

# Tradition & Discovery

The Polanyi Society Periodical

Incorporating  
**Convivium**

*The United Kingdom Review of Post-critical Thought*

Volume XX

Number 2

1993-94

---

---

## In This Issue

Preface .....	2
News & Notes .....	3
Call for Papers .....	5
Polanyi Studies In Hungary .....	6
Walter B. Gulick	
Materials from <i>Polanyiana</i> .....	9
Epistemology and the Human Sciences: Michael Polanyi's Contribution to the Reshaping of Moral Theology .....	11
Terence Kennedy C.Ss.R.	
Learning to Learn: Educating with/for the Mind-Body .....	17
Jerry H. Gill	
Contributors .....	27
On Mind and Meaning .....	28
Robert P. Doede	
Book Reviews .....	43
Submissions for Publication .....	46
Information on Electronic Discussion Group.....	46
Membership Information .....	47

# The Polanyi Society

## 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 59101

## 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

Richard Allen  
20 Ulverscroft Road  
Loughborough, Leics LE11 3 PU

Ted Moss  
'Prospect'  
Guildown Road  
Guildfore, Surrey GU2 5HA

## UK Coordinator

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

## Preface

I am pleased to include in this issue a short article by Walter Gulick, a recent Fulbright Lecturer in Budapest who worked closely with members of the Michael Polanyi Liberal Philosophical Association during his tenure in Hungary. Gulick provides helpful information about the MPLPA and interest in Polanyi in Hungary. There is as well material describing the most recent issue or TAD's sister journal, Polanyiana, which is an MPLPA project. Terence Kennedy's article explores affinities between Polanyi's thought and that of the Roman Catholic moral theologian Bernard Haring. Jerry Gill's reflections speak about teaching and learning. Gill was a recent participant in the conversations with William Poteat (a masterful teacher who explored Polanyi's ideas with Gill and many generations of students) sponsored by The Polanyi Society in Washington last November. Robert Doede's paper was originally given at 1992 gathering of The Polanyi Society. It is a careful philosophical essay which sets forth the concept of mind in Jerry Fodor's cognitive science and compares this perspective with Polanyi's richer ideas about body, meaning and mind.

After an interesting pair of meetings this year focusing upon William Poteat, The Polanyi Society annual meeting (held in conjunction with the annual meeting of the American Academy of Religion/Society of Biblical Literature) will revert to its earlier format: see David Rutledge's call for papers (p. 5) which carries a March deadline. The electronic discussion list on Polanyi's thought (p. 46) continues to gain subscribers. Unlike some lists, it is not the annoying type that inundates you with mail; in fact, it is so quiet, some of us will be soon writing in to stimulate a bit of discussion. Plug in, if you like.

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

---

---

The Polanyi Society meeting at the American Academy of Religion in Washington, D.C., Nov. 19 and 20 featured dialogue with **William H. Poteat** whose teaching and writing have probed many areas in common with those of Michael Polanyi. The sessions were remarkable for their sustained discussion of Poteat's thought and gave everyone present a special opportunity to understand better Poteat's appreciation of Polanyi and also Poteat's sense of his own difference from Polanyi. Poteat stated that he regarded his own work as more radical than Polanyi's. Poteat compared his way of changing our way of thinking to the Copernican revolution and asserted this through his thorough discussion of his overcoming the Cartesian dichotomy by his "mindbody" theme. The Friday evening session, presided over by Ron Hall, pursued mainly understanding Poteat's thought. The Saturday morning session, presided over by Charles McCoy, pursued comparisons and contrasts with Polanyi. The content of these sessions is much too rich and subtle to be reduced to summary. Audio tapes are available for \$7.00 from David Rutledge (Religion Department, Furman University, Greenville, SC 29613). There also may be a transcript made of these sessions. For further information, please contact David Rutledge. As one of those who have profited greatly by Poteat's writing, his interests in Polanyi and the effect of his excellent teaching on many of our associates in The Polanyi Society, I was helpfully informed and strongly impressed as he led us in discussing his work. Many of us could see why Poteat is regarded as a great teacher and thinker and deserving of the loyalty and admiration of his former students.

A timely publication for this event was a volume of articles and essays edited by **James Nickell and James W. Stines**, *The Primacy of Persons and the Language of Culture: Essays by William H. Poteat*.

While this volume will be reviewed in *TAD*, I recommend your ordering it from the University of Missouri Press, Columbia, Missouri.

This Polanyi Society meeting at the AAR brought together the most persons at an AAR meeting since our originating meeting with T. F. Torrance at the AAR in Chicago in 1975. Approximately 40 persons attended the Friday evening session and 30 attended the Saturday morning session. It was good to see some stalwart members like **Jerry Gill and Gene Reeves** again. Gene is still teaching in Japan, and Jerry Gill is at the College of St. Rose in Albany, New York.

The publications line in our renewal subscription form is producing more news of relevant publications and papers by our members. Below is a list compiled from recent receipts. If I have missed someone, please let me know.

**Barbara D. Baumgarten** completed in 1992 her Ph.D. at the Graduate Theological Union with a dissertation on *Visual Art as Theology: A Post-critical Aesthetic for Theology Based on the Epistemology of Michael Polanyi*. She also presented last March at the Western Region of the AAR "Contemplation and Artistic Expression: Some Reflections Based on the Epistemology of Michael Polanyi."

**Harvey Birenbaum**, in literature at San Jose State University, has done a comparison of Nietzsche and Blake: *Between Blake and Nietzsche: The Reality of Culture*, Bucknell University Press, 1992 (available through Associated University Presses, 440 Forsgate Drive, Cranbury, NJ 08512). Birenbaum "argues that structuralism and poststructuralism have both left us, unnecessarily, with a highly attenuated view of what

culture is, how it operates, and how it relates to the personal existence of human beings.” The book also includes “an epistemological view of myth that accounts for the creative ambiguity of cultural reality.”

**Jerry H. Gill** continues his productive work: *Mediated Transcendence*, Mercer University Press, 1990; *Merleau-Ponty and Metaphor*, Humanities Press, 1991; and *Learning to Learn: Toward a Philosophy of Education*, Humanities Press, 1993.

**Spencer McWilliams** reports two recent publications: “Construct No Idols,” *International Journal of Personal Construct Psychology*, 6, No. 3, 269-280 and “The Sacred Way of Liberal Arts,” *Journal of General Education*, 42, No. 4, 255-269.

**Walter B. Mead**’s article on “John H. Hallowell: A Political Philosopher’s Critique of His Profession’s Paradigm,” *The Political Science Review*, 1993 provides insight into one of the Duke University professors who introduced graduate students to Polanyi.

**Martin X. Moleski** has shown a valuable connection in his “Illative Sense and Tacit Knowledge: A Comparison of the Epistemologies of John Henry Newman and Michael Polanyi” in *John Henry Newman: Theology of Reform*, Michael E. Allsopp and Ronald R. Burke (eds.), New York: Garland Press, 1992.

**Arthur S. Reber**, one of the plenary speakers at the Kent State Centennial, has continued his application of Polanyian ideas as can be seen in his new book published by Oxford University Press: *Implicit Learning and Tacit Knowledge, An Essay on the Cognitive Unconscious*, New York, 1993.

A special issue of the philosophical journal *The Personalist Forum* is devoted to Michael Polanyi’s thought, and will appear early in 1994. The issue will contain two different articles on Polanyi and Kant by **Ronald Hall** and by **Walter Gulick**, and an article by **Phil Mullins** sketching a narrative of the self based on Polanyian themes. In addition, reviews of Ron Hall’s book *Word and Spirit* (by **Jim Edwards**), of William Poteat’s *Philosophical Daybook* (by **Jim Stines**), and of Robert Pirsig’s novel *Lila* (by **Richard Gelwick**) show how fertile Polanyi’s perspective has been for other thinkers. **David Rutledge** edited the issue; it is published by Mercer University Press, and is available for \$5.00 from Thomas O. Buford, Department of Philosophy, Furman University, Greenville, SC 29613.

# The Polanyi Society

## Call For Papers

As in previous years, The Polanyi Society is planning to hold a meeting in conjunction with the American Academy of Religion/Society of Biblical Literature annual meeting, which will be held November 19-22, 1994 in Chicago, IL. The Society will follow its recent pattern of asking to be scheduled just prior to the opening of the annual meeting; as the AAR/SBL is considering beginning their sessions on Saturday morning, we may be scheduled for Friday evening, November 18th. We should have that information later this year.

If you are interested in presenting a paper at this session, please submit to David Rutledge by Friday, March 11, 1994, a proposal of approximately 300 words, on a plain sheet without identification. If there are several proposals forthcoming, a jury of Society members will be convened to do a blind reading of the candidates. We are planning for an hour and a quarter discussion of each of two papers, which will be distributed prior to the meeting. Paper titles, authors, and respondents will be listed in the AAR/SBL Program in the Additional Meetings section. We encourage papers on any topic related--directly or indirectly--to the thought of Michael Polanyi or his concerns.

David Rutledge  
Coordinator for Religious Studies  
The Polanyi Society  
(803-294-3296)

Mailing Address: Department of Religion  
Furman University  
Greenville, SC 29613

# POLANYI STUDIES IN HUNGARY

**Walter B. Gulick**

Last year I had the great good fortune to be appointed a Fulbright Scholar to teach at the Technical University of Budapest. On January 26, 1993, my wife and I were met at the Budapest airport by Gabriella Ujlaki, and then began perhaps the richest six months of my life. My official duties were not too complicated: to teach a course in Business Ethics at Technical University and a course in Contemporary American Philosophy at Eotvos Lorand University, also in Budapest. These official duties, it soon turned out, were but the appetizers for a delectable dinner of Hungarian culture, a many course meal we enjoyed in the company of some wonderful people.

However, my purpose in this article is not to recount the splendors of our experience, but to speak of a sister organization, the Michael Polanyi Liberal Philosophical Association, and the state of Polanyian studies today in Hungary. Since its founding in Budapest in 1990, the MPLPA has compiled an impressive number of accomplishments. I'll speak of some of these achievements in the context of an account of recent developments in Hungarian philosophy and culture.

When the Hungarian communist government collapsed in 1989, little was known in Hungary about the ideas of Michael Polanyi. His strong support of economic, political and cultural freedom made his thought unacceptable in official circles. After all, he played a leading role in the Congress for Cultural Freedom, a group firmly opposed to communism. While much Western writing was smuggled into Hungary during the communist era, I don't believe any special attention was paid to Polanyi's thought. Rather the importance of the ideas of Polanyi, a native born son, is still in the process of becoming recognized by Hungarians.

In bringing about this recognition, the MPLPA is having by far the largest impact. Perhaps its greatest contribution has been in making Polanyi's work available in Hungarian translation. The Atlantis Publishing House published *Michael Polanyi's Selected Philosophical Writings* in 1992, a collection edited by Endre Nagy and Gabriella Ujlaki. Included in this collection are many articles from *Knowing and Being*. Two issues of *Polanyiana*, the MPLPA sponsored journal, also contain translations of Polanyi's articles. Any time now *Personal Knowledge* will be published in a translation by Maria Pap and Gyorgy Petri. *The Study of Man* and *The Tacit Dimension*, already translated, await final revisions. Soon *Science, Faith and Society* will be translated. I find it remarkable that so much has been accomplished in four years.

*Polanyiana* is vital to the assimilation and critique of Polanyi among Hungarian academics. The plan is that two English language and two Hungarian issues will be published each year, although that appears to me to be ambitious given the relatively few number of Polanyi scholars in Hungary. In any case, the availability of *Polanyiana* offers those of us writing in English a great opportunity. Its format can accommodate longer, more developed articles than can usually be handled by *Tradition and Discovery*. I was pleased to be able to be helpful by serving as English language editor for a double issue of *Polanyiana*. Information about how to subscribe to and submit articles to *Polanyiana* can be found elsewhere in this issue of *Tradition and Discovery*.

The MPLPA has been working to ensure that there are resources available in Hungary to support further Polanyi scholarship. Endre Nagy and Gabriella Ujlaki have made two trips to the Joseph Regenstein Library at the University of Chicago in order to microfilm the most important of the Polanyi papers housed there. Last spring 44 microfilms of these papers arrived in Hungary and are now stored at the Library of the Hungarian Academy of Sciences. Cataloguing their contents is now in progress. In addition, Eva Gabor and Gabor Pallo have found and brought home Polanyi's letters and manuscripts from such places as Manchester, Oxford and Berlin.

An ultimate aim motivating the MPLPA's activity is to found the Polanyi Archives as a research center for the study of the thought of Polanyi and other members of the tradition of philosophical liberalism in Central Europe. A number of personal items, already gathered, will be included in these archives. Letters by members of the Polanyi family have already been assembled by Erzsebet Vezer, as have some photos. The Archives will also contain books, articles, and documents dealing with the Polanyis. This very article will no doubt soon be nested there.

The MPLPA has already sponsored a number of conferences and lectures dealing with Polanyi. Richard Gelwick reported on the Polanyi Centennial Commemorative Conference held in Budapest August 24-26, 1991; see *Tradition and Discovery* XVII:3 (1991). As a new initiative, the MPLPA has announced a competition for young writers.

All that the MPLPA has accomplished would not have been possible without the aid of considerable financial support. The Soros Foundation has been especially generous in its support of the Association's activities. As is true of the other Eastern European countries, Hungary is still seeking to find a secure place in the global economy, and the transition is not easy. The real income of professors is declining, and I can assure you academic salaries would by themselves not allow for the traveling Hungarian Polanyians have been able to do. Eventually the work of the MPLPA will have to be self supporting, but for now the assistance of the Soros Foundation, Central European University and other groups has been indispensable.

In one major respect the intentions of the MPLPA are unlike those of The Polanyi Society in North America. As has been already suggested, the Michael Polanyi Liberal Philosophical Association has as its aim an investigation of "the philosophical, historical, sociological, psychological roots and results of the tradition of Central European liberal thought" (*Polanyiana* 2:3, p. 63). This means the group is interested in the thought of Karl as well as Michael Polanyi — and in such thinkers as Mannheim, Popper, Hayek, Koestler, Lakatos, and even Wittgenstein. Lee Congdon's book, *Exile and Social Thought: Hungarian Intellectuals In Germany and Austria 1891-1933* (Princeton University Press) provides a most helpful background for understanding this Central European tradition of liberal thought. To date, however, the broad interest of the MPLPA has remained latent and almost exclusive attention has been devoted to Michael Polanyi.

Eva Gabor writes about the "liberal" in the association's title in these terms:

At the very first meeting, we had a debate about the word "liberal" occurring in the name of the Society. There were fears that perhaps some would misunderstand the meaning of this word. We do not want to lay emphasis on its political connotation; only the philosophical implications are important for us. We consider ourselves to be a Society of open minded, liberal-oriented thinkers.

This was the leading idea of Michael Polanyi in all his life and work (*Polanyiana* 2:1,2, p. 12).

Endre Nagy's arguments were especially persuasive in convincing the new society to include the word "liberal" in its title. His article in the current issue of *Polanyiana*, "Civil Society in Michael Polanyi's Thought," is most helpful in indicating how Polanyi's social thought is relevant to Hungary's developing economic, civic and political structures.

It is hard for us in the West to imagine the emotion connected to the word "liberal" in Hungarian society. On this word pivots the whole contrast between a controlled and a free society. As Nagy makes clear, Hungarians did not revolt against communism primarily for economic reasons. Actually, Hungary's economy was one of the healthiest in the eastern bloc; it profited greatly from trade with the old USSR. No, Hungarians turned from communism primarily because the freedom to speak, travel and organize was impeded. The threats to liberty — to liberalism — were often subtle, but they were definitely felt.

Today, after four years of attempts to make the Hungarian economy more efficient so it can compete effectively in the global economy, the word "liberal" retains its power to attract an emotional response. Unemployment, previously unknown in communist society, has hit many workers — about 15% of the Hungarian work force at present. Real wages have declined for most who retain their jobs. Political apathy is rampant. Joining the European Community is the great hope motivating most intellectuals, but that still seems far off in an insecure future. While very few want to return to communism, disaffection among Hungarians is increasingly common now, and one target of the disaffected is those who avow any form of liberalism. That may be why the plaque on the Budapest birthplace of Michael Polanyi was recently smashed. Quite possibly it was destroyed because it announces it was sponsored by the Michael Polanyi Liberal Philosophical Association; Eva Gabor's fear that "liberal" would be misunderstood in a political sense may have proved prophetic. (Or was it destroyed because the Polanyis were Jewish? Probably not.)

These are difficult times of transition in Hungary, and my hope is that Western nations will work diligently to lower tariffs and trade barriers so that the European Community can embrace Hungary as soon as possible. Certainly I would not want to leave any reader with the impression that Hungarians are inhospitable or the country dangerous. My wife traveled on the excellent public transportation of Budapest after dark with a sense of security, a sense she would not feel at night in many of our large cities. My hosts at the Technical University, Marta Feher, Eva Gabor, and Gabriella Ujlaki, all key members of the MPLPA (we called them "our three angels"), were exquisitely generous and helpful. We immersed ourselves in Hungarian culture and returned refreshed and enlivened. The liberal spirit of Polanyi is indeed alive in Hungary, and so is the hospitality and intellectual ferment which once graced the salon of Cecile Mama.



# Materials from *Polanyiana*

**Editor's Note:** The preceding article by Walter Gulick discusses the work of The Michael Polanyi Liberal Philosophical Association (MPLPA) in Hungary; Gulick describes his Spring Semester 1993 term in Budapest as a Fulbright Scholar where he worked with MPLPA in putting together an English language double issue of *Polanyiana*, the periodical of MPLPA. The short article below is Gabriella Ujlaki's "Introduction" to this double issue in which she reviews other articles included in the issue. If you wish to order a copy of *Polanyiana* 2:4 and 3:1, you should send a check for \$10 (or equivalent) airmail to Magyar Hittel Bank, Budapest 1122, Pozsonyi ut 77-79, HUNGARY. Make the check to MPLPA and indicate the account number is 2221004351. You must also send notification to Dr. Eva Gabor (President of MPLPA, Technical University of Budapest, Department of Philosophy, 1111 Budapest, Muegyetem rkp. K. I. 59, HUNGARY) that you want a copy of *Polanyiana* 2:4 and 3:1 and have forwarded a check to Magyar Hittel Bank. Include a xerox copy of the check.

## Introduction

The present double issue of *Polanyiana* contains articles by researchers who make use of Michael Polanyi's thought. There are among the authors philosophers, theologians and psychologists. Our aim in presenting this collection of essays is twofold. First, our intention is to make available to a broader audience some of the articles which were presented on different occasions (conferences, seminars) when Michael Polanyi's work was discussed. We feel it is our task to select and publish the best of them. And our second purpose in this double issue is to give an opportunity to the interested reader to grasp the richness of the way of developing Polanyi's ideas as a basis for further thought.

Among the contributions, there are papers by philosophers of different branches of the discipline. Walter Gulick's paper, "Polanyi's Theory of Meaning: Exposition, Elaboration, and Reconstruction," is a very detailed and scholarly reconsideration of Polanyi's thoughts on linguistic, artistic and religious meaning. It is based on his original insights concerning how to improve Polanyi's ideas in psychology, philosophy and aesthetics. Polanyi's last work, *Meaning*, written together with Harry Prosch, is taken as the major point of departure. Gulick's article offers a new approach to the topic and challenges the reader to think further about the nature of meaning and how it is constructed.

Marjorie Grene's article, "The Subjective and the Personal," is a detailed analysis of two key concepts, indicated in her title, of Polanyi's philosophy in *Personal Knowledge*. The article was one of the main presentations at the centennial conference of Michael Polanyi at Kent State University in 1991. The author, an eminent philosopher who was assistant to Michael Polanyi and his closest friend and colleague at the time of writing *Personal Knowledge*, offered the manuscript to our Association to be published in *Polanyiana*. We appreciate her kindness very much, and we are honored by being able to publish it first.

Aaron Milavec's article, "If I Join Forces with Mr. Kuhn," represents another main branch of philosophy which is very much impacted by Polanyi's thought, namely philosophy of science. The article was also presented at Kent State and it helps the reader to understand how great Polanyi's role was in formulating Kuhn's seminal book on scientific revolutions.

Phil Mullins' article, "Religious Meaning in Polanyi's *Personal Knowledge*," provides a step toward clarifying the extent to which Polanyi's views about religion changed by the time of *Meaning*, the subject of much debate. Mullins, General Editor of *Tradition and Discovery*, writes down Polanyi's ideas about religion as presented in *Personal Knowledge*. Its approach is that of the philosopher of religion rather than of the theologian, so it helps the reader to get a clearer impression about his discipline, unfortunately almost neglected in Hungary.

Joan Crewdson's contribution to our double issue is a chapter of her still unpublished book on Polanyi's relevance to theology. We have chosen a chapter which might have relevance both for philosophers and theologians. This article represents the theological reception of Polanyi's work in our issue. The author shows how Polanyi's triadic structure of meaning can be interpreted as illuminating the theological doctrines of the Trinity in general and the Holy Spirit in particular. This article demonstrates one direction that a theology inspired by Polanyi's thought might take.

Arthur S. Reber's presentation was among the major addresses given at Kent State. Reber gives us evidence about the relevance of Polanyi's views on tacit knowledge to current psychological research. He indicates that Polanyi was able to anticipate much that is now supported by empirical evidence.

Csaba Pleh is one of Hungary's leading psychologists. His article provides a comprehensive survey of psychological thought during the last thirty years. His emphasis is on how the computer has provided an inspiration for studies of cognition, but how it has also created problems to which Polanyi was sensitive.

An earlier version of Endre J. Nagy's paper was given also at Kent State and it represents an approach of a sociologist and lawyer to Polanyi's ideas. Polanyi's liberal conservatism is almost unknown in Hungary, but it provides very much needed support for the creation of a new social system here. The importance of this aspect of Polanyi's thought inspired the Association to call itself the Michael Polanyi Liberal Philosophical Association. Endre J. Nagy, an organizing member of the Association, addresses in his article the present Hungarian situation and explains how Polanyi's thought about civil society can be of assistance now.

The present double issue of *Polanyiana* could not have been published without the much appreciated work of Walter Gulick who has been a Fulbright visiting professor in the Philosophy Department of Budapest Technical University this spring, who is also a representative of the North American Polanyi Society. We are very grateful for his help in editing and for his paper written for this issue of *Polanyiana*.

Gabriella Ujlaki  
*Polanyiana*, Vol 2, No. 4 1993 Vol 3, No 1 1993  
June, 1993

# Epistemology and the Human Sciences: Michael Polanyi's

## Contribution to the Reshaping of Moral Theology.

Terence Kennedy C.Ss.R.

**ABSTRACT** Key Words: responsibility, freedom, personal knowledge, epistemology, participation, history, social sciences.

*This article shows how there is a great kinship between Polanyi's thought and that of Bernard Haring, "the father of modern moral theology" in the Roman Catholic Church. Haring advocated an ethics of personal responsibility that calls for an epistemology such as Polanyi developed for history and social sciences in **The Study of Man**.*

Michael Polanyi's thought, without his knowing it, has been reflected in the renewal of Catholic moral theology. There are remarkable similarities between Polanyi's struggle against totalitarianism and his mission to humanise scientific culture and the work of Bernard Haring, "the father of modern moral theology."

Bernard Haring<sup>1</sup> says his experiences as a medic in the German army on the Russian front during World War II "prepared me to work to overcome a one-sided ethic of obedience and to preach instead a morality of personal responsibility and brotherly love, with adherence to one's own sincere but ever searching conscience."<sup>2</sup> After the war he was professor of moral theology and sociology at the Redemptorist house of studies in Gars. There he wrote *The Law of Christ* which completely broke the pattern of casuistic thinking and introduced personalism into moral theology. The basic model of moral behaviour was no longer conformity to law but a personal response to the call of love from the other. It could be said that *The Law of Christ* changed the understanding of moral theology in the Catholic Church in a manner quite like the effect of *Personal Knowledge* on the community of scientists.

Haring was one of the three theological experts that Pope John XXIII personally chose and appointed to the Second Vatican Council. His contribution was mainly on the questions of the meaning of morality and religious freedom. His ideas and pastoral approach shine through the Council's document on *The Church in the Modern World*. One of his many achievements was to introduce the social sciences into moral theology as a methodology for reading the signs of the times. The Council ratified this stance. "In pastoral care appropriate use must be made ... of the findings of the secular sciences, especially of psychology and sociology."<sup>3</sup> After the Council, he reformulated his thought in *Free and Faithful in Christ*, an update of *The Law of Christ* for a changing world. One can hear Polanyi's concerns ringing through this statement in *The Ethics of Manipulation*: "The ideology of the priority and supremacy of science and technology celebrates its feasts in classical Marxism but also in the western world."<sup>4</sup>

Haring never met Polanyi personally but came in contact with his thought through Abraham Maslow's recommendation of his philosophy of psychology and later through doctoral students at the Alphonsian Academy in Rome.<sup>5</sup> Haring was particularly impressed by Maslow's claim about Polanyi's classic *Personal Knowledge*: "If you have not studied this book, you dare not consider yourself prepared for the next century."<sup>6</sup> Haring often appealed

for an epistemology that would be liberating and healing. His Christian personalism was reinforced by Polanyi's humanistic approach to the sciences.

This essay presupposes a basic knowledge of Polanyi's post-critical philosophy and so will concentrate on his epistemology of the social sciences and how this impinges on ethics and morality through a new understanding of the person.

Polanyi's philosophy of science backs up Haring's charge against behaviourism that "Skinner and his most ardent followers frankly confess that freedom is nothing else than an illusion."<sup>7</sup> Freedom is the very heart of commitment in Polanyi's conception of personal knowing. "It regards freedom as liberation from personal ends by submission to impersonal obligations." This freedom must always be enlightened by conscience in its search for those goods that rule over both individuals and the State. The person is released from individual selfish ends by submission to impersonal universal obligations.<sup>8</sup>

Father Haring waged a long struggle against the inroads of behaviourism into psychology and ethics.<sup>9</sup> His insights are supported by Polanyi's understanding of the human mind. We cannot identify the mind with its exterior workings. That would be to fix attention on individual particulars without achieving a focal understanding of them as a comprehensive being. Polanyi evokes three closely reasoned arguments for the impracticability or practical contradiction of behaviourism. He proceeds phenomenologically from the observation of a person's face. Firstly, the particulars of the face observed in themselves are "meaningless." Secondly, they cannot be so observed since they are part of a physiognomy and apart from it remain unspecified; they are tacitly perceived when grasping it. Thirdly, it is impossible to trace the manifestations of the mind, "except by reading them as pointers to the mind from which they originate." What we know in the first place is the person whose mind as the centre of thought is revealed through his rational activities.

This insight illustrating the multiple operational principles functioning within the hierarchical ontological structure of the person throws light on human error, which has causes but not reasons.<sup>10</sup> Responsibility represents the highest level of embodied personal existence. Every human commitment involves a limitation of our capacities and the possibility of failure.<sup>11</sup> "Everywhere the potential operations of a higher level are actualised by their embodiment in lower levels which make them liable to failure."<sup>12</sup> Responsible choices may be vitiated by a failure of commitment at any level, i.e., physical illness, mental disturbance or, at the level of personal responsibility, by moral evil. The limitations defined by the parameters of our embodied existence are but the opportunities offered for the realisation of our "cosmic vocation" in freedom.

We now turn to Polanyi's stance in face of the great debate that raged in Germany from the end of the last century and well into the twentieth and which still has reverberations today: namely, what are the origin and status of history and the social sciences? Are they a pure extension of the methods of the natural sciences into human affairs? Do they have their own proper matter distinct from the physical sciences? Can they live up to the ideal of scientific objectivity? Are there social facts that can be probed by a value-free epistemology? Polanyi's answer to these questions was already largely determined by his realisation that the ideal of pure scientific objectivity was impracticable in the natural sciences. It was destined to be even more so for the social sciences. They were as yet new and as it were still rather immature in their epistemological features. Their birth should represent not so much an emancipation or secession from the natural sciences as a liberation from a false ideal of "value-free science" so

that they might enjoy their own proper identity. Here is the source of Polanyi's original contribution to this discussion. He became familiar with its terms during his formative years in Hungary and was personally acquainted with Weber and many of its leading protagonists in Germany, being part of those intellectual circles where these questions were most actual. His exchanges with Karl Mannheim in England brought the same issues to the fore. Perhaps the most revealing lines that Polanyi wrote on this topic were his "Bibliographical Note" at the conclusion of *The Study of Man*. Here he takes exception to Collingwood's interpretation of "the secession of history from the domain of the natural sciences"<sup>13</sup> and especially to how he treats Windelband, Rickert and Dilthey as the fountainhead of the anti-positivist theory of historical knowledge. He says they have been badly misrepresented. "Rickert does not **say** that the valuation of historical facts is a proper function of historiography. He says, on the contrary, and argues it in detail, that history **as a science** can merely identify acts deserving praise or blame, while strictly refraining from apportioning praise or blame." In line with this criticism while seemingly an admirer of Weber, he vigorously opposed the commonly accepted "doctrine of value-free science", which by foregoing all evaluation and limiting itself to description, undermines a free society and its institutions, by turning all moral and political commitments into mere facts about people's beliefs. Such a value-free social and political science is impossible of realisation for it denies that there is any successful or mistaken satisfaction of our normal standards.<sup>14</sup> He notes further that Dilthey's contribution should be seen less from the perspective of the separation between methodologies of history and the sciences than from the perspective of the movements of phenomenology, existentialism, and Gestalt psychology which he helped inspire. Polanyi proceeds to delineate his own position as one that would develop these movements into a comprehensive understanding of both history and the social sciences in continuity with the natural sciences. He therefore refuses to be drawn on the question of the secession of history from the sciences. He claims it is unique as a discipline and yet enjoys continuity of epistemological method with the sciences.

He would seem to part company with Wolfhart Pannenberg in his classic *Epistemology and the Philosophy of Science*<sup>15</sup> when he draws a line of discontinuity between the natural positive sciences and the hermeneutic social and human sciences. But is not Polanyi consistent with his theory of *Personal Knowledge* when he perceives just such personal and hermeneutic elements even in the natural sciences? In his preface to that volume he says,

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... the **personal participation** of the knower in all acts of understanding.<sup>16</sup>

If one follows Polanyi's thought through consistently, one discovers the idea of an open universe with man at its centre as its highest achievement. It is history that leads us into an understanding of man because it is history more than any other discipline that unveils the meaning of human decision, particularly those political decisions that have shaped the destiny of the human race. In the fourth and final part of his **magnum opus**, man is visualised as the pinnacle of evolution, creator of the noosphere through his cultural systems and intellectual frameworks. In such a hierarchical vision, there is a fundamental principle which Polanyi formulated as "the correspondence between the structure of comprehension and the structure of the comprehensive entity which is its object."<sup>17</sup> This presumes a continuously graded sequence of sciences which correspond with the ever intensifying degrees of existence. History does involve unique personalities and unrepeatable events. It therefore transcends the universal features of the positive sciences by entering into, or, in Polanyi's terms, indwelling the personalities and decisions that have moulded

our destiny. Here are our heroes and saints whom we approach with reverence and respect. "They offer opportunity for intimate indwelling and for a systematic study of their individuality."<sup>18</sup> The fact that history refers to a distinctive level of reality involves neither acceptance nor rejection of the secession of history from the sciences. The method of history passes from that of a personal observation of other objects to an encounter with another mind and thus to partaking in the existence of another person. Now the observer is logically related to the object of his science as a higher to a lower ontological level. When we come to the study of man however these levels unite as we begin to participate in the decisions of another person whom we willingly accept as a model; his standards become our standards:

The participation of the knower in the thing he knows increases steadily as the objects of knowledge ascend to ever higher levels of existence, and that, correspondingly, the observer also applies ever higher standards of appreciation to the things known by him. These two trends will combine to an ever more ample and also equal sharing of existence between the knower and the known, so that when we reach the point at which one man knows another man, the knower so fully dwells in that which he knows, that we can no longer place the two on different logical levels. This is to say that when we arrive at the contemplation of a human being as a responsible person, and we apply to him the same standards as we apply for ourselves, our knowledge of him has definitely lost the character of an observation and has become an encounter instead.<sup>19</sup>

Polanyi's approach to history and the human sciences may be summed up in a framework of respect whereby we assess the moral and political worth of persons and institutions. These judgements are based on our existential commitments, i.e., on our bodily, passionate, rational dwelling in society and its spiritual and cultural traditions. There are three ways of criticising human decisions that lead to three types of historical fallacies.<sup>20</sup> 1). By applying our standards without allowing for differences in the historical or real setting of the acting person. This is the straight jacket of a rationalist idea of immutable principles. 2). By judging others' past actions only by their past standards as distinct from our own. This sanctions conformity and makes any criticism of standards meaningless. 3). Judgements based on a materialist conception of man. Here all actions are seen as determined by impulses of power or profit so that human action is deprived of all moral meaning and directedness to ideals and obligations.<sup>21</sup> Rationalism is overcome by admitting the biological and cultural embodiment of all free actions; relativism is overcome by acknowledging that every person has access to standards of truth and rightness, and determinism by commitment to personal knowledge as the seat and source of responsible choice.

Polanyi saw that unless we believe and trust our scientific theories we could never achieve understanding of their human meanings and purposes. Haring is full of awe before the achievements of the sciences. "The dedication and courage of our scientists awakens in us a sense of admiration and gratitude." Their conquests must be viewed in the horizon of destiny of the human person. "True humanity has to be constantly guarded and defended. We are a creature of many dimensions; and only by a radical commitment to the basic value of salvific knowledge, altruism, respect for every person's dignity and concern for life conditions that favour the growth of genuine freedom can we assure gradual progress in hominization."<sup>22</sup>

## ENDNOTES

1. The current article is largely taken from a larger study “Epistemology and the Human Sciences: Michael Polanyi’s Contribution to Moral Thought” prepared for a Festschrift published in German and presented to Haring on his eightieth birthday in November 1992.
2. *Embattled Witness: Memories of a Time of War*, Seabury Press, New York 1976, vii.
3. *Gaudium et Spes*, n.67.
4. *Ethics of Manipulation: Issues in Medicine, Behavior Control and Genetics*, Seabury Press, New York 1975, 39.
5. For example T.Kennedy C.Ss.R., *The Morality of Knowledge*, Rome 1979.
6. *Motivation and Personality*, New York 1970, 10n.
7. *Ethics of Manipulation*, 113.
8. *Personal Knowledge* , 214.
9. A typical example in *Ethics of Manipulation*, Seabury, New York 1975, 109-136 on “Behavior Modification” with a fierce refutation of B.F. Skinner.
10. Ibid. 91. Here there appear to be the beginnings of a natural law theory because “studies of rationality remain always rooted in an ancillary knowledge of causes operating on lower levels of reality”(p.93).
11. Karl Popper and the critical rationalist school have criticised Polanyi as being a subjectivist and as denying the fallibilist nature of scientific knowing. Andy F. Sanders has demonstrated that Polanyi is much closer to Popper than commonly thought and that his post-critical fiduciary philosophy has in no way denied the revisability of scientific propositions. See his *Michael Polanyi’s Post-Critical Epistemology*, Rodopoli, Amsterdam 1988, especially Chapters 5 and 6.
12. *The Study of Man*, 67.
13. Much of the following information is based on a talk by Prof. Klaus Allerbeck on “The Logic of *Personal Knowledge*” at the Centennial Commemorative Conference on Michael Polanyi, Budapest 24-26 August 1991. Prof. Allerbeck believes that Polanyi subscribed to a type of Weberian *Verantwortungsethik*. For Polanyi’s discussion, see *The Study of Man*, 100-102.
14. See Richard Allen’s *Polanyi*, Claridge Press, London 1990, 72-73, 78.

15. See Chapter Two which significantly for our argument treats the emancipation of the human from the natural sciences. *Wissenschaftstheorie und Theologie*, Suhrkamp Verlag, Frankfurt am Main 1973.

16. *Personal Knowledge*, vii.

17. *The Tacit Dimension*, Doubleday, New York 1967, 33-34.

18. *The Study of Man*, 85.

19. Ibid. 94-94.

20. The underlying analogy with normative frameworks in animal behaviour should be noted. This leads to “a fourfold classification of deliberate choice” (ibid. 77).

21. Ibid. 87-89.

22. *Ethics of Manipulation*, 207 and 211. The author would like to thank Father Haring’s friend and colleague in the Alphonsian Academy, Father S. O’Riordan C.Ss.R. for his generous assistance in preparing this paper.



# Learning to Learn: Educating with/for the Mind-Body

**Jerry H. Gill**

**Editor's Note:** The November 21 and 22, 1993 meetings of The Polanyi Society in Washington D. C. featured two extended public conversations with William H. Poteat, a scholar and teacher who has encouraged generations of students to explore the thought of Polanyi. Among other topics, the Washington sessions treated teaching. Both the public conversations with him and the crowd of former students in attendance made it clear that William H. Poteat was an exciting teacher. Jerry Gill, who was a Ph. D. student at Duke working with William Poteat from 1964-66, attended the Washington sessions and was stimulated to produce the following reflections on teaching and on a memorable mentor.

**ABSTRACT Key Words:** learning, education, epistemology, curriculum, mind-body, William Poteat.

*This essay focuses on the application of the notions of tacit knowing and embodied interaction to the college classroom. Topics ranging from classroom arrangement and discussion techniques, through curriculum and textbook choices, to attitudes and values are address.*

At the recent Polanyi Society meetings in Washington D.C., when the discussion turned to the implications of Polanyian and Poteatian perspectives for academia, I was able to resist the temptation to put in a plug for my book, *Learning to Learn: Toward a Philosophy of Education*. I am no longer able to resist this temptation and offer below some reworked material from the chapters which seek to apply the philosophical posture worked out in this book to the college classroom. I have sought to include both theoretic and practical considerations. My hope is that these suggestions will serve to stimulate further discussion of this important topic, as well as greater conviviality and learning in our classrooms. I trust that my indebtedness to both Michael Polanyi and William Poteat will be fully evident.

## **I. Epistemological Themes**

I am convinced that a significant majority of college and university professors fail to give sufficient, if any, attention to the epistemological issues and themes which necessarily, if unconsciously, inform their choice of goals and procedures. It would seem that some understanding of what knowledge actually is, how the cognitive process works, and which practical patterns are appropriate thereto would be exceedingly germane to the academic enterprise, but unfortunately such considerations have little or no place in the training of college professors.

Perhaps the most basic and general theme that emerges from my initial exploration is that knowing is a relational reality. The key idea here is that knowledge is not a thing to be possessed but an activity to be engaged in. In other words, cognition happens, takes place in an ongoing fashion in the interaction between and among knowers and the known. To put it the other way around, the latter actually are constituted by means of the former. In this regard, knowing

is quite similar to dancing or any other active, relational phenomenon. Dancing creates both the dance itself and the dancers, in the sense that it is incorporated into and thus participates in the ongoing development of their identity. Knowing, too, participates in the evolution of both the known and the knower; each is constantly being altered by the interaction between them, by their cognitive symbiotic relationality.

When one reflects on the implications of this understanding of the knowing process for everyday classroom procedure, especially at the college level, certain conclusions would seem to follow. For instance, the direct presentation of facts and ideas, as in the typical lecture, for example, creates a static, unilateral situation in which students are exposed to, but have little or no opportunity to interact with, the information. Even when the lecture is creative and lively, and after granting that the students can interact mentally as they absorb the material, it remains true that the relationality of the situation is exceedingly minimal. When one realizes that at least three-quarters of a college student's classroom time is spent listening passively to lectures, certain shortcomings in our educational practices become obvious. In language and laboratory courses as well as in internships, there is general acknowledgment of the necessity for interaction between the knower and the known, although often there seems to be minimal connection between these more relational activities and the regular classroom lecture. Teachers frequently rely upon quizzes, examinations, and term papers as opportunities for students to show that they have interacted with material, but far too often such occasions only indicate the degree of passive memorization and regurgitation. What are needed are classroom techniques and structural procedures that will acknowledge and incorporate the relational, interactive character of the knowing process.

An important dimension of the relational quality of knowing is dialogue, especially as it applies concretely to language as a social activity. A chief form of cognitive interaction is conversation or discussion. There is something fundamental about the process of linguistic exchange of ideas, of explaining and questioning subject matter, to actually comprehending, exploring, and creating knowledge. When students have an opportunity to respond to ideas and information, among themselves as well as with the teacher, it becomes real and part of them in a way that it does not when assimilated silently. This is surely understandable when one recalls the absolutely strategic function linguistic activity performs in the incorporation of individuals into a community or into the human race.

Here again, however, the average college classroom shows little acknowledgment of the crucial role of dialogue to relational interaction, and thus the knowing process itself. Far too often, the "discussion periods" are nothing more than recitation or "guess-what-the-teacher-is-thinking" sessions. In their eagerness to "cover all the important material" and save the students from continuously "reinventing the wheel," teachers undermine the very learning process itself by depriving students of the opportunity to interact with the subject matter. One might be tempted to say that in such cases the teachers are teaching but the students are not learning, except that without learning there is no teaching.

In my own teaching I have come to the conviction that helping students learn to do philosophy is more important than teaching them about philosophy. Of course, it is valuable for them to know something about how the discipline has developed and what major thinkers have thought, and so on. We learn to philosophize best in the context of other philosophers. However, it remains true that not only will students soon forget most of what Plato or Dewey said but they can always look such things up in books. What is of paramount importance is that they learn something about thinking philosophically by actively engaging in the process. In this way we can increase the likelihood not only that they will know how to think more clearly and consistently but that they will not have had their interest in such things

aborted at the outset by non-interactive classroom sessions.

Another highly significant dimension of the relational character of the knowing process is necessitated by our own embodiment. The pivot point or fulcrum of our interaction with the world and others, as well as with ideas, is, at the most bedrock level, the somatic quality of our existence. In Western thought and education, learners have been viewed as essentially minds which at best inhabit, and at worst are imprisoned by, bodies. From Plato through Descartes to Bertrand Russell and Jean-Paul Sartre, most philosophers, along with classroom teachers, have tried to ignore or overcome the reality that human persons are embodied. On the basis of the work of such thinkers as Maurice Merleau-Ponty and Michael Polanyi, however, it is now possible to acknowledge and even to capitalize on this reality. The relational, interactive quality of the knowing process is mediated by our embodiment, including both perception and movement.

Fortunately, at the college and university level of education, teachers do not have to “contain” or channel the energy and movement of their students, as do elementary and junior high school teachers. Partly for this reason, however, we generally give little if any thought to this dimension of the learning process. In almost all classes, students file into rigidly rowed seats, sometimes in relatively huge numbers, where they sit still and listen to a lecture for about fifty minutes. Not only is their kinesthetic embodiment at best ignored and at worst antagonized, but their perceptual activity is usually confined primarily to one aspect, that of hearing. It is really surprising how few professors make regular use of visual aids, especially the chalkboard. Moreover, their own movement, which can serve as a point of visual focus for the students, is generally minimal, thereby contributing to the one-dimensionality of the educational experience.

In this connection, it should not go unnoticed that the design of most classrooms, with their static, military-like organization, and the teacher’s tendency to ignore such things as visual perspective, also undermine the embodied character of the knowing process. On the one hand, the seating arrangement forces most students to stare at the back of other students’ heads throughout the class hour, never actually engaging each other in face-to-face interaction. On the other hand, most of the class members are situated so as to be excluded from the axis of whatever dialogue might take place. The unilateral delivery of a lecture and the straight-lined design of the seating render all but the front and center seats irrelevant to the dynamic of the class. Far too often, professors do not notice such things, let alone do anything to alter them.

One way to highlight the sort of things I have been suggesting is to employ Paulo Freire’s techniques for consciousness raising. If one takes photos or draws pictures of the typical college classroom arrangement, a great number of relatively submerged realities begin to surface. In addition to the many factors which contradict the embodied character of the knowing process, such as those mentioned above, the entire theme of relationality, including interaction and dialogue, can be seen to be essentially undercut. Not only are the learners cut off from one another, but the teacher is separated from them all, both horizontally and vertically. While this distance may well serve best in the simple dissemination of information, it is surely counterproductive in relation to what constitutes real learning and knowing. Students are systematically excluded from interacting with the subject matter, each other, and the professor, while the professor is placed hierarchically so as to deny any serious mutuality and significant exchange with students. The picture is not one of a more experienced learner engaging interactively with other learners, but of “the expert” handing down esoteric and privileged data to the lowly initiates.

This means, in practical terms, that the basic format of the course must be discussion. Although occasional lectures are clearly desirable, as a way of providing background, summation, or additional challenge, the only way to help students develop their cognitive skills is to structure a course around the discussion of the ideas and issues presented in texts and lectures. In this way the ideas and issues raised by previous and current thinkers can be transformed into problems that confront the students themselves, and not simply interesting or uninteresting museum pieces. If and only if the students can engage the subject matter, so that it becomes important to them, will real learning take place.

In practice, I try to set the course up as a three-way dialogue between the texts we read, the students, and myself. In the beginning this sort of format was difficult for me, since I come to each class with so many ideas of my own and so much graduate school training. I felt a legitimate responsibility to the discipline and was generally over prepared in the sense that the students could hardly get a word in edgewise. However, over the years, I have become convinced, not only that my primary responsibility is to facilitate the student's learning to learn, but that the best way to honor the discipline itself is by engaging students in it rather than teaching them about it.

A second practical goal for the college classroom is to encourage students, amid their encounter with issues and ideas, to develop empathy for all points of view, especially those which differ from their own. The ability to appreciate where a person or idea is coming from, no matter how bizarre it may seem, is not only important in its own right but is a vital aspect of being able to consider both sides of an issue. At the level of popular culture, we generally evaluate ideas simply: yes or no, good or bad, I like it or I don't. Helping students learn to think, to analyze before they evaluate, is an important function of education. In like manner, encouraging students to appreciate or empathize with a point of view, whether from a text or from the seat next to them, before analyzing it, is also a crucial function of a sound approach to education.

A great deal of the excitement, as well as the substance, of learning by discussion comes from students interacting with each other, from learning to appreciate points of view which differ in some way from their own. Honest discussion involves actually listening to the other person's ideas and reasons before analyzing and evaluating them. Too often we only rehearse our own arguments while another person is speaking, rather than actually trying to follow their line of thought. A true discussion seeks a common goal, rather than the vindication of a particular perspective, and this process necessitates serious listening, a skill on which our own culture places little emphasis.

Of course, all of this applies with equal if not greater force to the teacher. This is difficult for one who has spent years working on the issues involved in a given field; it is easy to become impatient with the naive and "wrong-headed" character of many undergraduate ideas. However, when one actually takes the cognitive process seriously, as well as helping students learn to learn, it becomes increasingly easier to spend more time and effort tracing and comparing students' thoughts in classroom discussion.

## II. Practical Procedures

It is time now to consider some of the procedures which might be used to implement the foregoing principles. As I move to the procedural level, I must necessarily become even more specific and thus more personal. In the following pages, I shall describe various features and procedures of my own courses, with an eye to how they connect with key principles and epistemological themes. Although it is my conviction that these procedures are equally relevant to educational disciplines and levels other than my own, I shall leave such applications to those who wish to make them.

To begin with, because of the necessity of active participation to the knowing process, interactive discussion provides the format most conducive to cognitive activity. When a class is relatively small, say up to a dozen members, it works quite well to structure the discussion in seminar fashion, with each class session being focused around one or two student papers that interact with the textual material in a significant way. I usually ask the students to summarize one or two major themes or moves in the common reading and do something with them by way of comparison, analysis or evaluation. In small classes it works very well to provide photocopies of these papers so that each member of the class can follow and refer to specific points of the presentation. This sort of intensive approach works best with more advanced students, but I have used it to good advantage with relative beginners as well. With middle-sized and larger classes the discussion format needs a slightly different focus. I divide the class into smaller groups, of four to eight students each, rotating them in such a way that a different one has the responsibility of sparking the discussion each day. Depending on the size of the class and the number of sessions available, each group gets between three and six rotations in a given semester. This arrangement not only gives everyone some concrete opportunity to participate directly in the discussion, but it gives me a chance to get to know each student on something of an individual basis. I usually spend the first twenty to thirty minutes drawing out and summarizing the student's various ideas and positions on the chalkboard as we sit in a semi-circle in front of the class. Then we open up the discussion to the rest of the class for further observations and questions.

The seating arrangement for these discussions is extremely important. It is a great help if there is a small stage in front, or if the classroom is tiered, as this really facilitates full class participation. Also, the semi-circle of students in the front should not exclude those students on the outside rows of class. If possible, I try to curve these latter rows so as to create an amphitheater effect. Although I move around quite a bit as I "take notes" on the discussion on the chalkboard, I try to spend a good deal of time seated and listening as well, since this counteracts the teacher's tendency to dominate the discussion. All of these procedures are designed to reflect the simple realities of the embodied character of the knowing process.

When each group takes its turn at sparking the class discussion, the members of the group prepare short papers, usually one to three pages, in which they focus on an important point in the day's reading, take a position with respect to the point, and give their reasons for taking this position. In addition to guaranteeing that each group member has at least one thing to contribute to the discussion, these papers, which are handed in after class, provide several opportunities for me to interact with everyone taking the course. I try to make as many helpful and evaluative comments on each paper as I can, and almost always return them at the next class session.

Respect for students as persons entails prizing them as unique and as having certain capacities and potentials which warrant appreciation and development. If a teacher takes his or her vocation as a "calling," which is how I interpret my own experience, then each student will be viewed as intrinsically special, indeed, as "sacred." Each student

progresses at a different pace from other students. Whatever degree of respect and patience I have developed for students has resulted from the fact that I experienced these qualities in many of my own teachers, all the way from grammar school through college. I was both a “slow learner” and “culturally deprived” as a youngster, which resulted in my being a proverbial “late bloomer” in college. If my teachers had not exhibited profound respect for and patience with me as a person, I would never have become a teacher.

The first aim in my own classroom practice is to treat students as adults, as colleagues in our common educational experience. Of course, students between the ages of seventeen and twenty-two are not adults in the full sense of the term. However, I am convinced that it is only by relating to them as adults that they will become adults. In many ways college functions as a rite of passage in our culture, a process by which young people become full members of society. In other words, college students are on the threshold between childhood and adulthood, and the best way to assist them across this great divide is to relate to them as if they already were full, albeit new, members. The whole climate, in the classroom and outside of it, needs to convey one’s commitment to this basic belief.

One crucial way to express this fundamental commitment to the adult personhood of students is to structure each course so as to maximize their sense of having responsibility for their own education. This means that one must eliminate, as far as possible, all such hand holding devices as seating charts and roll-calling, as well as the “threats and prizes” approach to motivation represented by pop-quizzes, elaborate point systems, and so forth. In my own experience, the abuses that result from removing such modes of control are far outweighed by the long-term attitudinal and behavioral transformation which occurs with the majority of students. Moreover, those who have “succeeded” within the constraints of such techniques have accomplished only that, and have not been assisted to grow toward responsible adulthood.

Another important means of expressing one’s commitment to each student’s individual worth and adulthood pertains to the tone of one’s voice when talking to students, whether individually or as a class. It is impossible to overemphasize the significance of this intangible factor, but it is almost as difficult to put one’s finger on it. Time and time again, year in and year out, I have heard students complain about, and have frequently experienced first-hand, teachers speaking to students in a demeaning and condescending tone of voice. This practice is as offensive as it is subtle, and for the most part it becomes a matter of habit without the teacher even being aware of it. Nevertheless, there is nothing more debilitating to the students’ senses of self-worth, to say nothing of being cognitively counter-productive, than this sort of behavior.

It is absolutely essential to the relational and developmental character of the knowing subject to encourage each student’s full participation in the cognitive process. Moreover, if one is interested in conveying and modeling the idea that all sides of an issue and everyone’s opinions have a right to be heard, as well as underscoring the necessity of social interaction to the achievement of knowledge, then one must both encourage and take seriously each student’s contribution. The limitations of time, along with the occasional opinionated student, must be taken into account here. Also, although all opinions have a right to be held and heard, not all are of equal cognitive worth. When all this is taken into account, however, the fact remains that fundamental respect for and encouragement of students is as necessary to developing cognitive skills as it is frequently absent from typical educational enterprises.

Another major goal of my overall approach to the classroom is, of course, the development of standard intellectual abilities and habits. This concern focuses in the linguistic dimension of the social aspect of personhood

and knowing, for language is both the air we breath and the body we indwell, socially and cognitively speaking. Thus, in my own classroom I place a very high value on discussion, which includes both talking and listening, and writing of various kinds. In helping students understand and develop various aspects of cognitive activity, a teacher must not only identify, explain, and practice them, but must also provide opportunity and encouragement for the students to do likewise. Obviously, this means that the teacher must talk less and the students must talk more; this is a hard saying for those of us who are well trained, and even harder if we happen to be verbose or extroverted. Nevertheless, students learn to think in and through language, both written and spoken, and must be given ample opportunity to do so. This does not mean that every minute must be filled with talking; deep and clear thought often needs silence in which to ferment.

Let me reemphasize that the social, relational dynamics of the classroom constitute its very axis. The aim is to create an atmosphere which causes students to look forward to the class, to feel respected and needed in the pursuit of knowledge, and to respect and rely upon each other in these endeavors. On more than one occasion, I have had to arrive ten to fifteen minutes late to a class where the students had gone ahead with the discussion, since the rotating group format was already in place and familiar. I slipped into the back row of seats and observed the social dimension of cognitive activity in process. Whatever misgivings I may have had about the shortcomings of such teacher-less discussions were far outweighed by the satisfaction derived from hearing a number of students remarking, as they left the classroom: "That's amazing; we were actually educating ourselves and each other!"

In discussions, as well as on the students' papers, it is of utmost importance to respect all comments and points of view, constantly trying to connect them to the issue at hand as well as with broader issues. I try to involve as many persons as possible in the conversation, to frame my own contributions in the form of questions rather than conclusions, and to cultivate a kind of community or team spirit in which everyone works with each other in the development of the topic. Frequently, students will interrupt or demean each other's contribution to the discussion, and at such points I try to encourage mutual respect for and attention to both the student who is speaking and the topic at hand. All such "guiding" in the discussion process must be done without belittlement or officiousness but with gentleness and, one hopes, with humor.

These same concerns and practices apply with equal validity to one's conversations with students about their written work. Criticisms and commendations need to be expressed in a concrete and positive tone, and students should be encouraged to continue the dialogue about their work by talking with the teacher, writing comments on the comments they receive, or even rewriting the paper. I usually have a few students who write a number of extra papers in response to my remarks on their regular ones, and even some who carry on a semester-long correspondence. I generally ask all students to hand in their earlier papers with each ensuing paper so we both can have my previous comments available for ready reference.

By operating according to the foregoing theoretic principles and classroom goals, it is possible to discuss with students absolutely any topic with maturity and insight. Although one cannot require responsible thought and behavior, it is equally true that one cannot enable others to achieve these goals merely by the threats and prizes of the traditional grading system. However, by relating to students as if these qualities are expected, more often than not they become a reality. By expecting thoughtful and mature contributions to the discussion of such a wide range of difficult subjects as sexuality, racism, homosexuality, religious beliefs, poverty, and war, students, whatever their backgrounds and abilities, will grow into them. Even the obtuse and abstruse complexities of philosophy can be explored with

undergraduate students if one assumes and acts as if they will be able to do so.

### **III. Matters of Curriculum**

The obvious implication of this point of view is the importance of structuring a classroom program so that students have ample, indeed primordial, opportunity to engage each other in discussion concerning whatever subject matter may be deemed important. What is not so obvious, however, is the implication that this dialogical interaction should also involve the teacher. The chief difficulty is that, by and large, teachers are not familiar with the dialogical mode in relation to students. To lecture and answer questions from students is one thing, and to observe and supervise them discussing with each other is still another thing. To participate in a real discussion with students, as a more experienced but equal learner, is altogether a different thing. Not only have few teachers themselves been educated to do this, but the entire academic process has conditioned most of us, no matter how “enlightened,” to operate from an authoritative posture in relation to students.

It is a difficult task to re-tool ourselves to relate to students in a dialogical mode. We must rethink such obvious things as curriculum setting and activity patterns, but also such subtle things as tone of voice, the ability to listen, and not always having the last word. Although it can sometimes be humbling and painful, having someone tape one’s classroom procedures, so that one hears and sees oneself in action as an authoritarian dispenser of information, is extremely valuable. In addition, allowing students to see one’s own thought process, whether orally or in writing, including mistakes and corrections, goes a long way toward helping them feel that they, too, can learn to overcome their difficulties and mistakes. Being exposed to how a more experienced learner goes about this process enables students to learn how to learn.

I have worked at remembering that, even as it is important for my students to learn the vocabulary and mode of thought integral to the subject matter of our course together, so it is important for me to know the value system and interests of their lives outside the classroom. If I wish them to speak “my language,” as it were, I must be willing to learn “their language.” Even though the world inhabited by students may not seem very significant to teachers, it is absolutely important to remember that not only does it provide a helpful means to communicate with them and thus “educate” them, but it is the world of the persons to whom we have dedicated our help. Frequently students will loan me a book or record or invite me to attend some event which they value highly. I try always to engage such opportunities, not only for their sake but also for mine. I invariably learn from these encounters, and my students are motivated thereby.

In choosing textbooks for dialogical learning there are several factors to bear in mind, in addition to such obvious concerns as appropriate topic and level. One is to ensure that a solid variety of points of view on the issues involved is represented; true dialogue requires the incorporation of differences and alternatives. Another important factor is the inclusion of different cultural perspectives. For too long in America, and even in the Western tradition, we have conducted our educational programs as if other cultures, including the minorities in our own society, were inferior at best and nonexistent at worst. As the demographics of our shrinking world clearly indicate, this is no longer possible or wise. A third, related factor pertains to the desirability of using texts written by, or at least including the writing of, female authors. Not only is this a valuable and increasingly significant aspect of our own cultural development, but it contributes a great deal to the reeducation and broadening of both males and females with respect



to what constitutes a fully human person. One simple fact to bear in mind is that in almost all colleges and universities in the West, females far outnumber males; it is only appropriate from a motivational and modeling point of view to capitalize on the use of women writers and thinkers.

Students need to be enabled to recognize, explore, and draw conclusions about the relational interconnections between and among the various dimensions of the real, the true, and the good which they encounter within and outside the classroom. This, of course, requires that teachers be able to model and engage students in this sort of cross-disciplinary interaction. While it is very important for teachers to continually broaden their knowing, even at the expense of their own expertise, it is also helpful to realize that it is not necessary to know a great deal about a field or an issue in order to inquire or guide others into it. What is necessary is an interest in a variety of subjects and a commitment to the process of learning to learn. At one point Whitehead defined a good teacher as “an ignorant person thinking.”

Another principle for curriculum development flowing from my discussion of the mediational and contextual character of the known is the significance of concrete or action-oriented education. Beginning with my analysis of the knowing process, through the examination of the nature of the knowing subject, and including my exploration of that which can and should be known, I have repeatedly emphasized the pivotal character of embodied and social interaction. Knowing, knowers, and the known are all a function of symbiotic processes; they give rise to and sustain one another, even as dancing, dancers, and the dance yield and define one another. It is not surprising that an educational posture based on such a relational and reciprocal understanding of cognitive activity should stress the importance of active involvement in both the physical and social dimensions of its program. Without this concrete behavioral component, educational curricula will remain abstract and “intellectualist,” failing to connect with and affect the lives of the students.

By means of our traditional, elitist approach to education policy we have consistently placed intellectual activity above and as more important than physical activity. However, we have also interpreted the former as the acquisition of information and concepts rather than as the practice of cognitive skills. It is this bifurcation against which Dewey fought in his efforts to restore the pragmatic center of the educational enterprise. In his view, education is not preparation for life, whether in the form of mindless skills or in the form of inert knowledge. Rather, since life is education, at the most fundamental level, education must also be life.

One of the “master teachers” I was privileged to study with is William H. Poteat, recently retired from Duke University. In some ways, Professor Poteat’s pedagogical posture was the very opposite of many other teachers. I came into Poteat’s classes having spent four years teaching according to the principles and example offered by other teachers. At first, I was surprised, even frustrated, by Professor Poteat’s seemingly disorganized approach to class discussion and complete disuse of the chalkboard. However, it soon became clear that he was able to share a deep and overall grasp of the issues involved in the text, together with their implications and presuppositions. At the beginning of each class, Professor Poteat would summarize our previous exploration and use it as a point of departure for the current discussion. The class session itself ranged far and wide, with many students contributing what seemed, at best, to be collateral observations. Professor Poteat operated completely without notes, except for his markings and summaries on the pages of the texts.

As the term progressed, however, I became aware that I was in the presence of an extremely brilliant and effective scholar-teacher. There seemed to be no field or thinker with which Professor Poteat was unfamiliar, and he often effectively summarized various positions and issues for those of us who were not as well informed. Our subject

was philosophy, but our teacher, ranged broadly and deeply across history, psychology, religion, the arts, and natural science. More importantly, he was not primarily interested in imparting his knowledge to us, but in helping us come to understand and wrestle with the issues for ourselves. It was for this reason that he was uneasy with my own penchant for diagrams; he thought that they could too easily be construed as summaries of “the truth” by the students. Unfortunately, this seemed to make him distrustful of using the chalkboard at all. I think his teaching would have been improved by the incorporation of some board work, for it is an extremely helpful way of tracking the twists and turns of a class discussion.

The most impressive characteristic of Professor Poteat’s teaching style was his ability to integrate a deep commitment to and knowledge of issues and ideas with an extremely personable and informal atmosphere. Without in any way being a clown or “performer,” he could come to class wearing a cowboy hat acquired on a recent hunting trip to Wyoming, or begin each class with the latest good news/bad news joke. Whenever he listened to a student speak, in class or met one on campus, he interacted with them as if they were the only person present. I was fortunate in having Professor Poteat as my dissertation adviser, for he offered realistic guidance and assistance together with personable encouragement and understanding. One of his colleagues once described him as “a person who could tell you that he was anything from an antique book dealer to a Texas oil magnate and you would come away believing him.” In short he is an extremely knowledgeable and convincing person.

Professor Poteat asked students to prepare three-page papers on topics of their choice from whatever text we were working on. If it was a small class, we took turns reading these papers; otherwise we simply handed them in after class. The challenge of doing a responsible job on, say, “Kierkegaard’s Notion of Faith” or “The Meaning of ‘Meaning’ in Wittgenstein’s *Philosophical Investigations*” was truly formidable. It was here that I began to learn how, in Professor Poteat’s words, to “go for the jugular; once you have brought the beast down, you can carve it up at your leisure.” The use of repeated short papers, in which students focus on an issue in the text and take a position on it, complete with reasons, has been a crucial aspect of my own teaching method ever since. The writing of such “thesis papers” is not the only skill worth learning, but it is an exceedingly helpful one, both for students and those in other walks of life.

The most important thing I gained from Professor Poteat was a greater confidence in the learning process itself. He trusted himself and his students, together engage in cognitive activity, to be able to learn and help each other learn. Here is a very learned person who is so involved in learning to learn, and in enabling others to learn to do likewise, that he and they cannot help but do so. Professor Poteat was not as much worried about getting all the information and interpretations exactly right as he was concerned with approaching them in a fashion that would allow fellow learners continued and enriched learning. This attitude, this way of life, was pointedly illustrated one day when a student complained about the direction of our conversation by saying “But surely this is a psychological question, not a philosophical one.” Professor Poteat simply grinned broadly and replied, “I don’t know about that, but it sure is something interesting to pursue, is it not?”

My own teaching is not as open-ended and free-wheeling as Professor Poteat’s. I have tried to combine the ordered rigor and constant use of the chalkboard with the broadly interdisciplinary and personal character of Professor Poteat’s style. In addition, I have been strongly affected by the somewhat “radical” ideas of the 1960s, Dewey’s pragmatism, and Freire’s “politicism.” All of these emphases have been woven into my particular personality and life experiences, even as those of my mentors were woven into theirs. What we all have in common is a commitment to

the participatory nature of cognitive activity. Our common stress is upon the need of students to learn to learn by being involved in dialogical interdisciplinary, and responsible interaction with other learners, including the more experienced learners, "teachers."

All of this boils down to a definition of teaching as a form of learning. The teacher teaches best who places the learning process at the axis of teaching, both in theory and in practice. I have often joked with students that the whole enterprise of higher education is a "cover" for a way of allowing professors to go on learning and get paid for it. In my own case, this is not far from the truth; I have always felt a bit uncomfortable taking money for doing what I would choose to do anyway if money were not a consideration. In my view, teaching is primarily a form of learning, a way of continuing to participate in the dance of cognitive activity and helping others learn to do so at the same time. Surely, there are few vocations so important and so rewarding. To borrow and alter the title of Joe DiMaggio's autobiography, I feel extremely "lucky to be a teacher."

## Contributors To This Issue

**Jerry Gill** studied at Duke University with William Poteat from 1964-1966. He has taught at Rhodes College, Eckerd College, Eastern College, and currently teaches at College of St. Rose. Recent publications include *Mediated Transcendence* (Mercer University Press, 1989), *Merleau-Ponty and Metaphor* (Humanities Press, 1991), and *Learning To Learn: Towards A Philosophy of Education* (Humanities Press, 1993). Forthcoming is *Wittgenstein and Metaphor* (Humanities Press, 1994). As his article implies, Gill has enjoyed teaching cross-disciplinary courses such as "sports and social values" which he has developed over the years. He has directed a semester in Greece program for the last three fall semesters.

**Terence Kennedy**, an Australian by birth, has been a professor of moral theology at Alphonsian Academy in Rome since 1983. His doctoral thesis which focused on the thought of Michael Polanyi was directed by Bernard Häring.

**Robert P. Doede** has a Ph. D. in Philosophy from King's College, University of London. His doctoral thesis (1992) developed an embodiment account of mind by bringing together some of the crucial insights into mind and language found in the writings of Michael Polanyi, Martin Heidegger, and (the later) Ludwig Wittgenstein. Besides presenting papers at some Polanyi Society gatherings, he has written two Polanyi-inspired articles: "What the View from Nowhere Doesn't Reveal," *Crux*: (Sept. 1991/Vol. XXVII, No. 3), and "The Body Comes All the Way Up," *International Philosophical Quarterly* (forthcoming, Spring 1994). He is now working as a wait-person while he searches for a teaching post in philosophy.

**Walter B. Gulick** teaches at Eastern Montana College in Billings, MT; he was a Fulbright Scholar at the Technical University of Budapest in the Spring term of 1993. Gulick is book review editor for *TAD* and has been an active member of The Polanyi Society for many years.

# Of Mind and Meaning

**Robert P. Doede**

**ABSTRACT** Key Words: cognitive science, naturalization, original semantics, personal agent, event-causation.

*This paper examine's Jerry Fodor's attempt to naturalize the human mind by encompassing it within a new mechanistic ontology. It then explores Polanyi's view of mind's embodiment and meaning's emergence in an effort to uncover some fundamental incoherencies in Fodor's naturalization project.*

The modern digital computer has revolutionized the way we think about thinking and mind's ontology. The computer (or so some claim) is an example of an information processing system that might (given the appropriate program) share our psychology, without also sharing our physical organization (Fodor 1981:9). Jerry Fodor, a pioneer in cognitive science, is convinced that the modern digital computer holds the secret to naturalizing the human mind, i.e., rendering it explicable in terms of natural science.

In an attempt to extend the 16th century metaphor of the world-machine to encompass human cognition, Fodor seeks to exploit the computer as an existence proof, demonstrating that cognition is reproducible by machines: machines that manipulate symbols according to rules sensitive only to the symbols' physical structure. Fodor, however, gives the machine metaphor a new twist. No longer is the paradigmatic machine a clock, a physical contraption subject to physical laws. Rather, Fodor appeals to what is known as a "virtual machine," an abstract device whose structure consists of abstract rules that operate on explicit symbols.

Fodor deploys the concepts developed in the modern synthesis of linguistics, proof theory, information theory, artificial intelligence, and neuropsychology, known as Cognitive Science (henceforth, CS), to yield a functional and naturalized (i.e., non-anthropomorphic) analysis of intelligence: one that is independent of physics and yet wholly mechanistic in intent. But, as I hope to demonstrate in the following pages, Fodor's CS nonetheless rests upon an anthropomorphism, however more rarefied it may be: instead of ascribing human properties directly to nature, he first ascribes the properties of human artifacts, viz., virtual machines, to nature (i.e., our neurophysiology), and then appeals to these properties in his effort to naturalize the mind.

In the pages to follow, I not only explore Fodor's project of naturalizing the human mind, I also develop (what I take to be) Michael Polanyi's view of mind's embodiment. I believe Polanyi's views illuminate some of the fundamental inadequacies not only in Fodor's program, but in any account of the human mind pitched at a sub-personal level, i.e., a level of analysis that goes beneath the conscious intentions, actions, and avowals of the personal agent and purports to explain these in terms of processes and events to which the personal agent lacks both intentional and conscious access.

## Fodor on Human Intelligence

Quite simply, Fodor believes that human intelligence is a symbol-driven, rule-governed, physical phenomenon (Fodor 1981: 23-24). That is, as much as H<sub>2</sub>O is the scientific essence of water, so too the essence of intelligence turns out to be manipulation of symbols according to rules. Fodor contends that “the only psychological models of cognitive processes that seem even remotely plausible represent such processes as computational” (Fodor 1981: 27). He agrees with his friend and fellow cognitivist, Zeno Pylyshyn, that cognition and computation are “species of the same genus” (Pylyshyn 1984: xiii), i.e., both are rule-governed operations on a symbolism. Let’s take a moment and unpack the idea of “computational process.” What exactly is it?

The short answer to this question is “anything that is Turing-machine computable.” But, again, what does it mean to be “Turing-machine computable”? Suffice it to say that any question whose answer may be gained through an algorithm is Turing-machine computable. An algorithm is a rule that is free of ambiguities, vagueness, and approximation, and that, in a finite number of steps, answers a question. Algorithms are rules whose applications to (pre-specified) variables result in definite conclusions, “yes” or “no” answers.

Propositional logic is a good example of a computational process. It has symbols that function as variables, and rules specifying the operations that might be performed on them. There are three things to notice about propositional logic that are characteristic of all computational processes (here see Haugeland, 1985: 99ff):

- (1) It is a formal system: a formal system has syntax alone; it is bereft of semantics. Its symbols and rules constitute a strictly notional world, delineating logical possibility, and thus bearing no relations to the contingencies of the empirical world. That is, a formal system isn’t about anything until its symbolic atoms are assigned interpretations: e.g., “p” stands for any atomic proposition in any natural language.
- (2) It is a perfectly definite system: its primitive data-structures have truth values that are wholly explicit, without ambiguities, vagueness, or approximations (either “T” or “F” is assigned to its primitives).
- (3) It is a finitely checkable system: all of its permissible transformations may be proven valid by reference to a finite number of rules (algorithms).

All computational processes are *digital* in nature: a digital system is a system whose every state is discrete (not continuous or partial)—a system that moves from state to state by sudden jumps from one definite state to another. All digital systems can, therefore, be automated, i.e., the algorithms describing their state transitions can be *mechanized*. Here is the link to Turing machines: if the mental processes responsible for human intelligence are really computational processes, then these mental processes will, like all computational processes, have purely syntactical necessary and sufficient conditions, and thus be wholly susceptible to mechanistic *cum* naturalistic explanation—human intelligence will be mechanistically generable. All one has to do is discover the program that underlies the intelligence and run it on a universal Turing machine.

A *universal* Turing machine is a *virtual machine*: a machine made of rules not wires, an abstract specification of the functional structure of a very simple computing device that can functionally imitate any computational system. The idea of a universal Turing machine helped entrench the now common distinction between a machine's software and its hardware. It showed how a very simple hardware could embody an unbounded number of softwares; how a single gadget could become a universal imitator of any and every instance of formal information processing; how very complex information processing reduces to some very simple mechanizable operations; how the brain (neuroware) could think (run) an unbounded number of different thoughts (programs).

A home computer is a concrete example of a universal Turing machine that, in some wholly *natural* fashion, harnesses the causal structure of its hardware to realize the computational operations represented by the software run on it. So it would seem that if Fodor and the cognitive scientists are right, and cognition and computation *really* are "species of the same genus," then Turing machines reveal how we might go about naturalizing cognition by conceiving it to be just a biological instance of the software-hardware interface found in one's home computer. This, in fact, is precisely the line Fodor wishes to follow.

## The Computer's Turing Machine: The Machine Code

Exactly how does software harness a computer's hardware? This is a long and complicated story. Fortunately, to understand Fodor's computational theory of mind, we need only concern ourselves with a minimum of technical notions.

First, let's consider the notion of hardware. Hardware is the "nuts and bolts." On a conventional computer, the hardware is the physical stuff whose behavior is dictated by physical laws; it is subject to the laws of gravitation, Ohm's law, etc. The hardware usually consists (among other things) of a central processor composed of silicon microprocessors and all kinds of electronic gadgetry that is engineered (hardwired) so that the on's and off's of its microswitches electronically mimic the binary states (T's and F's) of three Boolean logical operations, AND, OR, and NOT.

Now add the notion of machine language (henceforth, ML). A computer's ML is the abstract binary specification of the computer's most basic functional structure, the way in which its hardwired logic gates (microswitches) are linked. This is why ML may be viewed either as the top of the hardware hierarchy, or as the bottom of the software hierarchy. As a built-in code of primitive symbols and rules, it enables the hardware to receive instructions (each instruction written in machine code elicits a unique operation within the mechanism) from programmers (via assembly language), and thus serves as a universal Turing machine, enabling the computer to imitate *any* computable function. In the end, *the ML determines the state of the computer*; every instruction a programmer gives to the computer must ultimately be encoded into the monotonous strings of "0's" and "1's" that define its ML and dictate its state transitions and output. The only things the machine code can be used to talk about are the states and processes of the computer itself (it is the computer's language of self-description). So here is a picture of a machine whose state transitions aren't determined by (although dependent upon) physical laws: the computer moves from discrete state to discrete state according to the dictates of the electromagnetic syntax of the ML that its circuitry has been engineered to embody.

We are ready now to consider Fodor's human equivalent of ML, what he calls "the language of thought" or "Mentalese." The language of thought, on Fodor's view, is the human universal Turing machine whose primitive neurophysical symbols and rules drive human intelligence (Fodor and Pylyshyn 1988: 13).

## **The Human Turing Machine: The Language of Thought**

Fodor considers how thought could be *about* something else, how one bit of the world (a brain state) could be *about* another bit of the world (a state of affairs). He's convinced that thought, like language, must have a medium of representation, and that this medium of representation, like language, must also have a rule-governed structure (a grammar). Without a language-like medium of representation, he argues, we would not have the slightest idea how our thoughts could *mean* something or be true or false. Moreover, he contends that, if this medium of representation didn't have a rule-governed structure, we would have no idea how thoughts could combine and decompose leading to valid inferences. He is certain that we can think *about* things, make rational choices, perceive the world, or learn concepts, only because we are born (innately endowed) with a hard-wired medium of structured representation--"the language of thought" (henceforth, LOT).<sup>1</sup> In short, if we can think, perceive, or make decisions (all inference-driven behaviors, according to Fodor (Fodor and Pylyshyn 1988: 30), we *must* have an internal propositional code in which we formulate hypotheses about the world, build models of the world, and test theories about the world. That is, the etiology (causal antecedents) of intelligent behavior is a series of computational transformations of propositionally-structured information embodied in human hardware, the electrochemical transformations of LOT's symbols is taking place in the central nervous system (CNS) (Fodor 1975: 52).

Fodor takes a child's learning of a natural language as an example of concept learning: he believes all concept learning is accomplished by formulating hypotheses and then testing them in the representational medium of LOT (Fodor 1975: 58). One cannot learn a language, according to Fodor, unless one already knows one (Fodor 1975: 65). And the language we all already know prior to learning our natural language is the LOT. By virtue of this innate endowment, this private but universal Turing machine, a child learns its mother tongue:

Learning a language . . . involves learning what the predicates of the language mean. Learning what the predicates of the language mean involves learning a determination of the extension of these predicates. Learning a determination of the extension of the predicates involves learning that they fall under certain rules (i.e., truth rules). But one cannot learn that P falls under R unless one has a language in which P and R can be represented. So one cannot learn a first language unless one already has a system capable of representing the predicates in that language *and their extensions*. And, on pain of circularity, that system cannot be the language that is being learned. But first languages are learned. Hence, at least some cognitive operations are carried out in languages other than natural languages (Fodor 1975: 63-64).

Fodor appeals to the relation of ML and programming language to give some empirical plausibility to his rather incredible view of first language learning. In a computer, the ML is a universal Turing machine that functions as a metalanguage encoding the instructions of programming language (object language). So too, claims Fodor, the predicates of the natural language that people learn are encoded in the LOT in which computations are performed that are token-identical to human thought (Fodor 1975: 66). So learning a first language is a matter of both compiling (encoding) a natural language into one's LOT and then using one's LOT to formulate hypotheses about the extensions

of its predicates--quite a complicated task for a youngster to perform. Fodor, however, isn't too concerned about how a youngster, wholly ignorant of formal grammars and hypothesis-testing methodology, could perform the rather sophisticated grammatical and inferential tasks Fodor's theory requires of him or her. Fodor simply maintains that all this fancy foot work is the unconscious and, therefore, subpersonal doings of the youngster's built-in neurophysiologically-embodied LOT (Fodor 1975: 52).<sup>2</sup>

He admits that this position may appear scandalous, but refuses to take it as a *reductio* because no serious alternative to his theory of first language learning has ever been proposed (Fodor 1975: 82). He is quite willing to "bite the bullet" here, so long as he can "eat his cake" later (Fodor 1975: 52). I propose, in a later section, to point the way to a Polanyian alternative to his computational account. But before I turn to Polanyi, I shall outline Fodor's account of how the syntactical scaffolding of the LOT acquires semantic content.

### **Fodor on How the LOT Acquires a Semantic Dimension**

The division of hardware/software intrinsic to the cognitivist commitment to the computer model yields two networks of relations, the causal and the inferential. Fodor's idea is that if we can establish even a partial isomorphism between the two, we have a way of understanding the inferential regularities that underpin human intelligence, make a science of cognition possible; i.e., why, for instance, we can know that Bill believes (if only tacitly) that "the sky is clear" if we also know that Bill believes both that "either it is raining outside or the sky is clear," and that "it is *not* raining out." The problem is finding a *naturalistic* means of linking the causal mechanisms of human neuroware (brain and CNS) to the inferential regularities of human software (psychology), regularities that are sensitive to semantic properties. Fodor, relying on his argument that cognition requires a language-like medium of representation, contends that "computers show us how to connect semantical with causal properties *for symbols*" (Fodor 1985: 93).

On Fodor's view, the causal properties of a symbol in the LOT (i.e., the brain's neurophysiologically embodied equivalent to binary digit in a computer's ML) get connected to the symbol's semantic properties in a mind's thought life (i.e., the mind's equivalent to an instruction in a computer's program) via the symbol's syntax. Fodor explains:

The syntax of a symbol is one of its second-order physical properties. To a first approximation, we can think of its syntactic structure as an abstract feature of its (geometric or acoustic) shape. Because, to all intents and purposes, syntax reduces to *shape*, and because a symbol is a potential determinant of its causal role, it is fairly easy to see how there could be environments in which the causal role of a symbol correlates with its syntax. It's easy, that is to say, to imagine symbol tokens interacting causally *in virtue of* their syntactic structure. The syntax of a symbol might determine the causes and effects of its tokenings in much the way that the geometry of a key determines which locks it will open (Fodor 1985: 93).

So now all Fodor has to do is find a way of construing the syntactical relations between symbols so that they mirror the semantical relations holding between symbols. And his means of doing this are ready-to-hand: proof-theory, seen from a very great distance, does exactly this (Fodor 1985: 93). Proof-theory shows that, for formal languages, "the semantic relation that holds between two symbols when the proposition expressed by the one is implied by the proposition expressed by the other can be mimicked by syntactic relations in virtue of which one of the symbols is



derivable from the other” (Fodor 1985: 93). Thus

It would not be unreasonable to describe Classical Cognitive Science as an extended attempt to apply the methods of proof theory to the modeling of thought. . . . Classical theory construction rests on the hope that syntactic analogues can be constructed for nondemonstrative inferences (or informal, commonsense reasoning) in something like the way that proof theory has provided syntactic analogues for validity (Fodor and Pylyshyn 1988: 29-30).

Armed with the notion of a Turing machine, all one has to do is imagine a machine whose state transitions are dictated solely by the syntactic properties of its symbols, and whose operations on its symbols are entirely alternations of their shapes. If this machine is so engineered that it will transform one symbol into another if and only if the symbols stand in a certain semantic relation, say as premise to conclusion (under some interpretation), then we have the cognitivist resources to naturalistically (i.e., mechanistically) explicate the linkage between the causal properties of our neurophysiology and the semantic properties structuring our mental lives. “The idea that the brain is such a machine,” says Fodor “is the foundational hypothesis of Classical cognitive science” (Fodor and Pylyshyn 1988: 30).

In short, Fodor believes that the physical shape (syntax) of symbols making up our LOT links the causal properties of our neuroware (brain and CNS) to the semantic properties of our programs (minds) by virtue of an isomorphism of syntax and semantics presumably engineered by evolution. But, of course, it is obvious that Fodor is here working with a very anorexic notion of semantics. Semantics involves a whole lot more than mere truth-preservation, i.e., formal validity. What about semantic properties of reference and meaning? These semantic properties are notoriously intractable to formal reconstruction, and yet foundational to the natural languages in which we consciously configure our lives.

### **Fodor’s Ambivalence Towards Semantics**

Because Fodor relies so heavily on the serial symbol-manipulating operations of the classical digital computer to represent the kinematics of human intelligence, he often gives short shrift to the issue of *original* semantics. Computers running specific programs *already* have a rich semantics given to them by the programmer and user, and since Fodor believes he makes real progress in resolving some traditional problems in the philosophy of mind by relying on the computer for his cognitivist speculations, he feels no compunction for not having a naturalistic account of original semantics, how the internal mental representations of his LOT “have semantic properties in, one might say, the first instance. . . . a theory of how mental representations represent” (Fodor 1981: 31). As he openly admits, “one can do quite a lot of cognitive science without raising foundational - or, indeed, any - issues about the semanticity of mental representations” (Lycan [ed.], 1990: 315).

Fodor’s elusive comments on issues concerning the semanticity of mental representations (original semantics) are very interesting. He exclaims “Heaven only knows” what relation between him and things in the world makes it possible for him to think or refer to them (Fodor 1981: 253). In another place, he confesses to hoping for “someone very nice and clever” to turn up and show him how to provide his LOT with an original semantics (Fodor 1981: 223). At one point, he even considers that appealing to the propositional attitudes of personal agents might “be essential in explaining why the representation represents what it does,” but then he changes his mind, conceding that his

computational theory of mind might well “require us to view mental symbols as *sui generis*” (Lycan [ed.], 1990: 314). Despite his lack of a theory of original semantics, Fodor has some definite opinions on what an acceptable account of original semantics must look like. In fact, he is quite explicit on this score.

For one thing, an acceptable account *must* be a *naturalized* account: “a theory that articulates, in nonsemantic and nonintentional terms, sufficient conditions for one bit of the world to *be about* (to express, represent, or be true of) another bit” (Fodor 1988: 98). A naturalized account of original semantics, *if* it is going to be articulable in nonsemantic and nonintentional terms as Fodor requires (i.e., in terms that aren’t connected to the natural language through which the agent consciously thinks about his or her world), will have to be a *causal account*: i.e., an account that links, at a sub-personal level, proximal physical events in our neuroware to distal physical events in the world. According to Fodor, such an account would mean that “what makes it the case that (the Mentalese symbol) ‘water’ expresses the property H<sub>2</sub>O is that tokens of that symbol stand in certain *causal relations* to water samples” (Fodor 1988: 98: emphasis mine). Fodor recognizes that the naturalistic aspirations that led him to construe human intelligence as a species of computation require of him an accompanying construal of *original semantics as a species of causation*. But he seems blissfully unaware of the fact that even if the symbols of the LOT are *causally* linked to events in the world, this will not give them a semantics: effects do not *mean*, or *represent*, or *refer* to, their causes. But, if the relation of representation-to-represented cannot be naturalized through reconstruction in sub-personal terms, terms denoting only scientifically acceptable primitives, then his whole computational theory of human intelligence rests on a non-naturalized representational foundation.

That is, if the symbolic primitives of the LOT cannot be shown to represent certain properties in the world (instead of merely being effects of certain causes in the world) by virtue of some wholly natural process describable by science, then Fodor’s computational account of mind would be predicated on an almost dualist account of representation--symbols in the LOT would merely take on the role of Descartes’ postulated *res cogitans*: *je ne sais quoi* that somehow intrinsically represents. Clearly Fodor’s computational theory of mind does not sit easily with his representational account of the LOT, at least, not within the naturalistic framework in which he proposes them. The real problem that Fodor’s cognitivist program encounters and cannot get around is that meaning or representation requires slippage or a degree of indeterminacy between representation and represented where a personal agent can get in and bring the former (tacitly) to bear on the latter. The coupling of representation and represented must be *intentionally* forged, and this can only be brought about by the non-inferential, integrative acts of personal agents. But this is precisely what a computational construal of mental processes *cannot* accomplish, because it is pitched at a sub-personal level where the personal agent is analytically dissolved into inferential processes allegedly embodied in the causal transactions neurophysical events (see Polanyi 1958: 372).

## Summary

Fodor is committed to the view that inference is the essence of intelligence: that human intelligence is a knowledge-based, propositionally-structured, and inference-driven, virtual machine implemented by the physical-symbol system of human neurophysiology. On this view, intelligence’s essence is abstract, residing in symbolic and formal processes whose medium of implementation (hardware) is irrelevant; this is why Fodor can factor out all the somatic peculiarities of human mood, perception and motor skills and confidently assert “that there are information processing systems which share our psychology (instantiate its generalizations) but do not share our physical organization” (Fodor 1981: 9). That is, human intelligence has no *essential* bodily roots (cf. Polanyi 1966: 15). He

implicitly endorses a thesis of *disembodiment*, where intelligence bears no essential relation to any particular medium of traction in the world. Disembodied intelligence is purely formal intelligence, so its semantics only amount to preservation of theoretical consistency (validity). I believe this is why

Fodor's delineation of a slender semantics, is however, commensurate with the account of personal agents his commitments engender. Personal agents, within Fodor's cognitivist program, cannot but turn out to be epiphenomena supervening computational processes, i.e., ghosts in virtual machines: causally-feckless, and ontologically-suspect entities. But at least causally-feckless and ontologically-suspect entities could get by with the insubstantial semantics Fodor's computational program provides. We turn now to Polanyi's speculations on human intelligence.

## **Polanyi on the Emergence of Human Intelligence**

Polanyi's view of human intelligence derives from his recognition of its evolutionary past. He is convinced that we will only begin to understand the nature of human intelligence when we understand its historical antecedents—the human mind was not parachuted into a prestructured world. Intelligence, like everything else, evolved through encounters with an environment that afforded an ambiguous mixture of opportunities and risks. For Polanyi, that is, intelligence evolved as an embodied response to a challenging environment of significances, opportunities, affordances, meanings. Polanyi's metaphysical moorings are open to view in his fundamental premise that “meaning is the sort of thing the world is organized to bring about” (Polanyi and Prosch 1975: 182). Below, I shall, in brief and somewhat caricatured form, rehearse Polanyi's vision of mind's and meaning's progressive embodiment in the world.

In the final chapter of his (1958) *Personal Knowledge*, Polanyi shows us how meaning eventually emerged from physics. The world brought meaning out of physics by evolving purposive self-centred biological agents: “living individuals overcame the meaninglessness of the universe by establishing in it centres of subjective interests” (Polanyi 1958: 389). Through these “centres of subjective interest,” self-identical matter became duplicitous, taking a finite point of view on itself. And these centres of subjective interest eventually overcame their *mute* beasthood, creating “a new fabric of life *not* centred on individuals,” a form of life, that is, characterized by “universal intent,” whereby the universe gained an *articulate* point of view on itself, and meaning became embodied in an active centre (Polanyi 1958: 344). By creating and indwelling a symbolic means of intersubjective expression, self-centred bodily agents gradually, but stupendously, amplified the self-centred intelligence that evolution developed in their bodies, and thereby gave birth to the “noosphere,” transforming their mere biological agency into full-blown personhood (Polanyi 1958: 389). The human mind, according to Polanyi, “has been so far the ultimate stage in the awakening of the world” (Polanyi 1958: 405). The emergence of mind gave the universe's meaning an individualized articulate embodiment in molar agents who “formed societies [and] invented language” (Polanyi 1958: 388).<sup>3</sup>

Whether or not the following is exactly how Polanyi himself would have reconstructed the evolutionary twilight of man's emergence into articulate self-expression, I think it is in harmony with much of his speculations on anthropogenesis. The selective pressures on the vulnerable bodies of early hominids made broad and organized communal allegiances necessary to their survival. And these communal allegiances both fostered and depended upon certain expressive-mimetic gestures and sounds of intersubjective import. Over evolutionary time, the complexity of this pre-linguistic network of significant gestures increased: generation after generation added to this network new and more discriminating tokens of gestural significance until finally this dialectic of biology and proto-culture produced

a form of life whose social skills of survival loosened the biological grip of self-centred instincts enough to allow hominid evolution to transcend its purely biological identity through pressing itself symbolically into linguistic possibilities. This is what Polanyi refers to as “the second major rebellion against meaningless inanimate being” (the first major rebellion was, of course, “the rise of self-centred individuals”) (Polanyi 1958: 389). Man’s “rise from mute beasthood,” his transformation of bodily mimetic-gestural intelligence into articulated utterances of social significance, is “noogenesis”--the articulate embodiment of meaning in the human mind (Polanyi 1958: 389). When man participates in this life, his survival-oriented bodily intelligence

ceases to be merely an instrument of self-indulgence and becomes a condition of his calling. The inarticulate mental capacities developed in our body by the process of evolution become then the tacit coefficients of articulate thought. By the forming and assimilation of an articulate framework these tacit powers kindle a multitude of new intellectual passions. (Polanyi 1958: 389)

So, in summary, Polanyi conceives of the emergence of mind and meaning as a transformation of the purposive and expressive body coevally and dialectically enacted within a protocultural context by means of linguistic articulation. For Polanyi, the emergence of mind is a feat of evolution and can only be understood from an evolutionary perspective: mind emerged when hominid evolution produced an articulate social symbolism through which to express the meanings it created and discovered as it pressed itself into new and richer possibilities --possibilities of universal (not self-centred) intention, of eternal meaning (Polanyi 1958: 389).

But let’s turn from these speculations on anthropogenesis, and attend to Polanyi’s view of how a single individual child achieves a mental life, i.e., a mind. In other words, let’s shift from speculations on the phylogenesis of mind and meaning to a phenomenology of a mind’s ontogenesis within an *already in place* cultural context of socially-sustained linguistic meanings. This will help us see how, on Polanyi’s view, the mind and original semantics are intimately connected to a child’s acquisition of a first language: a mother tongue.

## Polanyi on the Development of a Mind

According to Polanyi, we, the benefactors of millions of years of evolution, come to embody a mind when we learn to indwell our language community’s socially-sustained network of meanings: i.e., its articulate framework:

We come into existence mentally by adding an articulate framework to our bodies. Human thought grows only within language and since language can exist only in society, all thought is rooted in society (Hall 1968: 67).

The child grafts an articulate system of expression onto “the inarticulate mental capacities developed in [its] body by the process of evolution”; the child’s body provides then, “the tacit coefficients of [its] articulate thought” (Polanyi 1958: 389). A mind emerges, therefore, when a young child’s mute bodily passions (passions shared with its mammalian ancestors) are gradually channelled through, and transfigured by, the network of social commitments and normative constraints embodied in, and mediated through, its mother tongue: a purposive body is transformed into an intentional agent.<sup>4</sup> Through learning to indwell the articulate framework of its mother tongue, a child’s sub-linguistic, pre-propositional, and a-critical bodily intelligence is transformed into a symbolically-articulated, and propositionally-structured, rational mind. The emergence of a child’s mind is, therefore, a biosocial achievement: the child’s natural

bodily passions (appetitive, motoric, and perceptive drives) acquire the skill of linguistic expression (and become thereby mental passions) through the training and shaping imposed on them by a linguistic community.

On Polanyi's view, the individual child comes into existence mentally *always already* enconced in a nurturing linguistic community whose idiom functions as the child's *consciously* deployed "language of thought" (Schwartz [ed.] 1974: 75). That is, propositional thought begins as conscious and intentional public conversation, not as unconscious and private computations. Polanyi would sharply disagree with Fodor's view that thought is propositionally-structured all the way down. Polanyi's evolutionary perspective has propositionally-structured intelligence resting on a pre-propositional foundation of indwelling: The emergence of the mind is, therefore, predicated on a child's assimilation of a pre-existent articulate framework (i.e., a natural language), which, in turn, is predicated on the child's *natural* bodily capacity to acquire new skills.

"To use language," Polanyi submits, "is to extend our bodily equipment and become intelligent human beings" (Greene [ed.] 1969: 148). Polanyi recognizes that natural bodily drives and passions "are refashioned and amplified into something new by words" (Polanyi 1958: 194). By pouring our mute bodily passions into the articulate framework of our mother tongue, we develop new discriminative faculties and sensitivities, because "*as each of us interiorizes our cultural heritage*, he grows into a person seeing the world and experiencing life in terms of this outlook" (Greene [ed.] 1969: 148; emphasis mine). Our first language embodies the network of presuppositions, categories, and concepts under the constraints of which our mind emerges (Polanyi 1958: 266-67). As a child gradually comes to indwell a mother tongue, his innate *répertoire* of bodily expression acquires a cultural dimension that is grounded in its mother tongue's semantics: he participates in the semantic content of his cultural heritage, thus extending his bodily expressivity into the noosphere where he can perform speech-acts and become a responsible participant in his society.

Once a child has learned to indwell her mother tongue, she no longer responds to stimuli *simpliciter*, but encounters objects *under descriptions*. That is, her point of view becomes impregnated by the intensional semantics of her mother tongue. Her sense-bound memory is supplemented and penetrated by a verbal memory, and she soon gains the skill of making sense of her experiences by re-describing them and weaving them into coherent narratives. Moreover, she gains access to an explicit domain of possibility and counterfactuality: she can now refer to her past, fear her future, care about her present, tell lies, make her own desires and beliefs objects of her own (second-order) desires and beliefs, and even dread her own non-existence. A whole multitude of intellectual passions are kindled in a child when she assimilates the articulate framework of her culture, enabling her to participate in the rights and responsibilities of the noosphere (Polanyi 1959: 60).

So, for Polanyi, mind is neither *res cogitans* nor software driven by some hardware's syntax, but an articulate way of being *in* the world.<sup>5</sup> And if this is the case, then Fodor's Meno-esque problem of first language acquisition (i.e., we must first know a language in order to learn one) is *really* reduced to the problem of how we acquire the ability to indwell external entities. Polanyi's account of indwelling obviates the need for the innate LOT computations. Indwelling is a *basic* bodily action that Polanyi traces to "the inarticulate mental capacities developed in our body by the process of evolution" (Polanyi 1958: 389). Indwelling *isn't*, therefore, something we learn, or acquire, but our very means of learning or acquiring any skill whatsoever. In contrast to Fodor's postulated computations in the LOT (sub-personal activities that our CNS does), indwelling is something we do, but *not* by virtue of doing anything else. But this does not mean, of course, that we cannot indwell some thing *intentionally*, but only that *there is always a measure of irreducible indwelling preceding every intention*. Indwelling is primitive and phenomenologically simple: it is not

something we can bring about by doing something else first, because it is the *conditio sine qua non* of doing anything. However, we can *learn* to indwell things like hammers, skillful performances, physiognomies, or *first languages*, but the indwelling itself isn't something we can learn or teach--we can only *do* it. In the place of Fodor's hard-wired, universal, and propositionally-structured LOT in which a child purportedly forms hypotheses about the extensions of natural language predicates and then tests them, Polanyi has our first-language acquisition bottom-out in the basic actions of our universal, but sub-linguistic and pre-propositional bodily intelligence:

The child's way of learning to speak from his adult guardians is . . . akin to the young mamal's and young bird's mimetic responses to its nurturing, protecting, and guiding seniors (Polanyi 1958: 206).

“Indwelling is,” Polanyi claims, “being-in-the-world” (Polanyi 1964: xi). It is the way we are embodied as points of view in, and points of action on, the world; by its means “we keep expanding our body into the world” forming thereby “an interpreted universe” (Polanyi 1966: 29). Indwelling modifies our own limitations and possibilities within the world. And when we, as prelinguistic children, first indwell a mother tongue our identity undergoes a radical change because we are irreversibly taken out of a mere environment of instinct and stimuli and plugged into a whole network of socially-sustain symbols, meanings and practices accomplished by those who, before us, have taken the step into an articulate way of being-in-the-world (Polanyi 1958: 266-67):

Every time we assimilate a tool to our body our identity undergoes some change; our person expands into new modes of being. I have shown before that the whole realm of human intelligence is grounded on the use of language. . . . all mental life by which we surpass the animals is evoked in us as we assimilate the articulate framework of our culture (Polanyi 1959: 31).

From this perspective, first-language acquisition is predicated upon a child's apprenticeship in the practices and institutions of a language community. And, of course, apprenticeship in a language community can come about only because a child is always already “equipped by nature” to *indwell* the physiognomy and behaviors of its caretakers (Grene [ed.] 1969: 220). So while Fodor stems an infinite regress of languages by conceiving first-language acquisition as a matter of a child's unconscious but highly abstract operations on explicit symbols within its LOT, Polanyi's account of first-language acquisition stems the infinite regress by bottoming-out in the tacit dimension: in a primitive (basic), non-linguistic and innate bodily action, *indwelling*.

Our task in the next section is to see how Polanyi's conception of indwelling as the *conditio sine qua non* of mind's embodiment and meaning's emergence ramifies into a critique of Fodor's CS.

## Polanyi on Semantics

According to Polanyi, meaning is embodied in acts of indwelling whereby a personal agent extends itself into the world by integrating subsidiary items into a sustainable focus of attention. And *linguistic* meaning obtains by virtue of human agents indwelling *linguistic* tokens as a means of self- and intersubjective-expression. Polanyi will

have nothing to do with notions of semantics that aren't directly tied to the activities of human agency (Polanyi 1959: 22): e.g., Fodor's idea that representation can somehow be reduced to the sub-personal, to event-causation. On Polanyi's view, the semantic properties of our thought derive from our informal acts of indwelling whereby we bring the linguistic tokens (representations) of our mother tongue to bear tacitly on our focal targets (the represented). Consequently, Polanyi has no need to postulate a LOT whose primitive neurophysically-embodied symbols function as semantic primitives.

In his (1967) essay, "Sense-giving and Sense-reading," Polanyi speaks of language's "informal semantic structure" (Grene [ed.]1969: 181). He unpacks this structure as that of *indwelling*: where a "meaningful relation of a subsidiary to a focal is formed by the action of a person who integrates one to the other, and the relation persists by the fact that the person keeps up this integration" (Grene [ed.]1969: 182; emphasis mine). In a different essay, "Logic and Psychology," Polanyi is careful to point out that subsidiary and focal items are not "linked together of [their] own accord" (Polanyi 1968: 30). That is, meaning is not causally, but *intentionally* instantiated. So linguistic meaning comes into being and persists only by virtue of persons attending *from* linguistic tokens *to* their focal import. The personal agent is ineliminable from Polanyi's construal of semantics: "nothing ... can ever mean anything in itself." All semantic functions, he submits, "are the tacit operations of a person" (Polanyi 1959: 22).

In 1968, Polanyi was interviewed for the first issue of *Psychology Today*. Mary Harrington Hall asked him to comment on contemporary linguistics. He responded, noting that Chomsky's strictly formalist approach to linguistics (an approach that Fodor has taken-up and extended) leaves one with no real means to talk about *meaning*. The only way to cope with linguistic meaning, Polanyi claims, is to recognize that *meaning is a relational reality*, that meaning is "the relationship between the subsidiary and that on which it bears" (Hall 1968: 67). And applying this point to the issue of computer intelligence, Polanyi notes:

This is why *meaning cannot be introduced by a computer*, because the computer can only operate with focally known elements. It can never reproduce two different levels of awareness (Hall 1968: 67; emphasis mine).

That is, there is no personal agent whose integrative acts generate subsidiary awareness. Only an embodied agent who has access to the world by virtue of attending *from* its body bifurcates its awareness into two levels: the subsidiary and the focal. A computer merely opens and closes logical gates (micro-switches) according to constraints the programmer has imposed on them; it doesn't attend *from* at all. So its "world" is merely notional, a series of focal data-structures programmed into its electronically-driven binary code. But if this is so, how does one explain the semantics of the computer? How does one account for the fact a computer's computations really are sensitive to some semantic distinctions?

Notice in the quotation above that Polanyi didn't say that meaning cannot be ascribed to a computer, but only that "meaning cannot be *introduced* by a computer." That is, *original semantics cannot be generated by computers*, but only borrowed. Polanyi argues that "formal systems of symbols [representations] and operations [rules]" depend for their meaning on the "unformalized operations" that are "performed by a person with the aid of the formal system, when the person relies on its use" (Polanyi 1958: 258). That is, whether a formalized system of representation is

automated or not, its semantics derive from the person(s) using it. Computers then, on this construal, exhibit what Polanyi calls a “necessary relatedness to persons” which is a property that essentially restricts the independence of a machine, and reduces the status of automata below that of thinking persons:

For a machine is a machine only for someone who relies on it (actually or hypothetically) for some purpose, that he believes to be attainable by what he considers to be the proper functioning of the machine: it is the instrument of a person who relies on it. This is the difference between machine and mind. A man’s mind can carry out feats of intelligence by aid of a machine and also *without* such aid, while a machine can function only *as the extension of a person’s body* . . . (Polanyi 1958: 262; emphasis mine).

The human programmer is the *essential* link between the computer’s internal states and the objects or concepts they are deployed to denote. And it is only because human computer users *take* these operations to denote what the programmer designed them to denote that the computer warrants the ascription of computing, rather than say, heating the room, or providing a pleasant background hum. Computers can function as computers only “as extensions of a person’s body” because all meaning is *introduced* by persons treating external things as extensions of their bodies. On Polanyi’s view, human bodies are the matrices of original semantics; they are the from-which of every intention (Grene [ed.] 1969: 183-184).

So the computer’s semantics must be a *borrowed semantics*, a semantics bestowed on its symbolism by its human programmers and users: “the symbol can be conceived as such only in the eyes of the person who relies on [it] to achieve or to signify something” (Polanyi 1958: 61). But, Polanyi’s account of indwelling does, however, demonstrate why the computer may appear to be a syntax-driven *semantic* engine. Since indwelling tacitly imbues the indwelt with a bearing on a focus, the computer’s operations appear to be possessed of an intrinsic meaning: by using them to extend our focal awareness, we indwell them and automatically and tacitly supplement their symbols and rules with a bearing on our focal concern. And “this act goes unnoticed” (Grene [ed.] 1969: 151; c.f., Polanyi 1958: 169), because indwelling’s self-effacing transitivity renders the agent’s activities phenomenologically transparent, transposing them into the meaning of the agent’s focal object (Polanyi 1958: 60-61); this is the “semantic aspect” of tacit knowing (Polanyi 1966: 12-13), and the dynamic of self-forgetfulness behind Fodor’s inveterate tendency to commit the fallacy of misplaced semantics: assigning independent semantic properties to his postulated sub-personal atoms of cognition.

From this Polanyian perspective, Fodor’s aim of accounting for the semantics of human cognition by appealing to the computer model is preposterous: whatever semantic properties a computer may be said to possess derive, in the first place, from the informal acts of tacit knowing underlying all human cognition. This is why Polanyi calls the attempt to reduce human thought to formal processes “self-contradictory.” “The pursuit of formalization,” says Polanyi, “will find its true place in a tacit framework” (Grene [ed.] 1969: 156).



## Conclusion

Fodor's CS weds a Kantian epistemology to an empiricist philosophy of mind. Kant's *a priori* categories have become Fodor's rules, and the empiricist's impressions have become his primitive representations. But, whereas Kant was forced to postulate a transcendental subject in whose cogitations the rules were embodied, and the empiricists were forced to recognize their implicit reliance on an internal homunculus who viewed and associated the impressions, Fodor, in his desire to naturalize mind, seeks to obviate the need for a central agent by decomposing into dumber and dumber activities all the intelligent activities ascribed to it, until a point is reached that a series of micro-switches could perform its tasks. But Polanyi's account of mind's emergence and meaning's tacit dynamics reveals that, in reality, Fodor can only entertain the prospects of a naturalization of human intelligence because he is blissfully unaware of his own tacit contribution of semantics to the computational operations he appeals to in his herculean effort to explain human intelligence in sub-personal terms.

It is not just a little bit ironic that, in Fodor's attempt to naturalize human cognition by extending the mechanistic metaphor - in his attempt, that is, to not be anthropomorphic about man himself--he ends up creating a *new* breed of anthropomorphism: projecting the mechanistic (algorithmic) properties of a *human artifact* (virtual machine) onto nature (neurophysiology) and then reading these properties into the human psyche as if they explained the intelligence that invented this artifact in the first place. From a Polanyian point of view, Fodor's naturalization project is but another example of the "crippling mutilations" (Polanyi 1958: 381) that objectivism forces on our picture of human intelligence: it requires nothing less than "a specifiably functioning mindless knower" (Polanyi 1958: 264). Surely Fodor's work confirms Polanyi's claim that: "Any attempt rigorously to eliminate our human perspective from our picture of the world must lead to absurdity" (Polanyi 1958: 3).

## ENDNOTES

1. It is important to realize that the LOT is not the language in which we think; it is the language in which our *neurophysiology* computes, but Fodor takes a subset of these computations to be token-identical to human thinking, see Fodor 1975: 49ff.

2. It is interesting to note that these unconscious and subpersonal doings of the child's neurophysically-embodied LOT is what Fodor refers to as tacit knowledge. Tacit knowledge, for Fodor, is the program that underlies an organism's behavior (Fodor 1981: 78).

3. For some interesting speculations on how the dialectic of hominid biological vulnerability and hazardous environment occasioned the need for social organization, and how this, in turn, fostered and sustained the emergence of an articulate framework, see John McCrone (1990) and Merlin Donald (1991). Note, however, that both, at times, are rather naive in their deployment of the computer metaphor.

4. For more details on how this transformation might come about, see my forthcoming "The Body Comes All the Way Up," *International Philosophical Quarterly*, (Spring 1994).

5. That is, humans of mental competence are not in the world like an object enclosed in some physical space and bearing only external relations (causal and spatial) to other objects. Rather, humans are in the world in the metaphorical sense of “being in the midst of completing the first draft of a paper.” Humans of mental competence are bodily points of view on and points of action in the world: agents of concerned relations who are centrally situated in their phenomenal field and whose experience of the world is penetrated by the categories and concepts of their mother tongue. (See Polanyi’s Heideggerian gloss on indwelling, Polanyi 1964: x-xi)

## WORKS CITED

- Donald, Merlin. (1991) *Origins of the Modern Mind*, Cambridge, Mass.: Harvard University Press.
- Fodor, Jerome. (1975) *The Language of Thought*, Cambridge, Mass.: MIT Press.
- . (1981) *Representations: Philosophical Essays on the Foundations of Cognitive Science*, Cambridge, Mass.: MIT Press.
- . (1985) "Fodor's Guide to Mental Representation," *Mind* 94; 76-100.
- . (1987) *Psychosemantics: The Problem of Meaning in the Philosophy of Mind*, Cambridge, Mass.: MIT Press.
- Fodor, Jerome & Zeno Pylyshyn. (1988) "Connectionism and Cognitive Architecture: A Critical Analysis," *Cognition* 28,3-71.
- Grene, Marjorie (ed.). (1969) *Knowing and Being: Essays by Michael Polanyi*, Chicago: University of Chicago Press.
- Hall, Mary Harrington. (1968) "A Conversation with Michael Polanyi," *Psychology Today* 1;20-25 & 65-67.
- Haugeland, John. (1985) *Artificial Intelligence: The Very Idea*, Cambridge, Mass.: MIT Press.
- Lycan, William G. (ed.). (1990) *Mind and Cognition*, Cambridge, Mass.: Basil Blackwell, Inc.
- McCrone, John. (1991) *The Ape that Spoke*, New York: William Morrow and Company, Inc.
- Polanyi, Michael. (1958) *Personal Knowledge: Towards a Post-Critical Philosophy*, Chicago: University of Chicago Press.
- . (1959) *The Study of Man*, Chicago: University of Chicago Press.
- . (1964) "Preface to the Torchbook Edition," *Personal Knowledge*, New York: Harper & Row; ix-xi.
- . (1966) *Tacit Dimension*, Garden City: Doubleday & Company.
- . (1968) "Logic and Psychology," *American Psychologist* 23; 27-43.
- . (1969) "On Mind and Body," *The New Scholasticism* 43; 195-204.
- Polanyi, Michael & Harry Prosch. (1975) *Meaning*, Chicago: University of Chicago Press.
- Pylyshyn, Zenon W. (1984) *Computation and Cognition*, Cambridge, Mass: MIT Press.
- Schwartz, Fred (ed.) (1974) *Scientific Thought and Social Reality: Essays by Michael Polanyi*, New York: International University Press.

---

---

## Book Reviews

---

---

R. T. Allen, *Thinkers of Our Time: Polanyi*. London: The Claridge Press, 1990. Pp. 87. £9.95. Pb. £5.95. ISBN 1-870626-51-6(7).

This is a brief introduction to the main elements of Michael Polanyi's philosophy. Richard Allen does a good job in summarizing Polanyi's central concerns and ideas. After a brief history of Polanyi's career and some useful suggestions as to how one could best get acquainted with his work, the reader is given a condensed expose of the well-known Polanyian doctrines: the critique of objectivism (Ch.2), the theory of personal knowledge (Ch.3), the fiduciary programme (Ch.4), and the ontology of hierarchical levels (Ch.5). The book ends with a summary of his socio-political ideas (Ch.6: "The Restoration of Freedom and Meaning," 8 pp.) and a few bibliographical remarks on continuations of Polanyi's work (Ch.7, 2 pp.).

Since the book itself has no introduction, the reader is left in the dark regarding the purpose of the series *Thinkers of Our Time* and Allen's own motives and aims in relation to that purpose. One can only guess, for instance, that the sort of readers he is addressing himself to might be theologians, or at least religious believers, but one cannot be sure, and this makes reviewing the book somewhat problematic. What I find rather puzzling in this connection is the text on the cover, where it is suggested that Polanyi was (with F. Hayek) "probably the most important advocate of skeptical conservatism to emerge in Central Europe" and that his theory of personal knowledge remains "indispensable to anyone wishing to formulate the conservative view of society in terms suited to the modern world." These utterances seem to me to be misleading. As far as I know, Polanyi was a true liberal intellectual, dedicated to the pursuit of the ideals of truth, justice and charity and to the upholding of the traditions embodying these ideals. In his summary of Polanyi's social and political ideas, Allen points out rightly that the free society which Polanyi is advocating, is respectful of, and based on, tradition, but certainly dynamic and pro-

gressive as well (p. 75). Surely, this is not the same as "skeptical conservatism."

Polanyi might be characterized as an introduction to already existing and more elaborate introductions, such as Richard Gelwick's *The Way of Discovery* (OUP, 1977), Drusilla Scott's *Everyman Revived: The Common Sense of Michael Polanyi* (1985) and Harry Prosch's *Michael Polanyi: A Critical Exposition* (SUNY, 1986). For an introduction the book is very brief (eighty pages) and this might explain some of its weaker points.

Apart from a tendency to emphasize Polanyi's motives and aims, rather than the systematic coherence of his ideas, Allen also tends to depict Polanyi as rather isolated from contemporary Western philosophy. We hear very little of his influence on many well-known philosophers (of science, of religion, of culture, etc.) like Thomas Kuhn, Imre Lakatos, Sir Karl Popper, Ian Ramsey, Basil Mitchell, Gerald Holton and many others. Allen does not mention the fundamental shift in present-day philosophy due to the collapse of foundationalism and the role Polanyi played in preparing the way (by his critique of objectivism, his new philosophy of science, and his theory of tacit knowing) for this collapse and for much that nowadays goes under the heading of "post-modernism."

Allen's (few) criticisms of Polanyi seem to me somewhat hazardous, given his obvious lack of space. For instance, Polanyi's anti-reductionist account of ascending levels of reality is found inadequate. We are told that Polanyi merely shows again that the emergence of new levels of existence cannot be accounted for in terms of lower levels. According to Allen, Polanyi tries in vain to account for the emergence of human intelligence and culture by presuming neither [a] "that they were already but invisibly present in the primeval state of the universe," nor [b] "that they are the results of successive divine interventions" (p. 67). But Allen's dilemma is in fact a reduction of Polanyi's trilemma, the third horn of which is [c] that the Noosphere may also be interpreted as a last-

minute improvisation of the anthropogenetic process (cf. *PK* 393). Polanyi would probably reject [a] because it might lead to determinism. His introduction of such notions as “an ordering principle” (*PK* 383f.) or “an orderly innovating principle” (*PK* 387) seems to me to suggest that he kept options [b] and [c] open for further exploration. Whatever he had in mind with this ordering principle (“cosmic field” or “prime cause emergent in time”?) is surely a matter of dispute. In view of his use of the famous example of the “Welcome to Wales” pebbles (*PK* 33), he at least kept the possibility of a religious interpretation open. As I have suggested elsewhere, one might even take the whole of Part Four of *Personal Knowledge* as a sort of extended teleological “argument” from design.

Further problems seem to emerge from Allen’s criticism of Polanyi’s use of the republic of science as a model for a free and democratic society. According to Allen, a society “may need to be formed upon and cohere around a more specific set of beliefs” (p. 75), meaning by this religious beliefs. However, apart from the fact that this suggestion ignores the fact that Polanyi conceived of science, morality, law and religion as cultural systems which partly overlap each other, nothing is said in clarification of the remark (which beliefs, whose religion?).

Polanyi is also criticized because “he omits entirely the hope of seeing God after this life, and thus of achieving perfection through God’s grace and in eternity” (p. 76). Allen doubts whether Polanyi did sufficiently overcome “the errors and dangers of the Enlightenment’s secularization of Christianity” (p. 76). Again, this seems too quick, not only because there is very little argument, but also because Polanyi always depicts the religious way of life as a live and meaningful option (through perhaps more for others than for himself).

A somewhat different issue is Allen’s interpretation of Polanyi’s point about the crucial importance of the

tradition and practice of scientific research and the standards and ideals embedded in them. This idea is illustrated by Allen as follows: “As one can see in many parts of Africa where machines are run until they break down without thought for regular maintenance, it is not enough just to ship machines abroad if there is no tradition of technology. And the same applies to all human activities. Africa is also littered with abandoned constitutions” (p. 42). Surely, there is more here than meets the eye, but whatever it is, I cannot help but feeling that what is presented as an illustration of Polanyi’s point about scientific tradition, is in fact an illustration of something else.

There are a few statements in the book that are less than clear, or at least puzzling. For instance, Allen asserts that “Polanyi takes the correspondence theory of truth...more as an account of how to arrive at truth rather than as a definition of truth” (p. 52), but he does not tell us what he means by this. Also, the statement that Polanyi denied that truth is demonstrable, but did not deny that truth can be known (p. 20) might have been given more explication, especially because it is said elsewhere “that science...can attain, and has attained what is true” (p. 26). As far as I know, Polanyi sees truth as an ideal standard and he rejects the idea that one could be in possession of the truth.

Andy F. Sanders  
Groningen University

Richard Allen, *Thinkers of Our Time: Polanyi*. London: The Clarendon Press, 1990. £9.95. Pb £5.95. ISBN 1-870626-51-6(7).

This book is advertised as the first in a new series on “thinkers of our time.” It is brief (25,000 words), and my first comment has to be that these thinkers deserve to have been treated at greater length. Dr. Allen’s writings on Polanyi are widely known, and it is clear that he would, had space permitted, have had more to say on many central issues. But I must review the book as it is, and it is undeniably brief, though not the first brief study. Drusilla Scott’s *Everyman Revived* (The Book Guild, 1985) goes too far in the direction of popular presentation, but it is far from negligible as an introduction to Polanyi’s ideas.

Allen clearly anticipates that his audience will be not “Everyman” but that body of religious thinkers that cleave to Polanyian epistemology in the belief that religious “knowing” is somehow more acceptable in its terms than in those of any other epistemology currently advocated. In my opinion it is a mistake to think that Polanyi’s own view was religious in nature or intention. He developed his epistemology because he believed that it was the only one compatible with modern science as he understood it. It had the additional advantage that it ruled out research in support of any absolute, whether political or epistemological. Rather truth for the genuine scientist could only be provisional, dependent on the commitment to it of the individual and his success in convincing his scientific colleagues. Polanyi recognized that the scientist was a finite organism in a world that was for practical purposes infinite. Polanyi did not believe that we can will anything into existence simply by the strength of our commitment to it (Kuhn got close to this position, but he is rarely cited by theologians!). Moreover, sympathetic as he was to those subscribing to a religious view of the world, Polanyi seems to have counted himself among “those who cannot, through religion, sublimate our dissatisfaction with our own moral shortcomings, and with those of our societies” (*Meaning*, p. 215).

Allen asserts (p. 10) that Polanyi “sought to liberate us from the dangerous errors that have infected modern thought since Galileo and Descartes.” So he did, because Galileo and Descartes are held (by Anglo-Saxon philosophers at least) to be responsible for the dominant empiricist epistemology, which Polanyi believed to be wrong. But Allen goes on to suggest that these “dangerous errors” have resulted in “the totalitarian ideologies, world war, death or slavery for millions, and the contemporary scourge of terrorism!” With due respect to them, philosophers have rarely been as influential as that. None of these evils was unknown in the world prior to Galileo and Descartes.

Allen further asserts (p. 67) that “Polanyi attempts to offer an account that presumes neither that all future developments were already but invisibly present in the primeval state of the universe, nor that they are the results of successive divine interventions.” It seems to him however that “all that Polanyi accomplishes . . . is to show again that the emergence of new levels of existence cannot be accounted for in terms of lower and already existing levels.” Allen might, given more space, have had more to say on what he takes to be the cause of “the emergence of new levels of existence.” To me it seems that if they do not in some sense emerge from “lower and already existing levels” then there is no alternative to “successive divine interventions” which Polanyi was specifically not prepared to countenance.

What Allen has written will serve admirably as an introduction to Polanyi for those who are already committed (like Allen but unlike Polanyi) to the truth of the Christian revelation. Polanyi, as Allen points out (p. 76), “thinks of Christian belief only in terms of this present life.” Polanyi was admittedly more tolerant of Christian belief than many scientists, but his real (though as yet unrecognized) importance is as an epistemologist and philosopher of science. A further study of this aspect of his work had now better wait on the appearance of Professor W. Scott’s authorized biography. Meanwhile, those to whom Allen

specifically addresses himself may refer to his recently published major work, *Transcendence and Immanence in the Philosophy of Michael Polanyi and Christian Theism*.

N. E. Wetherick  
University of Aberdeen.

## Electronic Discussion Group

The Polanyi Society supports an electronic discussion group exploring implications of the thought of Michael Polanyi. For those with access to the INTERNET, send a message to "owner-polanyi@sbu.edu" to join the list or to request further information. Communications about the electronic discussion group may also be directed to John V. Apczynski, Department of Theology, St. Bonaventure University, St. Bonaventure, NY 14778-0012 PHONE: (716)375-2298 FAX: (716)375-2389.

## 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 doublespaced 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 64507  
Fax (816)271-4574  
e-mail:(mullins@acad.mwsc.edu)

John Puddefoot  
Benson House, Willowbrook, Eton  
Windsor, Berks. SL4 6HL  
Fax 44753671482

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

# 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 & 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. Membership: Regular membership in The Polanyi Society is \$20/year; student membership is \$12/year. 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, Windsor, Berks. SL4 6HL, United Kingdom.