Polanyi also, found this idealism uncongenial to a working scientist’s mind, and Oersted therefore invented a modification, in his splendid conception of an “anticipating consonance”<sup>22</sup> existing between the mind of the scientist and the workings of nature. Polanyi comes very close to this notion. For example, he writes,

When a discovery solves a problem it is itself fraught with further intimations of an indeterminate range, and ...when we accept the discovery as true, we commit ourselves to a belief in all these as yet undisclosed, perhaps as yet unthinkable, consequences. This is of course not explicit knowledge, and [he acknowledges] there is no explicit justification for the perception of a dawning truth.<sup>23</sup>

Still, Polanyi never quite admitted that these elements of tacit knowledge and of intimations of undisclosed consequences are, more often than not, simply wrong, although as a working scientist he must have observed this to be the case. But he would also have known that there is a certain pattern to these intimations, or anticipations. Almost by definition, a major scientist is one for whom this mechanism somehow works, at least often enough. At any rate, whether these anticipations are correct or turn out to be “a delusion”<sup>24</sup> (his words), Polanyi holds it futile to search for strictly impersonal criteria of its validity, “as positivistic philosophies of science have been trying to do for the past 80 years or so.”<sup>25</sup>

In the climate of the decay of logical positivism after the mid-fifties, Polanyi's conception of tacit knowledge, or personal knowledge, did not remain a prominent target of attack. In any case it was never really a completely thought-through theory of scientific creativity. On the other hand, a concept which Polanyi thought to be directly related to the tacit dimension, namely "emergence," seems to me to have been then, and remains now, a focus of debate and opposition, particularly from among biologists. To rescue biology from reductionism, from being dissolved into mere physics and chemistry, Polanyi announced "the principle that the operations of a higher level can never be derived from the laws governing its isolated particulars,"<sup>26</sup> hence that "none of the biotic operations can be accounted for by the laws of physics and chemistry."<sup>27</sup>

Here we encounter a newer version of the old debate which so agitated scientists and philosophers in the 19th century, of mechanism versus vitalism. Of course Polanyi did not deny that there is "a great deal of truth in the mechanical explanation of life",<sup>28</sup> but he wanted to insist that living functions are "determined at all stages by a combination of a mechanism with organismic regulation."<sup>29</sup> At the very least, he said, "a principle not present in the inanimate must come into operation when it gives birth to living things."<sup>30</sup> Such views, coming from a prominent physical chemist, found probably a much more willing audience outside the laboratory than in it, and this may account in part for the fact that we are holding this meeting in recognition of the work of Michael Polanyi not in our Mallinckrodt Laboratory of Chemistry, but in the Sperry Room of the Harvard Divinity School.

Also, to Polanyi, the principal interest of evolution was the rise of man from "lower" beings. To him, the problem of evolution seems to boil down to understanding how we reached "our position as the highest form of life on earth, and our own advent by a process of evolution."<sup>31</sup> But we are now in the age of anti-specieism, in which even the Spotted Owl has still some political clout; so one cannot expect much resonance nowadays with Polanyi's call for a reshaping of "the problem of evolution deformed by the current theory of evolution."<sup>32</sup>

The origin of species was a preoccupation which he thought can only make us "lose sight" of that more fundamental question. Properly understood, evolution is an expression of the concept of the "stratified universe of living things,"<sup>33</sup> in which progress from one level to the other cannot be done via reduction, or even by the continuation of the logic of one level with respect to the logic of the second above it, but rather by emergence--"the first emergence by which life comes into existence being the prototype of all subsequent stages of evolution."<sup>34</sup> Polanyi is quite frank that such ideas connect with earlier versions encountered in the history of science, for example, that of Teilhard de Chardin.<sup>35</sup>

With such tools, Polanyi struggled with what he called the concept of the "potentiality for obedience to higher demands,"<sup>36</sup> and "the capacity to feel reverence for men greater than oneself,"<sup>37</sup> both of which he regarded as aspects of the process of evolution. The Harvard Biology Labs being, as it were, only a stone's throw away from this room, one must acknowledge that within a very different system of concepts than Polanyi's, sociobiologists such as E. O. Wilson are in fact struggling with very similar problems, summarized under the heading Altruism. I mention this only to indicate what to an historian of science is again and again so impressive: the continuity of preoccupations of the same sort within very different frameworks and worldviews, from the pre-Socratics to the end of the 20th century.

## **Consequences of Polanyi's Doctrines**

As if by simple extrapolation, we can almost certainly guess where Polanyi's thought would land next. It is the modern base for moral belief. How, he asked, can

intellectual powers, grounded in tacit knowing and descended from evolutionary emergence...exercise the kind of responsible judgment which we must claim if we are to attribute a moral sense to man. In a world where, it is widely held, scientific rationalism has impaired moral beliefs...by shattering their religious connections, where the Enlightenment weakened ecclesiastical authority, and modern positivism denied justification to all transcendent values;<sup>38</sup>

where, he asked, can one find a theory for reestablishing the justification of moral standards? Control through established ecclesiastical authority appealed to Michael Polanyi as little as the control of science itself. Thus he wrote,

It was only when the philosophy of Enlightenment had weakened the intellectual authority of the Christian churches that Christian aspirations spilled over into man's secular thoughts and vastly intensified our moral demands on society. The shattering of ecclesiastical control may have been morally damaging in the long run, but its early effect was to raise the standards of social morality.<sup>39</sup>

What he feared most of all was the fusion of scientific skepticism and moral perfectionism. He saw that hybrid represented by modern existentialism and by what he called "an angry absolute individualism."<sup>40</sup> And the same hybrid also, by demanding a total transformation of society as a utopian project, expressed itself in Marxism as a political doctrine. In fact, it would be difficult to associate Polanyi's ideas with allegiance to any "ism;" for by putting centrally the concept of tacit thought as an indispensable element of all knowing, "The transmission of knowledge from one generation to the other must be predominantly tacit,"<sup>41</sup> and therefore cannot become concretized in a uniquely shareable ideology at a given time or through history.

And yet, apparently paradoxically, Polanyi sees a way of attempting total individual understanding with one's own mental faculties. That alternative is "entrusting oneself...to a teacher or leader."<sup>42</sup> St. Augustine observed this when he taught, "Unless you believe, you shall not understand." However, Polanyi does not hold out great hope that religion as now understood could fill this place for the need for tradition. "Modern man's critical incisiveness must be reconciled with his unlimited moral demands first of all on secular grounds. The enfeebled authority of revealed religion [as he called it] cannot achieve this reconciliation; it may rather hope to be *revived* by its achievement."<sup>43</sup>

Polanyi's final paragraph indicates his puzzled frame of mind on this point: "Perhaps this problem cannot be resolved on secular grounds alone. But its religious solution should become more feasible once religious faith is released from pressure by an absurd vision of the universe, and so there will open up instead a meaningful world which could resound to religion."<sup>44</sup> This view is connected, I believe, with Einstein's much better developed ideas on Cosmic Religion.

I don't see it as my task to provide a rebuttal to, or even a general assessment of Polanyi's thoughts. This has been done many times, for example, in the volume *Intellect and Hope*, edited by Langford and Poteat. But perhaps a few words are appropriate about the way comments on *The Tacit Dimension* generally run. Let me refer here to Robert S. Cohen's essay in the volume edited by Marjorie Grene, *Interpretations of Life and Mind*, an essay entitled "Tacit, Social and Hopeful." Cohen, both a physicist and a philosopher of science, acknowledges right away that the tacit dimension of knowing appears to him "acceptable and well-established."<sup>45</sup> Polanyi did not discover tacit knowledge, but he discovered at least how important it was in his own epistemology, and made more of it than many others. For Polanyi, "knowledge is situated within a background of clues, or a tacit background." That "means that there is a reality hidden behind the discovered objects. And so objects as we know them become clues to an as yet undiscovered and

deeper level of reality.”<sup>46</sup> For philosophy, this poses an immense challenge owing to the whole series of progressively more hidden realities it implies.

But, Cohen asserts, there is in all this a hint that Polanyi has a novel and interesting though undeveloped view of how the history of science progresses. “Polanyi asserts that different epochs of science offer different cue-maps, different forms of in-dwelling.”<sup>47</sup> Any working scientist who has passed through the development of his or her own fields over a couple of decades (and nowadays that is an immense distance), with the possibility of vast changes of mind and attitudes--is likely to assent to this picture.

## The “Big Book” and “the Story of Relativity”

The work that most closely connects Polanyi with the field of the history of science as scholarship is of course chiefly what he called his “big book,” *Personal Knowledge: Toward a Post-Critical Philosophy*, published in 1958. As he says at the beginning of his Preface,

This is primarily an inquiry into the nature and justification of scientific knowledge. But my reconsideration of scientific knowledge leads on to a wide range of questions outside science. I start by rejecting the ideal of scientific detachment. In the exact sciences this false ideal is perhaps harmless, for it is in fact disregarded there by scientists. But we shall see that it exercises a destructive influence in biology, psychology and sociology, and falsifies our whole outlook far beyond the domain of science. I want to establish an alternative ideal of knowledge, quite generally.

Hence the wide scope of this book and hence also the coining of the new term I have used for my title: personal knowledge. The two words may seem to contradict each other: for true knowledge is deemed impersonal, universally established, objective. But the seeming contradiction is resolved by modifying the conception of knowing.<sup>48</sup>

That new conception is based on the view that the personal participation of the knower in acts of understanding does not make such understanding *subjective*. The act of comprehension is “a responsible act claiming universal validity. Such knowing is indeed *objective* in the sense of establishing contact with a hidden reality.”<sup>49</sup>

The book was based on his Gifford Lectures, delivered in 1951-52 at the University of Aberdeen. But he confesses that he spent “nine years almost exclusively on the preparation of this book.”<sup>50</sup> Nevertheless, as even his friends and followers admit, it is by no means an easy book to read or accept. In their introduction to the collection, *Intellect and Hope, Essays in the Thought of Michael Polanyi*, the editors, Thomas A. Langford and William A. Poteat, begin with the sentence: “*Personal Knowledge* is an exasperating book.” They add,

If one does not find it exasperating, one has not *really* read it... There can be no doubt that *Personal Knowledge* comes to us with its rhetoric all out of focus. It is a mixed bag.... Philosophers by and large, at least English-speaking philosophers on both sides of the Atlantic, find *Personal Knowledge* annoying because it is dangerously loose, innocuous because it says what has been said elsewhere and better, or irrelevant because its preoccupations are no legitimate concern of philosophy or of philosophers.... One never ‘gets going.’<sup>51</sup>



There is no doubt that the book is maddening in spots. For example, Polanyi writes, “The principal purpose of this book is to achieve a frame of mind in which I may hold firmly to what I believe to be true, even though I know that it might conceivably be false.”<sup>52</sup> It has been suggested that it may be best to consider it an example of the confession literature, with such distinguished antecedents as Augustine and Rousseau.

Polanyi begins by going over a version of the development of the ideas of the solar system during the scientific revolution of the 17th century as a consequence of the Copernican model, and he draws on various well-known anecdotes to show how foolish it would be to hold that these early scientists forbade themselves to “go beyond experience by affirming anything that cannot be tested by experience.”<sup>53</sup> Ecstatic passages from Kepler easily show the opposite to be the case. But Polanyi devotes only a few pages to these matters, for his main proof depends on what he calls “the story of Relativity.” That theory was indeed taken by the positivists to show that through instrumentalist thinking Einstein had freed 19th-century physics from its metaphysical underpinnings, and thereby made the breakthrough to modern science. Polanyi correctly points out that every textbook of physics tried to present the rise of relativity as the necessary response to an experimental situation, namely the supposed null result of the Michelson-Morley experiment searching for an ether drift in 1887—fully in accord with the sensationist or positivist view of how theories must proceed. (As well, we should add, the easiest *pedagogic* method of convincing students that they must take seriously what otherwise would be so counter-intuitive.) But, Polanyi declares, “the historical facts are different.”<sup>54</sup> He noted that Einstein, in his publication, had not mentioned the Michelson-Morley experiment at all, and concludes from it that this theory was proposed “on the basis of pure speculation, rationally intuited by Einstein before he had ever heard about it.”<sup>55</sup>

## **An Experimental Proof of Tacit Knowledge**

Let us stop at this important point in Polanyi’s book and consider what you, as an historian of science, would now do on the basis of such a personal hunch or presupposition. It is an interesting enough case to give it serious treatment. You would begin by searching the literature of the period around the publication of the theory, encompassing perhaps a decade to either side of it, and not only of Einstein but of his contemporaries, to see who says what, if anything, about the Michelson-Morley experiment but also about the others of the same sort which were available by 1905. Then you would try to consult available documents in the archives of the main persons involved in the genesis and debates, pro and con, of the special theory of relativity, in the hope of finding contemporaneous exchanges or unpublished drafts and manuscripts from Einstein, but also from H. A. Lorentz, H. Poincaré, etc. You would also try to consult oral history interviews, autobiographical writings at a later stage, and so forth. If a promising Ph.D. candidate had come to me with such a project, I would have estimated it would take a year or two of research and quite a bit of travel to archives. In fact, as some of you may know, I published a long article on this case in *Isis* in 1969, entitled “Einstein, Michelson, and the Crucial Experiment,” and it did take me the better part of a year.

But Michael Polanyi did none of that. As he tells us in his book *Personal Knowledge*, he availed himself of a remarkable shortcut. After all, he had been in touch with Einstein since 1913. Taking advantage of his entrée, and in order “to make sure” of his hunch that Einstein’s theory was based on “pure speculation, rationally intuited by Einstein before he had ever heard” of the Michelson-Morley experiment, Polanyi got in touch with the physicist N. Balazs who was working with Einstein in Princeton in the summer of 1953, and asked his fellow former-countrymen to submit this speculation to Einstein himself.

In fact Balazs had an interview with Einstein on that subject, describing it to Polanyi in a letter of July 8, 1953. He reported that Einstein concurred that (as Balazs wrote) “The Michelson-Morley experiment had no role in the foundation of the theory. He got acquainted with it while reading Lorentz’s paper about the theory of this experiment (he of course does not remember exactly when, though prior to his papers), but it had no further influence on Einstein’s considerations, and the theory of relativity was not founded to explain its outcome at all.”<sup>56</sup> What did matter during the genesis, Einstein had told Balazs, was his concern with a series of more fundamental problems, such as the impression an observer, moving with the velocity of light, would have while viewing the light wave, and the lack of symmetry of action between coils and magnets when they are moved with respect to each other in producing the induction of currents in the coil.

Needless to say, this second-hand report of what Einstein may have said to Balazs, which Polanyi strangely chose to quote only in a footnote in his book, was not found convincing either by philosophers of science or by historians of science, the more so as the book as a whole was using this report as a tool in an otherwise quite idiosyncratic attempt at a new epistemology. Not until years later, when all the supporting work that I have mentioned above as necessary was done, would there be the kind of impact on the scholarly community which Polanyi had hoped to make by his shortcut. (And even then, I should add, to this day, long after all the supporting documents have been produced, there are still a few dedicated empiricists or experimenticists who will have none of this evidence, and they are holding on gloriously to their suspension of disbelief, which Samuel Taylor Coleridge thought was proper only for poets.)

And yet, and yet.... Polanyi *was* right. His hunch, of which he was so convinced that he tested it only in the most perfunctory way, through a third party rather than even taking the trouble to put the question to Einstein himself, was borne out later by a great deal of more laborious work by somebody else. To be sure, Polanyi overreached when he declared that Einstein’s theory was framed “on the basis of pure speculation, rationally intuited,” but it was evidently based chiefly both on the speculation about a thought experiment (that of traveling with the speed of light along a light beam) and some old, well-established 19th-century experiments long before Michelson’s, those of Faraday, Fresnel, and of stellar aberration.

How could that be? Was it merely an accident that Polanyi’s presupposition was borne out on the whole? Perhaps. But I prefer to think of it in Polanyi’s own terms. After all, for decades he had been a very prominent and successful scientist himself, engaged both in experiment and theory. He had *internalized* how scientists think, and had observed how others do their work, in finished publications as well as in conversations, and in debates, for example during his time in Berlin, when Einstein was also there and Polanyi saw much of him. In short, if there is such a thing as *apperception*, personal or *tacit knowledge*, and *in-dwelling*, we must allow Polanyi to have had those capabilities as a scientist himself. Or to put it in Hans Christian Oersted’s terms: Polanyi’s prediction of how serious research in the entirely different profession of the history of science would illuminate the genesis of relativity was an act of anticipating consonance with the real state of affairs, one that would be made fully clear only later.

In short, I would like to hold open the possibility that it is precisely Polanyi’s *lack* of having made a serious study and yet having reached the right sort of conclusion that constitutes, as it were, an experimental verification of his concept of personal and tacit knowledge. We all know that this sort of mechanism has worked in science, from the days of Kepler and Galileo who made advances to which their purely scientific knowledge of the time did not really entitle them. Polanyi is the first example I know where the same sort of thing happened in the pursuit of the history of science itself.<sup>57</sup>

## Endnotes

(1) Ferenc Szabadaary, *The Dictionary of Scientific Biography (DSB)* (New York: Scribner's, 1975), vol. XVIII, p. 718.

(2) Letter of 5 June 1964 from J.C. Polanyi to Helen Dukas (who had been Einstein's secretary).

(3) H. Reichenbach, in *Einstein: Philosopher-Scientist*, ed. Paul A. Schlipp (Evanston, IL: Library of Living Philosophers, 1949), p. 289. This reference is given by Polanyi in *Personal Knowledge* (Chicago: U. of Chicago Press, 1958), p. 14, footnote 1 (along with a quote from H. Mehlberg expressing a similar point of view.)

(4) Similar passages can be found in many places, for example in Karl Popper's <F255P255MIC255>The Logic of Scientific Discovery (New York: Harper and Row, 1959), p. 31.

(5) See Ferenc Szabadaary's summary of Polanyi's views in *DSB*, p. 719: "In the mid 1930's, Polanyi visited the Soviet Union. After his return, he wrote several articles and a book criticizing Soviet economic notions, and on planning and guidance of scientific research.... He was a supporter of complete freedom in scientific research, not only concerning its content but also in the choice of the subject."

(6) F. Engels, "Outlines of A Critique of Political Economy", in *Collected Works* (New York: International Publishing Co., 1975), vol. II, p. 428. Quoted and referenced by Robert S. Cohen in *DSB*, vol. XV, p. 136.

(7) F. Engels, *Preface to a Contribution to the Critique of Political Economy* (New York: 1970), pp. 20-21. Quoted by R.S. Cohen in *DSB*, vol. XV, p. 136.

(8) F. Engels, *Dialectics of Nature* (Moscow: 1954), p. 247. Quoted by R.S. Cohen in *DSB*, vol. XV, p. 136.

(9) B.M. Hessen, *The Social and Economic Roots of Newton's Principia*, introduction by Robert S. Cohen (New York: H. Fertig, 1971), p. 26.

(10) M. Polanyi, *The Tacit Dimension* (New York: Anchor book A540, Doubleday, 1967), pp. 3-4.

(11) *ibid.*, p. 6.

(12) *ibid.*, p. 7: "...bodily processes are prominent in the operations of perception." Similarly, Einstein reports that what he called "the elements of thought" were "in any case of visual and some muscular type." [Jacques Hadamard, *The Psychology of Invention in the Mathematical Field* (Princeton, N.J.: Princeton University Press, 1945), pp. 142-143.] See also Edmund Husserl, who writes: "Moving freely within the moment of experience which brings what is present into my intuitional grasp, I can follow up these connections of the reality which immediately surrounds me. I can shift my standpoint in space and time, look this way and that, turn myself forwards and backwards; I can provide for myself constantly new and more or less clear and meaningful perceptions and representations, and images also more or less clear, in which I make intuitable to myself whatever can possibly exist." [Edmund Husserl, *Ideas*, trans. W.R. Boyce Gibson (New York: Collier Books, 1962), chapter 3, section 27, p. 92.] See, further, Maurice Merleau-Ponty: "We grasp external space through our bodily situation. A 'corporeal or postural schema' gives us at every moment a global, practical, and implicit notion of the relation between our body and things... A system of possible movements, or 'motor projects', radiates from us to our environment. Our body is not in space like things; it inhabits or haunts space. It applies itself to space like a hand to an instrument..." ["An Unpublished Text by Maurice Merleau-Ponty", trans. Arleen B.

Dallery, in Maurice Merleau-Ponty, *The Primacy of Perception*, James M. Edie ed., (Evanston, IL: Northwestern University Press, 1964), p. 5; first published as “Un inédit de Maurice Merleau-Ponty”, in *Revue de métaphysique et de morale*, no. 4 (1962), 401-409.]

(13) M. Polanyi, *The Tacit Dimension*, p. 15.

(14) *ibid.*, p. 17.

(15) *ibid.*, p. 20.

(16) *ibid.*, p. 21.

(17) *ibid.*, p. 21: “For to see a problem is to see something that is hidden. It is to have an intimation of the coherence of hitherto not comprehended particulars.” Again, compare with Husserl: “What is actually perceived ... is partly pervaded, partly girt about with a *dimly apprehended depth or fringe of indeterminate reality* ... Moreover, the zone of indeterminacy is infinite. The misty horizon that can never be outlined remains necessarily there.” [E. Husserl, *Ideas*, p. 92.] See also Merleau-Ponty: “The characteristic property of the Visible is to have a layer of invisibility in the strict sense, which it makes present as a certain absence.” [“Eye and Mind,” trans. Carleton Dallery, in M. Merleau-Ponty, *The Primacy of Perception*, p. 187; first published as “L’Oeil et l’Esprit” in *Art de France*, vol. 1, no. 1 (January, 1961).] For a discussion, see E. Wigner and R.A. Hodgkin, *Bibliographical Memoirs of Fellows of the Royal Society*, vol. 23 (1977), p. 430, footnote.

(18) Polanyi, *The Tacit Dimension*, p. 78. Polanyi quotes Popper’s words and gives the reference in footnote 10, p. 98: “This view has been persuasively expressed by K.R. Popper, e.g. in *The Logic of Scientific Discovery*, New York, 1959, p. 279.”

(19) *ibid.*, pp. 78-79.

(20) A. Einstein, in an address given at a celebration of Max Planck’s sixtieth birthday before the Physical Society in Berlin. In *Ideas and Opinions* (New York: Bonanza Books, 1954), p. 226.

(21) I. Kant, *Critique of Pure Reason*, A 114.

(22) H.C. Oersted, “On the Spirit and Study of Universal Natural Philosophy” in *The Soul of Nature*, trans. Leonora and Joanna B. Horner (London, 1852; reprint London, 1966), p. 450.

(23) Polanyi, *The Tacit Dimension*, p. 23.

(24) *ibid.*, p. 25: “The anticipation of discovery, like discovery itself, may turn out to be a delusion.”

(25) *ibid.*, p. 25.

(26) *ibid.*, p. 36.

(27) *ibid.*, p. 42: “Moreover, the conclusion that machines are defined by the fact that boundary conditions expressly left open by physics and chemistry are controlled by principles foreign to physics and chemistry, makes it clear that it is in respect of its characteristic boundary conditions that a mechanically functioning part of life is not explicable in terms of physics and chemistry.”

(28) *ibid.*, p. 42, immediately following the preceding quote.

(29) *ibid.*, p. 43.

(30) *ibid.*, p. 44. (The very definition of emergence.)

(31) *ibid.*, p. 47.

(32) *ibid.*, p. 46.

(33) *ibid.*, p. 50.

(34) *ibid.*, p. 49.

(35) See *ibid.*, p. 46. See also *Personal Knowledge*, p. 388, where he associates his views with “noogenesis” and cites Teilhard in a footnote.

(36) *ibid.*, p. 52.

- (37) *ibid.*, p. 52.
- (38) *ibid.*, p. 56.
- (39) *ibid.*, p. 57.
- (40) *ibid.*, p. 59.
- (41) *ibid.*, p. 61.
- (42) *ibid.*, p. 61.
- (43) *ibid.*, p. 62.
- (44) *ibid.*, p. 92.
- (45) R.S. Cohen, "Tacit, Social and Helpful", in M. Grene, ed., *Interpretations of Life and Mind* (London: Routledge and Kegan Paul, 1971), p. 137.
- (46) *ibid.*, p. 138.
- (47) *ibid.*, p. 140.
- (48) M. Polanyi, *Personal Knowledge*, Preface, p. vii.
- (49) *ibid.*, p. vii.
- (50) *ibid.*, p. ix.
- (51) T. Langford and W. Poteat, eds., *Intellect and Hope. Essays in the Thought of Michael Polanyi* (Durham, N.C.: Duke University Press, 1968), p. 3 and pp. 6-7.
- (52) M. Polanyi, *Personal Knowledge*, p. 214. T. Langford and W. Poteat quote this passage in their introduction to *Intellect and Hope*, p. 14, in the context of comparing *Personal Knowledge* to the *Confessions* of St. Augustine.
- (53) The import of such passages is likely to be Polanyi's opposition to the teaching of scientist-philosophers such as Ernst Mach of who Polanyi says (p. 9) that "his book, *Die Mechanik*, published in 1883, founded the Vienna school of positivism."
- (54) *ibid.*, p. 10.
- (55) *ibid.*, p. 10.
- (56) *ibid.*, pp. 10-11, footnote 2.
- (57) I gladly acknowledge the help of Anne Davenport in converting my address into an article.

## Selected Bibliography

- Cohen, Robert S. "Tacit, Social and Hopeful," in *Interpretations of Life and Mind. Essays around the Problem of Reduction*, Marjorie Grene, ed. (London: Routledge & Kegan Paul, 1971), 137-148.
- Gelwick, Richard. *The Way of Discovery. An Introduction to the Thought of Michael Polanyi*. (New York: Oxford University Press, 1977).
- Holton, Gerald. "Einstein, Michelson and the 'Crucial' Experiment," in *Thematic Origins of Scientific Thought: Kepler to Einstein* (Cambridge, MA: Harvard University Press, 1988), chapter 8 and pp. 477-478.
- Langford, Thomas A. and William H. Poteat, eds. *Intellect and Hope. Essays in the Thought of Michael Polanyi*. (Durham, NC: Duke University Press, 1968).
- Polanyi, Michael. "The Growth of Science in Society," *Minerva*, vol. 5, no. 4 (Summer 1967), 533-546.
- Polanyi, Michael. "Life's Irreducible Structure," *Science*, vol. 160 (21 June 1968), 1308-1312.
- Polanyi, Michael. *Personal Knowledge. Towards a Post-Critical Philosophy* (Chicago, IL: University of

Chicago Press, 1958).

Polanyi, Michael. "The Potential Theory of Adsorption," *Science*, vol. 141 (13 September 1963), 1010-1013.

Polanyi, Michael. *Science, Faith and Society* (London: Oxford University Press, 1946).

Polanyi, Michael. *The Tacit Dimension* (Garden City, NY: Doubleday & Co., Inc., 1967).

Szabadvary, Ferenc. "Mihaly (Michael) Polanyi," *Dictionary of Scientific Biography*, vol. 18 (New York, NY:

Charles Scribner's Sons, 1981), 718-719.

Wigner, Eugene and R. A. Hodgkin. Biographical entry for Michael Polanyi, in *Biographical Memoirs of Fellows of the Royal Society*, vol. 23 (1977).

# Polanyi and Post-modernism

Allen R. Dyer

## ABSTRACT

*Post-modernism is receiving much attention, but it is often seen as merely an extrapolation of modernism. Michael Polanyi's post-critical epistemology offers a useful way of understanding post-modernism. The modern objectivism of critical thought leads to a dead-end dehumanization. Polanyi offers a recovery of the human dimension by demonstrating the ways in which all knowing, especially scientific discovery, requires human participation. An analogy is drawn with post-modern art and architecture, which similarly attempt to recover the human form and traditional or classical ornamentation in a way which goes beyond the sterile abstractness of modernism.*

As we near the end of the twentieth century, we are increasingly hearing references to something called “post-modernism.” Presumably post-modernism is something beyond modernism. The modern age, which had become so familiar to us, is now history. It has passed almost unheralded, and now we must adjust to something new. Whether this is a source of lament or rejoicing depends on how we understand modernism. Our quest for cultural self-understanding forces us to come to terms with the issues that Michael Polanyi, almost half a century ago, insisted were of greatest urgency.

The quest for a definition of post-modernism may remain as elusive as an attempt to get a clear picture of the future by gazing through a crystal ball. What the future will hold must be more than an extrapolation of present trends. We must understand our present situation in historical context, and unless we are to be passive victims of our future, we must work to shape our vision of destiny according to values and ideals which we freely and deliberately choose and openly acknowledge. In order to understand post-modernism, we must get a bearing on modernism. Indeed in the words of Fredric Jameson, “It is safest to grasp the concept of the postmodern as an attempt to think the present historically in an age that has forgotten how to think historically in the first place”(73).

The quest for a definition of post-modernism is a bit like trying to find one's way out of a fog without navigational aids. The vision of reality offered to us by the modernist accounts of objectivity show us only the fog and not our location in it. It is these accounts of objectivity offered by critical thought which Polanyi explicitly repudiated in his post-critical epistemology. I therefore suggest that using the clues Polanyi offers us, we should be able to see clear of the cultural fog of the false objectivity of impersonal knowing. Polanyi's post-critical epistemology offers us a coherent vision of what is now being called post-modernism. For Polanyi, knowledge is not an impersonal undertaking but a very personal affirmation of that which we claim to know. Critical thought, which we equate with modernism, attempted to distance the knower from the known. Polanyi's post-critical knowledge recovers the human dimension of knowledge by demonstrating that even in science, held to be the most precise form of knowledge by the modernists, the scientist relies on tacit unspecifiable clues in pursuit of discovery and any claim to knowledge must be accredited by the community of knowers.

We may hope that the future is a fiduciary program based on trust (or faith) and human understanding, not an attempt at control of the human and natural worlds according to some covert and unacknowledged ends, as has been the case with modernism. We hope that science will be used as a human tool to achieve human ends rather than a mechanism pretending value neutrality and subverting humane goals. We especially hope that politics will be truly political and not merely a facade hiding totalitarianism cleverly masked in the false objectivity and pseudoscientific morality of Marxism. Now that we have at last witnessed the collapse of Soviet Marxism, it is most appropriate that we take a look at the concerns Polanyi expressed in his post-critical philosophy. For there can be little solace in the suffering of the former Soviets, taken glibly as a triumph of capitalism, when the familiar errors of modernity remain as entrenched as ever in Western thought. This I take to be the lesson of the Hungarian Revolution, which Polanyi called to our attention in his important 1966 essay by that name. If we read the lessons of history correctly, we are not just witnessing the collapse of an economy but also the collapse of an ideology.

Most accounts of post-modernism, shrouded as they are in the cultural fog of modernist objectivity, seem to grope for signs of change, something slightly different, a harbinger of what is perhaps yet to come. Polanyi's radical traditionalism offers a clear view on modernity and thus a prospect for understanding post-modernism. Before elaborating that vision I will sketch some of the attempts of various disciplines to come to terms with post-modernism. While my brief sketches remain incomplete, I hope they are suggestive.

## **TOWARD A DEFINITION OF POST-MODERNISM**

The first harbinger I recall of post-modernism as a cultural phenomenon comes from the late novelist Walker Percy. His *Love in the Ruins* (1971) referred fondly to the "old modern age" with a sense of irony which gave perspective on the present as a historical phenomenon. His old modern age was shockingly familiar, a culture centered around the automobile with residential communities of imitation plantations surrounding a golf resort. There is a love clinic for couples who have become bored with their affluence and each other. And with the shocking brand name recognition which brings familiarity up close, the major landmark in this culture is the local Howard Johnson motel, where much of the action takes place.

Percy's technique is in many ways Kierkegaardian in his exaggeration of the familiar in order to call attention to that which has become all too jaded much in the same way that Soren Kierkegaard exaggerated the themes of Christianity to remind his nominally Christian Danish countrymen what it meant to be Christian. This must be what Jameson means when he says, "It is safest to grasp the concept of the postmodern as an attempt to think the present historically in an age that has forgotten how to think historically in the first place" (73)

This must be what the literary critics are attempting to do when they "deconstruct" familiar realities. It is only possible to get a grasp on the assumptions that inform the construction of reality when those very assumptions are challenged. It is necessary to wonder, yet simple deconstruction does not in itself constitute a vision of reality. This is groping in the cultural fog.

In *Joseph Heller*, Ruderman has described a concern in literature in distinguishing fact from fiction such that the only certainty becomes the writer's own consciousness. The distinction between those writers who are concerned with external reality and those concerned with internal realities (the wave of the 1960's, Vonnegut, Updike, Heller) has been identified as a distinction between modern writers and post-modern writers.



Adams has written about the distinction between modernism and post-modernism in art and theology. He sees in the work of artists such as George Segal a reintroduction of human forms and themes in art following the modern tendency toward abstract expressionism. Indeed,

Segal was particularly resentful of the dualistic dictum that linked abstraction to transcendence. Spirit, he was convinced, was not to be achieved at the expense of the body: both his Jewish heritage and sensual temperament dictated that universal emotion and psychic or sacred ideals could only be conveyed through “the reality of what I could sense, touch, see” (13).

One might therefore see on a Segal canvas a white plaster construction worker or a painter on a scaffold in front of the canvas. Notable is Segal’s *The Holocaust*, (at San Francisco’s Legion of Honor) in which ten figures are sprawled on the ground and one is standing behind a barbed wire fence on a promontory overlooking the Golden Gate and the San Francisco Bay. Not only are there human figures in the sculpture, but the viewer becomes part of the picture and must make choices and reflect on those choices. Does one stand, for example, behind the fence or outside the fence?

Adams contrasts Segal’s affirmative view of history with the theology (or a/theology) Mark Taylor has identified as post-modern. Based on de-constructionism, Taylor’s work begins with the modernist elimination of any meaningful sense of place or time; and so history becomes a/history and theology becomes a/theology. Notes Taylor:

postmodernism opens with the sense of irrevocable loss and incurable fault. This world is inflicted by the overwhelming awareness of death--a death that “begins” with the death of God and “ends” with the death of ourselves. We are in a time between times and a place which is no place (quoted in Adams, 43).

I would say Taylor’s view is post-modern only in the sense that it is ultra modern, whereas Segal recaptures something of the humanistic tradition that has been lost in modernity. Furthermore Segal’s repudiation of Cartesian duality--mind and body or mind-spirit and body--helps us appreciate what in particular has been so troubling about modernity. The Cartesian kind of objectivism is objectionable precisely because it repudiates the self or any form of sensory experience as a valid form of knowledge. Yet we know what we experience even if it is not given objective credibility. Thus post-modernism reaches beyond modernism by reaching back to a more classical or historical or personal view of reality. Those familiar with the work of Michael Polanyi will quickly recognize that this was the project that Polanyi set about in his post-critical philosophy.

The situation of contemporary psychiatry provides yet another example of the evolution from classicism to modernism to post-modernism. Classical psychiatry involved description and interpretation. Psychoanalysis would be placed in the era of classical psychiatry and its emphasis has been on history, narrative, memory and interaction of the doctor and the patient. Modern psychiatry has sought to explain psychopathology on brain neurochemical mechanisms, often ignoring human experience and history. The integration of neurobiology and the psychosocial approach could be described as post-modern in the sense that post-modern art and architecture has recaptured the human dimension and form.

Recently, I came across an article on post-modern ski technique, which carefully traced the evolution from classical to modern to post-modern changes in shifts in body weight and evolving technology of the equipment itself.

Post-modern anthropology acknowledges the effect of the anthropologist on the culture and sometimes the response of those studied to the writings about. In this sense psychoanalysis is quintessentially post-modern in its focus on the personal role of the analyst in the understanding of the analysand.

In warfare we see a similar evolution from classical hand to hand combat to the sterile, impersonal, technological efficiency of the Persian Gulf conflict. We might conclude that terrorism is a post-modern extension, a return to the personal dimension of historical means of settling conflict. But my conclusion is that terrorism is in fact a paranoid corruption of modernism in its use of immoral means to achieve ends claimed to be moral. I mention this conclusion briefly here in anticipation of remarks I will make presently about Polanyi's concept of moral inversion. Terrorism is a moral inversion in that it claims a moral legitimacy for something that is quite immoral.

Finally, before turning directly to Polanyi, I offer comments on one more field, architecture. In architecture we see the most tangible vision of post-modernism. In architectural writings, we see the most clearly articulated statements of how post-modernism goes beyond modernism. In art and architecture, post-modernism signifies a reintroduction of the human form and scale after the sterile era of modern abstract expressionism.

Classical architecture from Greek times to the twentieth century involved various forms of ornamentation. Buildings were adorned much as the human body has been adorned. Modern architecture stripped away all ornamentation. It was utilitarian. "Form follows function" became the rallying cry. The steel and glass box became its most familiar manifestation.

Post-modernism involves a reintroduction of the human form and scale. It is a hybrid classicism, a return to what was familiar and comfortable, even as buildings became gigantic and often inhumane. Oversized arches and palladian windows recall a time when such elements were used to highlight human forms, as in a doorway for example. Post-modern architecture is an attempt to re-humanize architecture. Postmodernism appeals to a popular discontent with modernism and to nostalgic longings of various kinds.

In simplistic terms, according to architect and critic, Charles Jencks, "postmodernism is the replacement of the mechanistic paradigm by the biological and organic world view. The new biology and also a more sophisticated cultural model for understanding how nature and society work, are replacing modern paradigms" (40).

Assuming Newtonian science to be modern, Jencks suggests that "the modern world is drawing to a close in all areas--even modern science is over." He contends that

the world view that comes from modern Newtonian science--the mechanistic, reductive, deterministic world view--is over. The idea of mechanism as the driving metaphor for our culture is finished. It's had it. The future, as far as metaphor is concerned, is all biology, information and semiotics--the Age of Meaning (40, see also Jencks, 1991).

There is a sense in which post-modern architecture may be seen as a compromise, providing a kind of cultural balance between the new and the old. The new Sainsbury Wing of the National Gallery in Trafalga Square is an example. Various modern plans had been rejected under protest. Prince Charles reportedly decried one design as a "carbuncle on the face of a much beloved friend." The post-modern design of Robert Venturi and Denise Scott Brown harmoniously

extends the classical elements of the original facade without being an imitation of something old. The new facade is clearly new, yet its playful use of columns and windows relates to its neighbor, calling attention again to the classical elements which had become so familiar as to go almost unnoticed. Venturi and Scott Brown succeed in much the way Kierkegaard or Walker Percy succeed in getting us to notice what had become so familiar as to go unnoticed. Polanyi does much the same in getting us to think about what we claim to know.

Several new hotels have adopted post-modern architectural themes as a way of making guests feel more comfortable. Modern boxes required the guest to adapt to their environments. Post modern hotels, such as the Marriott in San Francisco or the Grand Hyatt in Washington, use classical elements such as oversized palladian windows, triangular or arched pediments, interior courtyards and gazebos, to recall the human scale of a small village.

The New York State Empire Collection provides a striking collection of modern art of the “New York School” in which we see in particular the workings of abstract expressionism. However we also notice that for all of the attempts to eliminate any explicit reference to the human form, biological themes emerge repeatedly in such structures as the egg-shaped auditorium (called “the Egg”) and in numerous other sculptural forms suggestive of the vertebral column, a snake, etc.

## **POLANYI’S POST-CRITICAL PROJECT**

Polanyi’s rich and textured philosophy offers much and warrants close study which is amply rewarding. For the purpose of understanding post-modernism, I wish to focus on Polanyi’s critique of Soviet Marxism. I do this for two reasons. First, I think the events of the past year or two vindicate Polanyi’s rather unique perspective on this cultural phenomenon and deserve to be highlighted. But, secondly, I think the shift to a post-modern culture is accelerating and we need our bearings to navigate the changes we face.

Polanyi was concerned that the central planning of the Soviet economy according to explicitly stated goals was a false and impossible task. It was doomed to failure he believed because it did not allow for the personal freedom needed to be creative and responsive. His insight was based on an understanding as a scientist of how scientific discovery inevitably must proceed, namely according to hunches and intuitions, tacit understandings of someone immersed in the search for discovery. These understandings can never be made completely explicit: “. . . we know more than we can tell and we can tell nothing without relying on our awareness of things we may not be able to tell” (*PK*, “Preface to the Torchbook Edition”, x), Polanyi reminds us.

Polanyi also tells us (*PK*, “Preface to the Torchbook Edition”, ix) that his project began with an opposition to the view, derived from Soviet Marxism, that the pursuit of science should be directed by the public authorities to serve the welfare of society. Polanyi held that the power of thought to seek the truth must be accepted as our guide, rather than be curbed to the service of material interests. He noted that such a defense of intellectual freedom on metaphysical grounds was no more acceptable to the dominant schools of Western philosophy (namely positivism, or the Cartesian epistemologies) than to the Marxists. It is well worth noting that the mechanisms for disbursing federal funds for research in the United States are centrally planned on more or less explicit goals sensitive to the political process and material interests rather than a less easily definable search for truth and knowledge. Does this explain at least in part the decline in American technological innovation?

Polanyi notes in his essay on “The Message of the Hungarian Revolution” (1966) that the Petofi circle, which repudiated Marxist-Leninist dogma, was a group of Communist party members who had become disillusioned with the doctrine that public consciousness is a superstructure of the underlying relations of production. They rejected the idea that public thought under socialism must be an instrument of the Party controlling Socialist production. They affirmed instead that truth must be recognized as an independent power in public life. The press must be free to tell the truth. Murderous trials based on faked charges must be publicly condemned. And above all, the arts corrupted by subservience to the Party must be set free to rouse the imagination and to tell the truth.

Polanyi makes much in that essay of a comment made by Professor Richard Pipes, then Director of Harvard’s Russian Research Center:

Four years ago, when writing an essay on the Russian intelligentsia . . . , I wanted to conclude it with a brief statement to the effect that the modern Russian intellectual had a very special mission to fulfill: “to fight for truth.” On the advice of friends I omitted this passage since it sounded naive and unscientific. Now I regret having done so. . . (*Knowing and Being*, 26).

The Hungarian intellectuals, like a scientist, were in search for truth and that search required a freedom not admitted in socialist society. Yet a Western historian was also afraid to speak of truth for fear it would sound “naive and unscientific.”

In *Personal Knowledge*, Polanyi has a very powerful section called “The Magic of Marxism” in which he identifies “the dynamo-objective coupling.” Marxism is based on a self-contradictory principle, a prophetic idealism spurning all reference to ideals. It has (or had) such extraordinary appeal because it allowed

the modern mind, tortured by moral self-doubt, to indulge its moral passions in terms which also satisfy its passion for ruthless objectivity. Marxism, through its philosophy of ‘dialectical materialism’ conjures away the contradiction between the high moral dynamism of our age and our stern critical passion which demands that we see human affairs objectively, i.e. as a mechanistic process . . . (228).

Thus we see a coupling of the moral force or dynamism and the objective view of reality, each repudiating association with the other. Any opposition to Marxism or the central government on moral grounds was repudiated by the objective view of reality, dialectical materialism, yet any presentation of contrary facts, was repudiated by fierce but unacknowledged moral passion, hence the dynamo-objective coupling.

The dynamo-objective coupling could be used for a moral defense of immorality, what Polanyi calls the moral inversion, of which Marxism is but perhaps the most interesting example, but which we find in evidence throughout modern culture, from *Butch Cassidy and the Sundance Kid* to *Bonnie and Clyde* to Kubrick’s *A Clockwork Orange* to Gide’s *Lafcadio’s Adventures*. We must be sensitive to moral inversion and dynamo-objective coupling because they provide clues to modernism gone awry. It is our modernist inability to acknowledge and reflect on our own moral commitments.

Here we see perhaps most clearly the shortcomings of modernist epistemology, the split between our false objective view of reality and our moral passions. But Polanyi does not stop with a diagnosis of our problem. He offers us a solution

which he calls post-critical and which we can well understand as post-modern.

Polanyi returns to the enduring classical themes of Plato and St. Augustine. Polanyi believes he can provide an answer to the paradox Plato posed in the *Meno*. How can one pursue a discovery if one does not know what one is looking for? Polanyi answers this not logically but psychologically. The scientist in pursuit of discovery does in fact “know” what he is looking for but the awareness is tacit, not completely specifiable. The insistence on a human or psychological dimension to scientific discovery puts Polanyi’s post-critical epistemology at variance with the more modernist accounts of science which focus on the discovery more than the discoverer.

Polanyi saw in St. Augustine the first example of post-critical thinking, bringing the history of Greek philosophy to a conclusion. We might say Augustine is classical (or pre-critical if we date modern critical philosophy from Descartes or Kant). In confessing his own beliefs and acknowledging them as his own, he taught that all knowledge was a gift of grace for which we must strive under the guidance of antecedent belief: *nisi credideri tis, non intelligitis*, “unless ye believe, ye shall not understand (*De libero arbitrio*, Book I, par. 4). According to Polanyi,

Here lies the break by which the critical mind repudiated one of its two cognitive faculties and tried completely to rely on the remainder. Belief was so thoroughly discredited that, apart from specially privileged opportunities, such as may be still granted to the holding and profession of religious beliefs, modern man lost his capacity to accept any explicit statement of his own belief. All belief was reduced to the status of subjectivity: to that of an imperfection by which knowledge fell short of universality (*PK*, 266).

So accustomed have we moderns become to the separation of faith and knowledge that it is difficult even for believers to appreciate that knowledge itself depends on faith. Polanyi is particularly persuasive on this point because the data he draws on is the data of science itself and the data of political experience. He suggests that, in order to remind ourselves that all knowledge depends on our belief in it, we should preface each declaratory sentence with the words “I believe that”. “Snow is white” is really equivalent to saying “I believe that snow is white.” And anyone who thinks this is a spurious challenge to empirical, objective reality need only be reminded that Eskimos, the true connoisseurs of snow, have twenty different words to distinguish snow.

## CONCLUSION

Polanyi’s view of post-modernism is an optimistic view. If we go beyond the limitations of critical thought and the damage it does to human experience, the recovery of the personal in knowing and being suggests for us the possibility of a positive future. Post-modernism can then be seen to be a recapturing of the human dimension of life and an integration of the bifurcated legacy of modernism, a re-weaving of the treads of faith and knowledge of mind/spirit and body.

## WORKS CITED

Doug Adams, *Transcendence with the Human Body: George Segal, Steven De Staebler, Jasper Johns, and Christo*. New York: Crossroads, 1991.

Fredric Jameson, *Postmodernism, or, The Cultural Logic of Late Capitalism*. Durham: Duke University Press, 1991.

Charles Jencks, "Architectural Dialogue: Charles Jencks and Kurt Andersen on the Postmodern Legacy," *Architectural Digest*, December, 1990, p. 40.

Charles Jencks, *The Language of Post-Modern Architecture*, 6th edition. New York; Rizzoli International Publications, 1991.

Judith Ruderman, *Joseph Heller*. New York: Continuum Books, 1992.

Walker Percy, *Love in the Ruins*. New York: Farrar, Straus & Giroux, 1971.

---

---

## Book Reviews

---

---

Charles Taylor, *The Ethics of Authenticity*. Cambridge: Harvard University Press, 1991. Pp. 142. \$17.95 ISBN 0-674-26863-6. (Originally published in Canada in 1991 under the title *The Malaise of Modernity*.)

Reviewed by Walter Gulick

Taylor addresses three characteristics of modernism which have often been seen as contributing to the decline of Western civilization: individualism, instrumental reason, and the replacement of political engagement with self-absorbed pursuits. His overall strategy is to make perceptive comments about the positive moral energy which has led to the rise of these characteristics of modernism while he simultaneously attempts to separate out their debilitating features. This work of retrieval is, on the whole, successful.

*The Ethics of Authenticity* is a relatively brief, accessible book based on a series of radio programs Taylor did for the Canadian Broadcasting Corporation. In this respect, it contrasts with such formidable, although influential, works as *Hegel* and *Sources of the Self* that Taylor wrote earlier. Taylor has read Polanyi and cites him occasionally in his writings. Indeed, the thrust of Taylor's book unites a concern about social and epistemological issues in a way which is consistent with Polanyi's philosophical interests.

The bulk of the book teases out the senses in which the individualism of self-fulfillment is grounded in a valid authenticity rather than a narcissistic self absorption. Consistent with Polanyi's emphasis upon convivial traditions (although directly drawing on Bakktin), Taylor insists authenticity is grounded in the dialogical character of human existence. He thereby counters atomistic notions of selfhood. Our identity "is the background against

which our tastes and desires and opinions and aspirations make sense. If some of the things I value most are accessible to me only in relation to the person I love, then she becomes internal to my identity" (p. 34). Taylor fights against the notion, central to some versions of autonomy, that subjective choice itself confers worth. Rather he affirms that "independent of my will there is something noble, courageous, and hence significant in giving shape to my own life" (p. 39).

Discussions of the good life are central to personal and social identity for Taylor. He opposes the "liberalism of neutrality" (p. 17) as unauthentic, much as Polanyi opposed supposed objective inquiry. Rather than allow social science to explain away the stances of contemporary culture, he argues for a dynamic "politics of democratic will-formation" (p. 118) which is itself enframed by an ethic of caring and rational discourse.

The convergences between Taylor's and Polanyi's thought are many. They each affirm the importance of viewing humans as historical, embodied beings thinking from a background of commitments toward specific objectives. In attacking thoughtless reliance upon instrumental reason and technology, Taylor carries out a project that has similarities to Polanyi's attack on communist illusions of control over science and society and his dismissal of objectivist claims to certainty in thinking.

While there is an apparent similarity of Taylor to Polanyi with respect to the issue of nihilism, Taylor's position seems to be more consistently developed (perhaps because it is less fully developed). Each sees that normless freedom (negative freedom indiscriminately applied) carries within it the seeds of nihilism. Polanyi shows how moral passions linked with skepticism or cynicism and an emphasis on anti-authoritarian freedom leads to the various forms of nihilistic moral inversion in this century. Yet Polanyi also appreciates the importance of freedom in

scientific inquiry and the free marketplace. Polanyi protects against incipient nihilism in free scientific inquiry when he speaks of the importance of scientific journals, review processes, and community authority in judging scientific hypotheses. But his logic of economic liberty is not as carefully protected by norms, as the legacy of the Reagan years suggests.

*The Ethics of Authenticity* deals with issues that Alasdair MacIntyre tackled in *After Virtue*, Christopher Lasch addressed in *The Culture of Narcissism* and *The Minimal Self*, and Robert Bellah et. al. considered in *Habits of the Heart*. Charles Taylor's reflections on these issues, while not as wide ranging as those in the other books, is insightful--a recommended read.

---

*The Problem of Universals*, Edited and with Introductions by Andrew B. Schoedinger (New Jersey and London: Humanities Press, 1992). Pp. x + 360. Hb: ISBN0-391-03725-0. Pb:0-391-03726-9.

### Reviewed by Philip A. Rolnick

Andrew Schoedinger has given us a fine compilation of texts which address the problem of universals. The selections begin with Plato and Aristotle, continue through the Medieval period, include modern English and German philosophers, and end with a host of relatively recent thinkers, such as Russell, Quine, Carnap, Donagan, Bambrough, and others. On the whole, the texts are appropriately chosen and arranged so as to highlight debated points. Generally the work is well balanced, presenting the various historical options which philosophers have portrayed, from Plato's and some modern writers' holding to the existence of separate substances, to the conceptualists, to the denial of universals except in name (nominalists), to the denial that there is a problem as historically presented (Wittgenstein et al.).

The virtual omission of the question of the *source* of what is universal predetermines and limits the boundaries of discussion. How universals have come to be hardly comes up in the various essays, although theistic writers such as Aquinas and Ockham are included. R. I. Aaron, whose essay argues that universals are both "natural recurrences" and "principles of grouping or classifying," does see that "there is admittedly a metaphysical problem . . . . What is the final explanation of the recurrences in nature?" As Aaron notes about his own discussion, and as I would note about Schoedinger's collected essays, "ultimate questions are left unanswered" (344). Nonetheless, what the book does attempt to do, it does quite well.

Schoedinger's introductions to each writer are succinct and helpful. His general Introduction, being limited to less than two pages, is too succinct. What he does offer seems to imply a position in some manner leaning toward a variant of the realist position. A bolder attempt at synthesis, one which indicated his own position in greater depth, would be welcome. However, what he says about the problem of universals is clear enough:

it is a real problem because particulars are, and can only be, described by their characteristics. Such characteristics are qualities and qualities are what are generally understood to be universals (xi).

He then adds (borrowing a theme of Bertrand Russell's) that relations as well as qualities must come under consideration as one takes on this problem.

Schoedinger ventures to say: "There is another way of viewing the primacy of universals. Without them there could be no language as we understand it" (*ibid.*). Then offering a quick rebuttal of ostension as the sole constituent of language, Schoedinger contends that "the *recognition* of characteristics and the formulations of nouns is symbiotic" (x, emphasis added). This symbiosis of recognition and subsequent language formulation re-



sembles Polanyi's tacit/articulate symbiosis, as does Schoedinger's conclusion: "Consequently, the nature of universals is ultimately associated with human thinking" (*ibid.*). In what I take as a further similarity to Polanyi, Schoedinger suggests that universals have to do with "resemblances that exist in the world around us" (*ibid.*). The issues are given fuller treatment in the edited selections.

Those interested in Polanyi's work will find that *The Problem of Universals* bears strongly upon Polanyi's notion of "universal intent" and thus upon his very notion of "personal knowledge." What does Polanyi mean by "universal"? Where in the historical scheme of things would Polanyi's work be situated? Where should Polanyi's thought be positioned on the spectrum of realist-conceptualist-nominalist? A close reading of the selections in *The Problems of Universals* might discipline much of the current debate among students of Polanyi regarding Polanyi's allegedly realist universalism or lack thereof. For example, W. V. Quine compares some of the older and newer terminology of the debate: "Logicism holds that classes are discovered while intuitionism holds that they are invented--a fair statement indeed of the old opposition between realism and conceptualism" (166). Where would Polanyi stand in this discussion? Or, when David Pears, who argues that there are no universals, declares: "It is impossible to cross the gap between language and things without really crossing it," Polanyi's very different treatment of "crossing a logical gap," making "contact with reality," etc., come to mind, if only in opposition to Pears.

Working from a very different perspective, Bertrand Russell takes a clear and bold stand on universals:

*a universal* will be anything which may be shared by many particulars, and has those characteristics which . . . distinguish justice and whiteness from just acts and white things.

. . . all truths involve universals, and all knowledge of truths involves acquaintance with universals (115).

Accusing Russell of being misled by language in a far-reaching way, F. P. Ramsey asserts that "the whole theory of particulars and universals is due to mistaking for a fundamental characteristic of reality, what is merely a characteristic of language" (123). Likewise, R. Bambrough declares "that Wittgenstein solved what is known as the problem of universals," praising it as one of the greatest discoveries of the humanities in recent times (266).

Yet Polanyi overtly distanced himself from Wittgenstein's "language game" view: "The purpose of the philosophic pretence of being merely concerned with grammar is to contemplate and analyse reality, while denying the act of doing so" (*PK* 114). Polanyi was not only aware of this historical debate about universals, he explicitly addressed it in some of his essays published in *Knowing and Being*: "To understand verbal communication requires that we resolve the problem of universals" (190). In these essays, Polanyi offers his explanation of the problem with his unique solution (See, especially, *KB* 165-172). Here and in *Personal Knowledge* (114) Polanyi contends that universals refer to "real entities." He not only thinks that there is a metaphysical entity referred to by universals, but actually goes so far as to claim that in making their claims, scientists are "swearing by the existence of this reality" (*KB* 172). Such claims position him as strongly realist. However, he points out that the historical difficulty arises from the attempt to make explicit what cannot be. And here Polanyi declares that "the secret can be found in a tacit operation of the mind" (*KB* 191). I think that the tacit dimension takes Polanyi beyond language in insisting that "the truth of a proposition lies in its bearing on reality" (*KB* 172). Hence, in order to understand Polanyi's realism, one would have to investigate its relation to the tacit dimension, a project which is beyond the scope of this review.

*The Problem of Universals*, as Andrew Schoedinger has presented it, is a problem that students

of Polanyi could fruitfully ponder further. Wrestling with the selections of this text would be well worth the effort.

---

---

## Contributors To This Issue

---

---

**Dale Cannon** is Professor of Philosophy and Religious Studies at Western Oregon State College, Monmouth, OR 97361. He invites responses to his paper. For Winter and Spring of 1993, he will be a Resident Scholar at the Ecumenical and Cultural Study Center on the campus of St. John's University in Collegeville, Minnesota. He will be working on a book delineating and justifying a heuristic framework for use in the comparative study of religion that recognizes the possibility of six authentic ways of carrying on religious life within any one major religious tradition.

**Gerald Holton** is Mallinckrodt Professor of Physics and Professor of History of Science, Jefferson Physical Laboratory, Harvard University, Cambridge, MA 02138. Among his recent publications are "Ernst Mach and the Fortunes of Positivism in America," *Isis*, vol. 83 (1992): 27-60; "How to Think about the 'Anti-science' Phenomenon," *Public Understanding of Science*, vol. 1 (1992): 103-128; and *Thematic Origins of Scientific Thought: Kepler to Einstein* (Cambridge: Harvard University Press, 1988).

**Walter Gulick** teaches in the interdisciplinary humanities program at Eastern Montana College, Billings, MT 59101. In Spring of 1993, he will be teaching at Technical University of Budapest where he also will be working with members of the Michael Polanyi Liberal Philosophical Association in Hungary.

**Allen R. Dyer** is Professor and Chairman of the Department of Psychiatry and Behavioral Sciences at the James H. Quillen College of Medicine, East Tennessee State University. He has previously served on the faculty

of Duke University, the Albany Medical College, and the State University of New York, Albany. He is a graduate of Brown University, attended the Pacific School of Religion, holds the M.D. and Ph. D. (medical ethics; religion) degrees from Duke University. He did his internship and residency in psychiatry at Duke and is a graduate of the UNC-Duke Psychoanalytic Institute.

**Philip Rolnick** earned his Ph. D. at Duke University and is Assistant Professor at Greensboro College in Greensboro, NC 27401. His *Analogical Possibilities: How Words Refer to God* (forthcoming Scholars Press in Spring of '93) includes some use of Polanyi's philosophical ideas.

# Polanyi Society

## Membership/Renewal of Membership

(Please print or type)

Name \_\_\_\_\_ Date \_\_\_\_\_

Mailing Address \_\_\_\_\_

Telephone: Work \_\_\_\_\_ Home \_\_\_\_\_

e-mail address: \_\_\_\_\_

Institutional relationship \_\_\_\_\_

Study Area(s)  Arts  Communications & Rhetoric  Literature  Philosophy  Philosophy of Science  
 Religion  Theology  Education  Psychology  Psychiatry  Science and Technology  Economics   
Sociology  Law  History  Political Science  Other

Primary Interest in Polanyi (key words) \_\_\_\_\_

Membership Fee:  Regular Annual, \$20;  Student, \$12.

Pay to: Polanyi Society

This is:  New Membership  Renewal  Data Update, have paid dues

Publications: Please give complete facts of publications so that it can be indexed and located. Thesis/  
dissertation: Indicate school and degree as well as other data:

Members renewing subscriptions do not need to complete the full form above. Note only address changes and recent publications. If your address label is correct, please tape it to this form. The membership cycle follows the academic year. Subscriptions are due September 1 to Richard Gelwick, University of New England, Biddeford, ME 04005. European subscriptions (5 pounds sterling) are handled by John Puddefoot, Benson House, Willowbrook, Eton, Winsor, Berks. SL4 6HL, United Kingdom.