

Tradition & Discovery

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Preface

This issue of *TAD* includes the plenary addresses of Mary Jo Nye and Walter Gulick given at the June 8-10, 2012 Polanyi Society-sponsored conference at Loyola University, Chicago. There are a few details about this third Loyola conference in News and Notes. Also in particular I call your attention in this section (p. 3) to the Polanyi Society Endowment challenge grant open until the end of 2012; this is an opportunity to help build the Society's resource base. Details about the fall 2012 annual meeting program (November 17, 2012 in Chicago) of the Society are in this issue. There are papers by Andrew Grosso, David Stone, and François Euvé, S.J., Professor of Theology, Center Sèvres (Paris), a physicist and theologian, who is visiting this term at Georgetown University. Dale Cannon's paper, with Jake Sherman as respondent, will apply ideas discussed in last year's treatment of Polanyi and the "Participatory Turn" to specific issues of religious practice (Sherman provided the paper in 2011 and Cannon responded). In sum, the fall annual meeting should be very interesting. In this issue is a review article by Will Stillman and a short paper by Jere Moorman on what seems to be a perennial topic that bubbles up from time to time, the matter of connections between ideas of Gregory Bateson and Michael Polanyi. There are also review articles by David Rutledge and Dale Cannon which treat the writings of Jerry Gill. Gill, an early student of William Poteat, is an unbelievably productive scholar who has been teaching more than fifty years. He briefly responds to comments from Rutledge and Cannon. Finally, there are two short reviews by Esther Meek and Ryan Pollock which treat interesting books.

Phil Mullins

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NEWS AND NOTES

Endowment Challenge Grant

The Polanyi Society has recently received pledges from members to match up to \$2000 in donations to the Polanyi Society Endowment; donations need to be made before January 1, 2013 to take advantage of the match. Checks should be sent directly to the Polanyi Society Treasurer, Dr. Charles Lowney (Department of Philosophy, Baker Hall 213, Washington and Lee University, Lexington, VA 24450). If membership dues and a donation are combined, please include a note indicating the amount you intend to designate as an endowment gift. Donations can also be made using PayPal which is available at the following address: <http://polanyisociety.net/paypal/donate.html>. Checks are preferred since the Society is charged for PayPal services.

The Society established an endowment fund in the fall of 2010. The purpose of the fund is to provide some regular income that can support Society projects such as the recent conference at Loyola University, Chicago. At each of the last three Loyola conferences, the Society has provided travel and/or registration scholarships for a number of younger scholars. In 2009, there was a similar program bringing graduate students to the Atlanta annual meeting to make presentations. The Polanyi Society is a frugal, low budget organization, one whose membership dues are minimal; although the Society has very limited resources, the Board of Directors has been willing to take calculated risks to sponsor programming that promotes interest in Polanyi's writings. Some Society members have been generous in donating to the very specific programs (usually advertised in *TAD*) such as the Travel Fund or the Loyola Conference Fund. Clearly, however, the long-term solution to problems such as how to support a travel and/or scholarship program for a conference is to establish a fund that will annually yield enough

income that the Board can plan the financial aspect of programs without relying so extensively on short-term fund raising. The last Treasurer's Report (included in *TAD* 38:2) indicates the August 31, 2011 balance in the Society's endowment fund was \$9950.24. We are thus in the infancy stage of building an endowment. The Board did, however, establish an Endowment Committee and that committee is now working to build this nest egg. If you are interested in making a bequest or an annual commitment to the endowment fund (such annual gifts have promoted the year-end challenge program in recent years), please contact David Rutledge (David.Rutledge@furman.edu), the President of the Polanyi Society, who currently chairs the Endowment Committee.

Dues Payment and Address Changes

The Oct. and Feb. but not the July issue of *TAD* include a membership flyer and an addressed envelope to be used to mail annual academic year dues and/or to make donations to the Polanyi Society. US postage regulations require that **EVERY** copy of *TAD* mailed in the postage class used must weigh exactly the same. Thus, even if you pay your annual dues in October, you will, nevertheless, receive these membership materials in your February copy of *TAD*. Dues remain \$35 (\$25 for libraries and \$15 students), a bargain in the academic journal world. Except for those residing outside the US, members should pay dues with a check. The Society can no longer easily and inexpensively process credit cards. For those living outside of the U.S., there is a Pay Pal payment option on the Polanyi Society membership web page (<http://polanyisociety.net/register/join-renew.php>). Dues and donations are handled by the Polanyi Society Treasurer, Charles Lowney (Dept. of Philosophy, Baker Hall 213, Washington and Lee University, Lexington, VA 24450 USA). Phil Mullins (mullins@missouriwestern.edu) should be contacted directly for *TAD* address changes.

Polanyi Society Speakers Bureau

The Polanyi Society's Speakers Bureau helps organize talks to groups by Polanyi scholars. Marty Moleski, S. J., and Richard Gelwick gave talks in 2010 at universities; Richard Moodey and Phil Mullins gave talks in summer of 2011 at a meeting in Gummersbach, Germany. If you know anyone who might be interested in a speaker, send the name and e-mail address to Phil Mullins (mullins@missouriwestern.edu). There is now a link on the Polanyi Society web page with general information about the Speakers Bureau. You will find there a précis of the talks given by Moleski and Gelwick. Several Society members have indicated interest in speaking on different aspects of Polanyi's thought. It is likely that the Society can arrange for someone nearby to provide a talk on a topic of interest.

Travel Assistance For Younger Scholars Attending Polanyi Society Annual Meeting

For students and other young scholars planning to attend the November 2012 Annual Meeting in Chicago, limited travel funding is available. Society members are urged to inform worthy candidates about this assistance. Candidates and anyone who wants to nominate a potential candidate, should contact Walter Mead (wbmead@ilstu.edu) who administers the travel fund. Applications must be completed no later than November 1, 2012.

Contributions to the travel fund are, of course, always welcome. Those who wish to contribute to this fall's travel program as well as anyone who wishes to explore options for an ongoing sustaining travel fund gift, should e-mail Walter Mead. Send checks directly to Charles Lowney, the Polanyi Society Treasurer (Department of Philosophy, Baker Hall 213, Washington and Lee University, Lexington, VA 24450). Donations can also be made using the link for the Pay Pal Donation Form on the membership page on the Polanyi Society web site (<http://polanyi-society.net/register/join-renew.php>). All donations are eligible for an IRS letter certifying a charitable

deduction. Related information about travel funds is available on the Polanyi Society web site (polanyi-society.org).

2012 Loyola Conference Report

The Polanyi Society hosted its third Chicago conference on the thought of Michael Polanyi on June 8 to 10 of this year. Our previous conferences (2001 and 2008) were at the Loyola University, Lakeshore campus, while this one took place at the Water Tower campus downtown.

The theme of the conference was "Connections/Disconnections: Polanyi and Contemporary Concerns and Domains of Inquiry." On the opening day of the conference, eleven people went on the field trip to the Regenstein Library to work in the Papers of Michael Polanyi. There were keynote addresses by Mary Jo Nye and Walter Gulick. Richard Gelwick reminisced about his experience of working with Polanyi and Polanyians in a most pleasant conversation before the Saturday buffet banquet. Eduardo Beira arranged the first public showing since the 1940s of Polanyi's film, "Unemployment and Money," and led a lively discussion afterward. Two panels were part of the program: "Polanyi and Politics/Political Philosophy" and "Mysticism and the Tacit Dimension." There were more than 20 individual presentations on a broad array of topics in Sociology, Information Theory, Biology, Neurology, Philosophy, Theology, Aesthetics, Semiotics, Technology, Linguistics, Social Work, Political Science, and Economics. Compared to the two preceding conferences, there were more participants (44) from more countries (Australia, Hungary, Ireland, Israel, Portugal, The Netherlands, Poland, and the U.S.) at this conference.

Stephan Turner's essay "Making the Tacit Explicit" recently appeared online in *Journal of the Theory of Social Behavior* (DOI: 10.1111/j.1468-5914.2012.00500.x) and will soon be available in the print version of the journal.

Struan Jacobs' article "Tradition as a Topic of Philosophical Interest in Britain in the 1940s" was published in *Journal of Philosophical Research* 37 (2012): 313-335. DOI: 10.5840/jpr20123715.

Michael Polanyi, [Vor] Denker des Liberalismus im 20. Jahrhundert, R. T. Allen (Hrsg.). Gumpersbach, Germany: Friedrich-Naumann-Stiftung für die Freiheit, Theodor-Heuss-Akademie, 2012. pp. 130. Richard Allen has recently edited this small volume of essays intended for readers new to Polanyi; essays are brief and footnotes are few. The eleven essays introduce principal features of Polanyi philosophy, focusing on his contributions to political, social and economic theory. These essays grew out of papers given at the Polanyi Seminar held July 28-31, 2011, at the Theodor-Heuss-Academie of the Fredrich Naumann Stiftung für die Freiheit, Gumpersbach, Germany. Authors and essay titles are: R.T. Allen, "Introduction: Michael Polanyi and his Political and Economic Writings"; Endre Nagy, "Polanyi on Liberty: Earlier Writings"; Phil Mullins, "Polanyi on 'Public Liberty' and 'Dynamic Orders'"; Simon Smith, "Authority and Practice: General and Specific Authority in Science and Society"; Viktor Genk, "On Moral Inversion"; Tihamer Margitay, "Moral Inversion: A Social Diagnosis"; Richard W. Moodey, "The From-To Structure of Political and Economic Thinking"; R. T. Allen, "A Polanyian Account of Relations between Politics and Economics"; Richard W. Moodey, "Polanyi and the Sociology of Economic Life"; Klaus-Ulrich Neumann, "The Organization of Science in Polanyi's Days and Now"; Klaus Allerbeck, "Michael Polanyi: Almost a Sociologist." For information about obtaining a copy of the book, write Corinna Schulz-Roggenkamp (corinna.schulz-roggenkamp@freiheit.org).

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. Manuscripts should be double-spaced type with notes at the end; writers are encouraged to employ simple citations within the text when possible. MLA, APA or Chicago style are preferred. Because the journal serves English writers across the world, we do not require anybody's "standard English." 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. Consistency and clear writing are expected. Manuscripts normally will be sent out for blind review. Authors are expected to provide an electronic copy as an e-mail attachment.

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2012 Polanyi Society Annual Meeting Program

The annual meeting for the Polanyi Society for 2012 is November 17, 2012 in Chicago in conjunction with the American Academy of Religion annual meeting. There will be a morning and evening session with two papers apiece. The papers will also be posted on the Polanyi Society web site (polanyisociety.org) by early November. Please download the papers since they will only be summarized in the sessions..

Session I : Saturday morning, Nov. 17th, 9 – 11:30 a.m.
South Building, Room S502b, McCormick Place Convention Center

9:00

Andrew Grosso, Trinity Episcopal Church, Atchison, KS
“Michael Polanyi Meets Abba Moses: Embodiment, Indwelling, and Interdisciplinarity”
Respondent: Dick Moodey, Gannon University

10:00-10:15 Break

10:15

David Stone, Northern Illinois University
“Realigning the Tacit and Indwelling”
Respondent: Phil Mullins, Missouri Western State University

11:15 - Business Meeting

Session II: Saturday evening, Nov. 17th, 7 – 9:30 p.m.
PDR #3, Hilton Chicago Hotel

7:00 p.m.

François Euvé, S.J., Professor of Theology, Center Sèvres (Paris)
“Polanyi and the Renewed Dialogue between Religion and the Natural Sciences”
Respondent: Philippe Gagnon, Université de Strasbourg

8:00-8:15 Break

8:15 p.m.

Dale Cannon, Western Oregon University
“A Polanyian-Participatory Approach to Comparative Study of Religion: *The Questions of King Melinda* and Anselm’s *Proslogion* as Two Traditions of Religious Practice”
Respondent: Jake Sherman, California Institute of Integral Studies

The Online Program Book is available at http://papers.aarweb.org/program_book. Sessions can be located by searching for P17-107 and P-17-402.

Michael Polanyi and the Social Construction of Science

Mary Jo Nye

ABSTRACT Key Words: Michael Polanyi, Thomas S. Kuhn, J. D. Bernal, Karl Mannheim, social construction of science, Karl Popper.

Scholars in the field of social studies of science marked the year 2012 as the 50th anniversary of the publication of Thomas S. Kuhn's The Structure of Scientific Revolutions. Kuhn's book is routinely cited as the beginning of a new intellectual movement that jettisoned logical and empiricist accounts of scientific progress in favor of sociological and psychological explanations of scientific practice. In contrast, this essay argues that the roots of the social construction of science lie earlier, in the 1930s, in the political milieu, scientific careers, and intellectual debates of a generation in which Michael Polanyi was a central figure. Crucial elements in the development of Polanyi's philosophy of science are examined, with comparisons to J. D. Bernal, Karl Mannheim and others of their generation, as well as to the younger Thomas Kuhn and to Karl Popper.

The year 2012 marks the 50th anniversary of the publication of Thomas Kuhn's *Structure of Scientific Revolutions*. Many special conferences have been focusing on Kuhn's ideas and his legacy, just as anniversary conferences in 2008 marked the 50th anniversary of the publication of Michael Polanyi's book *Personal Knowledge*.¹ Kuhn's *Structure* is routinely cited as the beginning of a new intellectual agenda in studies of the history and philosophy of science, coinciding with the social and political unrest of the 1960s and with a skeptical critique of post-World War II and Vietnam-era "Big Science." This intellectual movement jettisoned the methods of the history of ideas and the assumptions of logic-oriented philosophy, including Karl Popper's popular philosophy of critical rationalism, in favor of sociological and anthropological approaches to explaining contemporary and past science. By the 1970s, practitioners of the social construction of science (which became identified under the broader rubric of science studies) were explaining scientific theories as the result of negotiations of competing interests within scientific communities, so that scientists' claims for the value-free objectivity and universal validity of their results became a matter of self-interest rather than reflections of the natural world.

Polanyi scholars are aware of similarities between Kuhn's and Polanyi's philosophies of science, as are scholars in science studies who routinely cite Polanyi's *Personal Knowledge* or *Tacit Dimension*. Some participants in commemorative Kuhn conferences of 2012 have paid attention to Polanyi in their assessments of Kuhn, who was some thirty years younger than Polanyi and drew upon Polanyi's early writings along with many sources. In my recent book on *Michael Polanyi and His Generation*, I demonstrate in detail just how much is owed to Polanyi and to some other scientists of his generation who took the first social turn in writing about the nature of science and scientific practice.

My aim in the book is to explain in detail how the origins of the social construction of science lie in the scientific culture and political events of Europe in the 1920s and 1930s during a period when scientific intellectuals struggled to articulate the nature of scientific knowledge and to strengthen public confidence in science in an era of economic catastrophe, popular socialist and nationalist movements, and the rise of Stalinism and Fascism. I focus in my book on Michael Polanyi as a central figure—in fact THE central figure—in a generation that broke, by the 1940s, with accounts of science either as historical narratives of great men and

great ideas or as philosophical analyses of a universal scientific method based in empiricism and logic. In my book, I did not have the responsibility of writing a biography of Michael Polanyi, because of the excellent biography published in 2005 by Martin X. Moleski with the late William T. Scott, but I was able to weave Polanyi's life and career into a more general history. In this essay, I present an account of the main arguments and themes that run through my book, and I conclude with remarks about the aims and epistemology of the social construction of science by way of comparison to Michael Polanyi's generation and to Thomas Kuhn's *Structure*.

First, it is crucial to understand that Michael Polanyi (1891-1976) was a member of the Central European refugee generation of the 1930s, men and women who were expelled from their home countries for political reasons couched in terms of anti-communism or anti-Semitism. This generation and their role in the emergence of the sociology of science is the focus of the May 2012 issue of the journal *Studies in East European Thought*.² The central events of Polanyi's youth were the Great War of 1914-1918 and the Bolshevik Revolution, followed in Hungary by the short-lived communist government of Bela Kun and its overthrow by conservative nationalist Hungarian military and political forces. Polanyi was a member of a sub-group that is identified by historians as the twice exiled generation or the "Hungarian phenomenon." They left Hungary in late 1919 or early 1920 for Germany, Austria, and elsewhere under pressure from a post-revolutionary, conservative regime that adopted an explicitly Christian and nationalist ideology in a Hungarian nation that previously had been a multi-ethnic state. The experience of the Hungarians' first exile is reflected in the Hungarian sociologist Karl Mannheim's description of the "socially unattached intelligentsia" in *Ideology and Utopia*, published in German in 1929.³

Michael Polanyi was one of the older members of this generation of Hungarian scientists. They were born around 1900 and included Eugene Wigner, Leó Szilárd, John von Neumann, and Dennis Gábor. Theodore von Karman was ten years older than Polanyi, and Edward Teller was a decade younger. As scientists, they worked in Germany or Austria before the anti-Semitic policies of the Third Reich forced their second emigration elsewhere. The first part of my book focuses on Polanyi's early life in Budapest; the circumstances of his double exiles, his later experiences of McCarthy-era discrimination in the United States, and his reflections on assimilation and Jewish identity. In Budapest, the young Polanyi absorbed a cosmopolitan, liberal, and trans-national European point of view that characterized many assimilated or baptized Jews of early twentieth-century Budapest. His own family upbringing was secular, educated, literary, and scientific with a strong dose of leftwing politics, which he came to reject. The vision of the multiethnic society promulgated among liberal politicians and thinkers of the Habsburg Monarchy was one of the underlying foundations of Polanyi's later descriptions of the "republic of science" and "public liberty."

The Budapest upbringing was crucial in other respects as well. Nowhere in Europe were citizens of Jewish origin more assimilated, secularized, and "westernized" than in Budapest before the Great War. His confrontation with a rise in anti-Semitism in Hungary and Germany forced Polanyi to rethink the meaning of Jewish identity and his relationship to religion and to Christianity. His religious reflections strongly influenced his later philosophy of science. I emphasize, too, that his commitment to Jewish assimilation was part of his commitment to modern science, to the old Hapsburg Empire and to internationalism, and to his political criticism of the kind of radical and revolutionary-left politics that Central European anti-communists came to identify as Jewish. As with many émigrés, Polanyi's experiences led him to acknowledge his potentially marginalized status as cultural outsider and encouraged in him the wide-ranging intellectual exploration and combativeness that helped constitute his originality. In this vein, Arthur Koestler, another of Polanyi's family

friends from Budapest who wound up in England, ruminated on the fates of Hungarians, “the only people in Europe without racial and linguistic relatives in Europe; therefore they are the loneliest on the continent. This . . . perhaps explains the peculiar intensity of their existence . . . Hopeless solitude feeds their creativity, their desire for achieving.”⁴

Another influence on Polanyi’s later notions of the republic of science and the autonomy of science was the long period that he spent working in Fritz Haber’s Institute for Physical Chemistry in Berlin. Arriving in Berlin in 1921 from medical and scientific studies in Budapest and Karlsruhe, Polanyi found himself in a milieu of laboratories, colleagues and co-workers, research seminars, and social groups which he came to think of as unrivaled anywhere on Earth. At that time, the institutes of the Kaiser Wilhelm Society constituted a new kind of organization for scientific research. The existence and funding of the Society relied on a network of financial support from the German national state (Reich), the Prussian state (Land), German industry, philanthropy, and private foundations, but from 1920 until 1933 the Society followed a research mission which was devoted to traditional academic values and to fundamental science. Working within this institution, Polanyi was sheltered to a large extent from pressures to make his own research conform either to pedagogical imperatives of the university or to demands from the state or from industrial employers for immediately useful results. As a result, Polanyi came to see the Haber Institute as a kind of ideal city of science, praising it in that language as early as 1928. I argue that Haber’s Institute became an idealized model for Polanyi’s vision of the need for the independence of science from external control and from demands for social usefulness.

In addition, and crucially, the day-to-day experiences of Polanyi’s long scientific career—in Budapest, Berlin, and Manchester—provided the data and the convictions that informed his rejection of standard accounts of science in the positivist mode, in favor of a sociological and psychological account of the nature of science. I discuss Polanyi’s chemical work in some detail in my book, showing how the general applicability of his views on scientific practice was ensured by the wide range of his scientific researches in the overlapping fields of thermodynamics, X-ray crystallography, chemical kinetics, reaction mechanisms, and quantum theory. Polanyi had many scientific triumphs during his career, especially in chemical kinetics and in modern chemical dynamics, where he is regarded as one of the field’s founding fathers alongside Henry Eyring and Eugene Wigner. Polanyi experienced disappointments, too, for example in his work in surface chemistry and X-ray diffraction studies of fibers and metals. Physical chemists judged his surface theory of adsorption inadequate, preferring the approach of the American chemist Irving Langmuir, and Polanyi’s pioneering work in X-ray diffraction and chemical structure met resistance from colloid chemists. There also were objections to the semi-empirical approach that he and Eyring developed for calculation of the energies of transition-states in simple chemical reactions.

I argue that Polanyi came to see his own successes and setbacks as typical of scientists’ experiences, rather than as unusual, although he tended to underestimate the esteem in which he was held in the broad scientific community. In lectures and essays that he began writing in the early 1940s in Manchester, Polanyi drew upon memories of the everyday routines and ups and downs of his own scientific career in order to develop what he intended to be a novel and controversial description of science as a community of dogmatic traditions and social practices rather than a march of revolutionary ideas and individual genius. He drew upon his laboratory experiences in order to develop an account of the apprenticeship system within science and to describe the “typical” or ordinary scientist who is at the heart of everyday scientific practice (what Thomas Kuhn more famously called normal science). Polanyi’s personal reflection on resistance to some of his own chemical results led him to sociological explanation, rather than logical explanation, for the mechanism by

which scientific priority and recognition are accorded within the structure of scientific authority. He was one of the very first scientists to come to these conclusions in published writing, along with the Polish bacteriologist Ludwik Fleck in 1935 and the British X-ray crystallographer J. D. Bernal in 1939, a point to which I will return.

After more than two decades of a high-profile research and administrative career in physical chemistry, Polanyi turned away from vigorous chemical research in the late 1930s to focus on economics, politics, and philosophy of science. One of the factors in this shift, as I document in my book, is that he was unable to duplicate at Manchester the material culture and intellectual excitement of the science of the Berlin years. Another factor was his contemporary political milieu, as he adjusted to a very different culture than central Europe at a time of immense political turmoil in Great Britain. He arrived in Manchester shortly after the formation of a coalition National Government which was contemplating various measures for central planning in order to combat the problems of the Depression. Discussions were also taking place in the context of the development of strongly centralized, command economies in Germany and the Soviet Union, which greatly distressed Polanyi.

Economics had long been a preoccupation in Michael Polanyi's family. His older brother Karl was a journalist and teacher specializing in political and economic analysis. Karl left Vienna in 1933 for London. Michael's own interest in economics had accelerated in the late 1920s, when he organized an economics dinner seminar for friends and colleagues. In the late 1930s he began reading and writing about the causes of the Great Depression, and he made two films on Keynesian free-market economics which were shown in London, Manchester, Paris, New York and elsewhere from 1938 to the mid-1940s. I argue that economics became a transition between Polanyi's career in chemistry and his vocation in the philosophy of science. He began using economic metaphors as models for the scientific community, describing science as a dynamic order of internally and mutually adjusting spontaneous actions, governed, like the free-market community, by an invisible hand. With this model, he argued against socialist planning schemes and government control of science, whether in the Soviet Union or Great Britain. He rejected, too, the views of his brother Karl that the free-market system is outmoded and had succeeded briefly only because of local conditions of time and place. It is hardly original for me to suggest that Polanyi's economics played a role in his *Minerva* essay of 1962 on the "republic of science." I do emphasize, however, that he had more than passing knowledge of economics, and that he had long been committed to classical Liberal economics in the Austrian tradition of the late Dual Monarchy. Polanyi's economics also shows the influence of debates with his older brother, and I see echoes of Karl's economic history of guild traditions and functionally-organized economic units in Michael's discussions of the nature and structure of the scientific community.⁵

Economics and politics are difficult to untangle, and Michael Polanyi was entangled in their interlocking spheres in England by the late 1930s. Combating British left scientists' sympathy with the Soviet experiment and defeating the social relations of science movement in Great Britain became essential aims in Polanyi's intellectual and political life around 1940. In particular, J. D. Bernal became a prime target of Polanyi's essays and lectures, some of which were collected in Polanyi's 1940 book *The Contempt of Freedom*. Bernal's 1939 book on *The Social Function of Science*, which argued the historical relationship between pure and applied science and the need for scientists to describe the usefulness of their work, fueled Polanyi's writings against science planning in Britain and led him to help found a "freedom in science" counter-movement aimed against the British scientific Left. Yet, what I have found is that while Polanyi and Bernal had unbridgeable differences over Marxism and the Soviet Union (as did Michael with his brother Karl), there are striking similarities in

their views on the operation of social norms of behavior within the scientific community and the inadequacy of a history of science told as the march of disembodied ideas.

Like Polanyi, Bernal shifted talk about science from scientific method and scientific heroes to scientific communities and scientific practice—from the logic of science to the life of science. Science must be understood, Bernal wrote, not as the pious record of works of great men, but “*as an institution*.”⁶ He described the training of scientists and networks of scientific communication.⁷ He insisted on scientists’ passionate desire to get to the truth and also to get ahead in competition with other scientists, and he laid out a code of moral values and ethical conduct in science in 1939 which closely resembles the American sociologist Robert K. Merton’s description three years later in a 1942 essay on “Science and Democracy,” where Merton defines the scientific norms of universalism, disinterestedness, organized skepticism, and what Merton originally called “communism.”⁸ Had Bernal been able to extricate himself from his ideological commitment to Marxism and Stalinism, which had very little practical effect on his science or on the views expressed in *The Social Function of Science*, other than to alienate many of his readers, the immediate reactions to his views would have been substantially different.

In contrast to his political differences with Bernal, there was mostly agreement between Polanyi and the Viennese-born Karl Popper on broad political matters, but not on the nature of science or on the role of skepticism in science and politics. As I discuss in my book, Popper was in England by the mid-1940s, teaching at the London School of Economics. Educated philosophically by his personal discussions and differences with Vienna-Circle logical empiricism, Popper’s philosophical ideas first appeared in English in political writings before the appearance in English of the *Logic of Scientific Discovery*. His main target in the political writings—which first appeared in the 1940s—was the doctrine of historical determinism, with Popper rejecting the notion that one can arrive at historical laws based in observations of historical facts and the discovery of historical rhythms or patterns.⁹ In order to argue that history is not a science, Popper had to describe what science is and what scientists do, and in this he used the same arguments in *Poverty of Historicism* and *The Open Society and Its Enemies* as he did in the 1934 German version of *The Logic of Scientific Discovery*.

Karl Mannheim figures importantly in this history. One of Popper’s targets in *The Poverty of Historicism* was Mannheim who, like Popper, was teaching in the 1940s at the London School of Economics. Like Polanyi—and I will return to that point—Popper objected to Mannheim’s advocacy of central planning and social engineering in the 1935 book *Mensch und Gesellschaft im Zeitalter der Umbaus (Man and Society in an Age of Reconstruction)*. Popper identified Mannheim’s vision with a closed society that is fundamentally antithetical to an open society based in the free dialectic of making mistakes and correcting them.¹⁰ Equally erroneous in Popper’s view was Mannheim’s sociology of knowledge in *Ideology and Utopia*, translated in 1936. Popper argued that Mannheim undermined confidence in scientific objectivity by discussing the mental or psychological attitude of the individual scientist and the scientist’s training in distinctive thought-models. Popper accused Mannheim of failing to recognize how intersubjectivity and the public character of scientific debate preserve the objectivity of science.¹¹

If, on first glance, Popper seemed to be leaning here toward a social turn, Popper never made the turn. His quest for objectivity centered on critical rationalism, the process of conjecture and refutation, and the eternal under-determination of scientific theories. As for the role of the personal in scientific knowledge, Popper wrote that “subjective experience, or a feeling of conviction, can never justify a scientific statement, and . . . within science it can play no part.”¹² In articles of 2011 and 2012, Struan Jacobs and Phil Mullins used

correspondence to trace personal interactions between Polanyi and Popper, whose philosophical differences became painfully apparent in 1958. Polanyi subtitled *Personal Knowledge* “Towards a Post-Critical Philosophy,” thereby positioning his philosophy against Popper’s critical rationalism. The next year, Popper prefaced the 1959 edition of *Logic of Scientific Discovery* with an attack on an unnamed Polanyi, with Popper ridiculing the notions of tacit and personal knowledge as destructive of rational thought.¹³

Polanyi’s *Personal Knowledge* of 1958 was based on his Gifford Lectures at the University of Aberdeen during 1951-1952, a period in which he also delivered a series of lectures at the University of Chicago, soon published in 1951 as part of the book *The Logic of Liberty*. The book *Personal Knowledge* had been in the making since Polanyi hired Olive Davies in November 1941 as part-time secretary to help with his writing projects. These projects included a book, he told his friends, on scientific life. The final form of the book was at least partly influenced by the mandate of the Gifford Lectures to discuss natural religion or natural theology “without reference to or reliance upon any supposed special exceptional or so-called miraculous revelation.”¹⁴ Polanyi incorporated themes from earlier lectures and essays into *Personal Knowledge*, including the necessity for “pure” science and scientific autonomy, the craft nature of scientific practice, the roles of “schools of research” and “apprenticeship,” the tension in science between innovation and tradition, the authority structure of science, and the existence of specifically scientific norms and values. His study of Gestalt psychology led him to consider dynamic elements of perception and to develop a terminology of “subsidiary awareness” and “focal awareness,” in order to distinguish the observer’s subsidiary awareness of the elements or particulars of an observation from his focus on the wholeness or closed form (“Gestalt”) of a thing.

“Tacit” knowledge was an important preoccupation in *Personal Knowledge*, with the claim that there are two kinds of knowledge: explicit, articulated, and formal knowledge on the one hand, and tacit, unarticulated, and non-formalized knowledge on the other hand. Polanyi argued that the first cannot be achieved without the second, just as “focal” knowing relies on “subsidiary” awareness. The rule-bound knowing of empiricism and logic is linked to objectivity, and the tacit knowing of know-how, intuition, and passion is linked to subjectivity. For Polanyi, personal knowledge is the unification of the objective and subjective aspects of all knowing, including, prominently, scientific knowing.¹⁵

There was a larger program in *Personal Knowledge*, however, than just the philosophy of science. Polanyi aimed to undermine what he believed to be the false ideal of “objectivity” in post-Enlightenment scientific and “critical” thinking, a rationalist outlook, he believed, that prevents unification of the biological and physical sciences and, more broadly, the natural sciences and social sciences.¹⁶ He identified the ideal of objectivity with the wrongful elimination of realism from the philosophy of science, and he reiterated forcefully and at length in *Personal Knowledge* his earlier statements of faith in scientific discovery as an effort to make contact with reality in something like a “prayerful search for God.”¹⁷ Calling the reader’s attention to the atrocities committed by totalitarian regimes during the 1930s and 1940s, he condemned “objectivity” for its moral blindness and indifference to human freedom. In so writing, Polanyi distanced his philosophy from mainstream philosophy of science, despite the value of many of his insights and observations.¹⁸

The immediate reaction to *Personal Knowledge* among professional philosophers of science was largely negative, in contrast to its more favorable reception among interested scientists, theologians, and religiously-concerned intellectuals. I find it ironic, given the later incorporation of some of Polanyi’s themes into the sociology of science, that one of his principal targets in *Personal Knowledge* was sociology in general and Karl Mannheim’s sociology of knowledge in particular. Polanyi had known Mannheim since the meetings

of the “Sunday Circle” at Béla Balázs’s home in Budapest during the First World War. Mannheim’s stated aim in *Ideology and Utopia* was to overcome relativism in order, like Polanyi, to demonstrate the stability of scientific knowledge (although Mannheim’s focus was social science, not natural science).¹⁹ Mannheim saw his sociological epistemology as one of relationism, not relativism or relativization, drawing upon recent work in art history on style. Just as art may be definitely dated according to its style, so each form of knowledge, or what Mannheim called a “thought-model,” is possible only under certain historical conditions, and a scientific community’s thought-model binds it together to see things in a similar way. This was an insight that we can find as well in Polanyi’s interpretive frameworks, in Ludwick Fleck thought-styles and thought-collectives, and in the younger Thomas Kuhn’s paradigms.²⁰

In Mannheim’s view, sociology of knowledge should be able to translate the results of one thought-model into another and to discover a common denominator for different perspectives.²¹ Like Polanyi, Mannheim argued against objectivism and against the kind of demand made by Popper for the scientist’s psychological detachment from his results. In Mannheim’s view, “the problem lies not in trying to hide these perspectives or in apologizing for them, but in inquiring into the question of how, granted these perspectives, knowledge and objectivity are still possible.”²²

Again, I suggest, as in the case of Bernal, politics separated Polanyi and Mannheim more than epistemology united them. They met together in London and talked, but Polanyi objected to Mannheim’s views on social planning and to the implication in Mannheim’s sociology of knowledge that “thought is not merely conditioned, but determined by a social or technical situation. I cannot tell you how strongly I reject such a view.”²³ Nor was Polanyi alone in his unease with Mannheim’s sociology of knowledge. Like Polanyi, Robert K. Merton detected Marxist presuppositions in Mannheim’s sociology. More significantly, Merton self-consciously oriented his sociology of science away from sociology of knowledge on the grounds that sociology of science required a stronger empirical base of knowledge about the social processes internal to the scientific community before seeking to understand extra-theoretical influences on science.²⁴

Around the time of Polanyi’s death, the mainstream in history and philosophy of science diverged into separate channels with a wider and wider path turning away from the history of ideas, logical empiricism and critical rationalism toward the sociology of scientific institutions, the social history of science, and the sociology of scientific knowledge. I argue that Thomas Kuhn was a transitional figure in three generations of scholars in the social study of science. The first generation included Polanyi, Bernal, Mannheim, Fleck, and Merton, all born during the period 1890 through 1910. The second transitional generation prominently featured Kuhn, but also included John Ziman, Jerome Ravetz, and David Edge, all in Great Britain. A third generation, born in the 1940s, enrolled Harry Collins, Steven Shapin, and Bruno Latour, among others. Members of the second two generations acknowledge some debt or inspiration to the first generation, and they routinely cite the importance of Polanyi’s notions of tacit knowledge, apprenticeship, and the social nature of science. Kuhn’s *Structure* book brought renewed attention to Polanyi, as well as to Fleck, whose 1935 book on the conditioning of the development of scientific facts by thought-styles and thought-collectives began to attract wide notice in its 1979 English translation.²⁵

The science studies scholars in the 1970s, in contrast to Polanyi or to Kuhn, were unrelenting in a methodology of sociological history and sociology of knowledge that largely abandoned psychology. In contrast, Kuhn, like Polanyi, had enlisted psychology into a sociological account of the way science works. Both Kuhn and Polanyi employed Gestalt theory, and both explored the notion of a psychological conversion experience

when one paradigm or framework is abandoned for another one. Kuhn insisted on radical discontinuity and even incommensurability between old and new paradigms, whereas Polanyi—like Fleck independently of him—described scientific change as a continuous process of transformations.²⁶ Kuhn dismissed Polanyi's emphasis on the individual scientist's innate act of faith or belief, saying that he found a kind of mysticism in Polanyi's emphasis on faith that made him uneasy. Kuhn also criticized what he called Polanyi's failure to work out fully the sociological implications of Polanyi's own ideas.²⁷ In this respect, the next generation followed Kuhn's sociologically-oriented program further than did Kuhn himself.

What most clearly distinguishes Polanyi and his generation from their intellectual children and grandchildren is that Polanyi's generation—Mannheim included—felt a deep reverence for natural science and mathematics. They shared a conviction of the transcendence and universalism of scientific thinking—an aesthetics of a vision beyond ourselves. This was a conviction found equally in the tenets of the logical empiricism of the Vienna Circle and of Popper's philosophy of critical rationalism. It is a view of science rooted in that generation's common culture of the 1930s, as I have tried to demonstrate in detail in my book.

In contrast, Kuhn had no fears for the life of science or for public confidence in science during the expanding scientific enterprise in the United States and Western Europe in the 1950s. Kuhn was committed to science, if not to scientific truth with a capital "T." He had a pragmatic attitude that scientific knowledge is successful problem solving, and that science is very good at what it does. In response, however, to a younger generation's interpretations of the *Structure of Scientific Revolutions* with which he disagreed, Kuhn fought hard against any epistemological relativism that would devalue the scientific enterprise as a whole. His problem, like Polanyi's, was to explain the almost sacred mystery of the overall stability and reliability of science.

The next generation after Kuhn was considerably more skeptical about Truth and about science in general. Science studies scholars took as their task the destabilization of standard scientific knowledge and the disunification of science—what Shapin has called a "lowering of the tone" and what the Cambridge historian of science Simon Schaffer has called the "loss of the obvious."²⁸ No longer concerned with Fascism or Stalinism, and for the most part abandoning debates about capitalism and Marxism, these American and British scholars who turned from studies in science to studies of science did so within a politics of criticism of a scientific power-elite that they observed working closely with the military-industrial sectors of the national state during the post-Cuban missile crisis Cold War and the Vietnam War. The expansion of Big Science across the national landscape turned many former science enthusiasts against what the science journalist Daniel Greenberg called the "immaculate conception of science," using Polanyi's *Logic of Liberty* as its exemplar.²⁹

Scholars in science studies pursued a program of examining and unmasking the mechanisms by which scientists gain credibility within and outside their disciplinary communities in local times and places. They were largely suspicious of the claims of the scientific elite for the privileged status and civic virtue of scientific knowledge. Whereas Polanyi had insisted upon the role of the scientist's belief and commitment—the eminently personal—in daily scientific practice, science studies scholars turned Polanyi's notion upside down and often argued to the public that what is said to be scientific knowledge is only belief.

Clearly, the insights of the 1970s generation were used for different ends than intended by Polanyi and his contemporaries. The aim of Polanyi's generation was to strengthen, not diminish, public valuation of science, scientific credibility, and universal knowledge. They all would have disagreed to the last breath with Harry Collins's provocatively radical statement in the early 1980s that science is only social relations, and that

the natural world plays a “small or non-existent role in the construction of scientific knowledge.”³⁰ Of course, postmodernism—and history more generally—teaches us that authors cannot control the uses of their texts in different times and places. In a recent turn, as Bruno Latour has complained, the writings of Harry Collins and Latour have been enlisted by deniers of biological evolution and of climate change, who say that these scientific theories are only one closed scientific community’s belief. In this instance, Latour disagrees with his avowed acolytes.³¹ Polanyi, too, would have disagreed, as did Kuhn, with some of the later uses made of his work, but this is the price that must be paid for offering powerful ideas and insights to an audience far removed from their cultural origins.

Endnotes

¹“Personal Knowledge at Fifty,” Conference, Loyola University, Chicago, 13-16 June 2008; “Reconsidering Polanyi,” Conference, Budapest, June 26-28, 2008.

²Tamàs Demeter, “Introduction,” *Studies in East European Thought*, 64 (2012): 1-4.

³On the “Hungarian phenomenon,” see Gábor Palló, “Scientists’ First Step of Emigration: From the Hungarian Periphery to the Centre,” *Periodica Polytechnica*, 34 (1990): 319-323 on 319, 320 and Gábor Palló, “Hungarians’ Second Step of Emigration: Toward the New Centers,” *Periodica Polytechnica*, 35 (1991): 78-86, on p. 85. Further, Tibor Frank, *Double Exile: Migrations of Jewish-Hungarian Professionals through Germany to the United States, 1919-1945* (London: Peter Lang, 2009); Lee Congdon, *Exile and Social Thought: Hungarian Intellectuals in Germany and Austria, 1919-1933* (Princeton: Princeton University Press, 1991); Laszlo Somlyody and Nora Somlyody, eds. *Hungarian Arts and Sciences 1848-2000* (New York: Columbia University Press, 2003). For quotation, Karl Mannheim, *Ideology and Utopia: An Introduction to the Sociology of Knowledge*, trans. Louis Wirth and Edward Shils (New York: Harcourt, Brace, and World, 1936), pp. 154-155.

⁴Quoted in Kati Marton, *The Great Escape: Nine Jews Who Fled Hitler and Changed the World* (New York: Simon and Schuster, 2006), p. 11. On the Hungarian scientists and patterns of creativity, see Gábor Palló, “Scientific Creativity in Hungarian Context,” *Hungarian Studies*, 19 (2005):215-231. Also, Laura Fermi, *Illustrious Immigrants: The Intellectual Migration from Europe 1930-1941* (Chicago: University of Chicago Press, 1968), pp. 53-59.

⁵Michael Polanyi wrote that the ideal community of scientists resembles a body politic that works according to the economic principles of independent initiatives coordinated “as by an ‘invisible hand’ in the joint endeavor of discovery. Michael Polanyi, “The Republic of Science: Its Political and Economic Theory,” *Minerva*, 1 (1962): 54-74; quotation from pp. 54-55. For a minimal definition of Austrian Liberalism, see Deborah R. Coen, *Vienna in the Age of Uncertainty: Science, Liberalism and Private Life* (Chicago: University of Chicago Press, 2007), p. 10. For Polanyi’s early uses of the terms “dynamic order” and “spontaneously arising orders,” see his 1941 essay “The Growth of Thought in Society,” in *Economica* 8 (1941): 428-456, esp. 431-432, 435. Hayek had extended the notion of spontaneous order from economics (a 1933 lecture) to general knowledge in a 1936 lecture, published as Friedrich von Hayek, “Economics and Knowledge,” *Economica*, new series, 4 (1934): 33-54. . Note that the U.S. Justice Oliver Wendell Holmes in 1919 wrote that the best test of truth is the power of thought to get itself accepted in the competition of the market. In Massimo Pigliucci, *Nonsense on Stilts: How to Tell Science from Bunk* (Chicago: University of Chicago Press, 2010), p. 112.

⁶J. D. Bernal, *Social Function of Science* (Cambridge, Mass.: MIT Press, 1967), p. 11.

⁷Bernal, *Social Function of Science*, especially pp. 310, 317. While lobbying for a central governmental

agency in support of science, he also wrote that the organization and financial support of science must be largely controlled by the efforts of scientists themselves, not by bureaucrats. Bernal, *Social Function of Science*, pp. 65, 310, 321-323.

⁸See Gary Werskey, *The Invisible College: A Collective Biography of British Scientists and Socialists of the 1930s* (London: Allen Lane, 1978), p. 189, on Bernal, *Social Function of Science*, p. 416. See Robert K. Merton, "A Note on Science and Democracy," *Journal of Legal and Political Sociology*, 1 (1942): 115-126, reprinted as "The Normative Structure of Science" in Merton, *Social Theory and Social Structure: Toward the Codification of Theory and Research* (Glencoe, Ill.: Free Press, 1949), pp. 307-316. A recent analysis of Merton's norms is found in Stephen Turner, "Merton's 'Norms' in Political and Intellectual Context," *Journal of Classical Sociology*, 7 (2007): 161-178. Merton changed his own characterization of the scientific community's communism to "communalism" in order to make clear the non-Marxist meaning of the common ownership of scientific information, discoveries, and theories.

⁹Karl Popper, *The Poverty of Historicism* (London: Routledge, 2004), p. 140, p. 3.

¹⁰Popper, *Poverty of Historicism*, pp. 43, 58, 62-63, 69. Karl Mannheim's *Mensch und Gesellschaft im Zeitalter der Umbaus* (Leiden: Awsijthoff, 1935) appeared in English in 1940 as *Man and Society in an Age of Reconstruction* published in London by Kegan Paul Publishers.

¹¹Popper, *Poverty of Historicism*, pp. 143-144. On Popper as making the social turn, see Ian Jarvie, *The Republic of Science: The Emergence of Popper's Social View of Science* (Amsterdam: Rodopi, 2001).

¹²Popper, *The Logic of Scientific Discovery* (London: Hutchinson, 1959), pp. 22-26, quotation on p. 24.

¹³Mary Jo Nye, *Michael Polanyi and His Generation: Origins of the Social Construction of Science* (Chicago: University of Chicago Press, 2011), p. 269. See Struan Jacobs and Phil Mullins, "Relations between Karl Popper and Michael Polanyi," *Studies in the History and Philosophy of Science*, 42 (2011): 426-435; and Struan Jacobs and Phil Mullins, "Michael Polanyi and Karl Popper: The Fraying of a Long-Standing Acquaintance," *Tradition and Discovery*, 38: 2 (2011-2012): 61-93.

¹⁴On the Gifford Lectures see <http://www.giffordlectures.org/aberdeen.asp> (downloaded 26 June 2012).

¹⁵Useful guides to *Personal Knowledge* are Polanyi's *The Study of Man* (Chicago: University of Chicago Press, 1959); Marjorie Grene, "Personal Knowledge," *Encounter*, 11:4 (1958): 67-68; and Stefania Ruzsits Jha, *Reconsidering Michael Polanyi's Philosophy* (Pittsburgh: University of Pittsburgh Press, 2002).

¹⁶On the post-Kantian and early nineteenth-century origins of modern notions of objectivity and subjectivity, see Peter Galison and Lorraine Daston, *Objectivity* (New York: Zone Books, 2007), pp. 30-31.

¹⁷On the prayerful search for God, Michael Polanyi, *Science, Faith and Society* (Chicago: University of Chicago Press, 1964), pp. 34-35.

¹⁸In a notice of the 2009 re-issue of *The Tacit Dimension* (Chicago: University of Chicago Press, 2009), which is a 1966 book based on Polanyi's 1962 Terry Lectures at Yale, Steven French voiced mystification at Polanyi's "cosmic panorama" and references to a fateful conflict between the "moral skepticism of science and the moral demands of modern man." French notes how far distant Polanyi's work lies from mainstream philosophy. Steven French, notice of *The Tacit Dimension* in *Metascience*, 19 (2010): 157-158, quoting from *The Tacit Dimension*, p. 57.

¹⁹Karl Mannheim, *Ideology and Utopia: An Introduction to the Sociology of Knowledge*, trans. Louis Wirth and Edward Shils (New York: Harcourt, Brace and World, 1936) includes *Ideologie und Utopie* (Bonn: F. Cohen, 1929), pp. 264, 5.

²⁰See Tamàs Demeter, "Weltanschauung as a priori: Sociology of Knowledge from a 'Romantic' Stance," *Studies in East European Thought*, 64 (2012): 39-52; Michael Hagner, "Perception, Knowledge and

Freedom in the Age of Extremes: On the Historical Epistemology of Ludwik Fleck and Michael Polanyi,” *Studies in East European Thought*, 64 (2012): 107-120.

²¹Mannheim, *Ideology and Utopia*, pp. 271, 300-301.

²²Mannheim, *Ideology and Utopia*, p. 296.

²³Eva Gábor, ed., with the assistance of Dézsö Banki and R. T. Allen, *Selected Correspondence (1911-1946) of Karl Mannheim, Scientist, Philosopher, and Sociologist* (Lewiston: The Edwin Mellen Press, 2003), p. 314; also William T. Scott and Martin X. Moleski, S.J., *Michael Polanyi: Scientist and Philosopher* (Oxford: Oxford University Press, 2005), pp. 194-195.

²⁴Nye, *Michael Polanyi and His Generation*, pp. 286-287.

²⁵See Ludwik Fleck, *Genesis and Development of a Scientific Fact*, trans. Fred Bradley and Thaddeus J. Trenn, eds. Thaddeus J. Trenn and Robert K. Merton (Chicago: University of Chicago Press, 1979). The original German edition was published in Basel in 1935 by Benno Schwabe Publishers.

²⁶On this point, see Nicola Mössner, “Thought Styles and Paradigms—A Comparative Study of Ludwik Fleck and Thomas S. Kuhn,” *Studies in the History and Philosophy of Science*, 42 (2010): 362-371.

²⁷See Aristide Baltas et al., “A Discussion with Thomas S. Kuhn,” in *The Road Since Structure*, eds. James Conant and John Haugeland (Chicago: University of Chicago Press, 2000), pp. 255-323; on mysticism or extrasensory perception, see p. 296; and Thomas S. Kuhn, “The Function of Dogma in Scientific Research,” in *Scientific Change: Historical Studies in the Intellectual, Social and Technical Conditions for Scientific Discovery and Technical Invention, from Antiquity to the Present*, ed. A. C. Crombie, pp.347-369, on pp. 394-395 on sociology.

²⁸ See Steven Shapin, “Lowering the Tone in the History of Science: A Noble Calling,” in Shapin, *Never Pure: Historical Studies of Science as if It Were Made by People with Bodies, Situated in Space, Time, and Society, and Struggling for Credibility and Authority* (Baltimore: MD: The Johns Hopkins University Press, 2010), pp. 1-14; and Simon Schaffer, in John Pickstone et al., “What is the History of Science?” *History Today*, 35 (May 1985): 46-53, on p. 49.

²⁹For the popularization of the critical notion of the scientific priesthood, see Ralph E. Lapp, *The New Priesthood: The Scientific Elite and the Uses of Power* (New York: Harper and Row, 1965). Also Daniel S. Greenberg, *The Politics of Pure Science*, new edition (Chicago: University of Chicago Press, 1999; orig. 1967), p. 5.

³⁰Harry Collins, “Stages in the Empirical Programme of Relativism,” *Social Studies of Science*, 11 (1981): 3-10, on p. 3.

³¹Bruno Latour, “Why Has Critique Run Out of Steam? From Matters of Fact to Matters of Concern,” *Critical Inquiry*, 39 (2004): 225-248, on pp. 227, 230.

Polanyian Biosemiotics and the From-Via-To Dimensions of Meaning

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ABSTRACT Key Words: Michael Polanyi, Jesper Hoffmeyer, Susanne Langer, biosemiotics, meaning, triadic interpretation, cosmic emergence, embodiment, tacit knowing, evolutionary epistemology.

A central aim of Michael Polanyi's philosophy is to demonstrate the many ways in which human existence is meaningful to counter the nihilistic and positivistic accounts that contributed to the world wars and totalitarian governments in the twentieth century. Yet Polanyi's references to various sorts of meaning is suggestive rather than systematic and coherent. The objective of this essay is to show the relationship between the different aspects of meaning by viewing their emergence in cosmological perspective beginning with simple forms of life and culminating in the ways signals, perception, and language support human experiences of significance. Emergence, embodiment, and "from-via-to" interpretation are key ingredients in this Polanyian version of biosemiotics.

Michael Polanyi's last series of lectures, delivered in Chicago and Texas, is entitled "Meaning." In his introductory comments to the lectures, Polanyi states that the basic point of the lecture series is expressed by the titles of the last two lectures, "Meaning Lost" and "Meaning Regained."¹ I believe the notion of meaning regained can be taken not only as the culmination of his last lectures, but as a phrase that summarizes the ultimate point of his entire work in philosophy.² Yet the notion of meaning, so crucial to his thought, remains to the end of his writing used in a variety of ways that can be confusing. In this essay, I will set out a view of the different aspects of meaning to which Polanyi alludes and ground them in a semiotic framework that has affinities to the evolutionary scheme that is featured in Part Four of *Personal Knowledge*. I believe that the clarification of the notion of meaning in its different aspects is crucial to the project of ensuring that Polanyi's post-critical philosophy is a living movement that remains responsive to contemporary issues.

Typically, discussion about meaning has centered around two distinct poles. Analytic philosophy and to a large extent post-modern thought have concentrated upon the linguistic aspects of meaning. This discussion has featured such structural notions as syntax, semantics, and pragmatics, and has been littered with such terms as propositions, utterances, morphemes, codes, memes, texts, and illocutionary acts. The second major pole of discussion is related to the notion of significance and has been classically expressed in the question, "What is the meaning of life?" By the end of this essay, I hope answers to the following two questions might be evident: 1. Is there any organic connection between linguistic meaning and meaning as significance such that it makes sense to use the same term, "meaning," to refer both to a result of language usage and to experienced significance? 2. If there is a connection, how is it best understood?

Polanyi's Usage of the Term "Meaning"

To justify my claim that Polanyi's notion of meaning is multi-faceted and not systematically delineated, let me mention five different ways he uses the term, often without noting the differences in his usage.

- (1) Denotational meaning. Fairly early in *Personal Knowledge* Polanyi refers to “two kinds of wholes and two kinds of meaning” (PK 58). “The more clear-cut cases of meaning are those in which one thing (e.g. a word) means another thing (e.g. an object)” (PK 58). This first type is what is commonly called denotation, but which Polanyi also calls representational meaning (although denotation and representation have somewhat different connotations).
- (2) Existential meaning. The second type of meaning is that which a context contains in itself. “Other kinds of things, like a physiognomy, a tune or a pattern, are manifestly wholes but this time their meaning is somewhat problematic, for though they are clearly not meaningless, they mean something only in themselves” (PK 58).

Before proceeding further, let us notice some ambiguities in this second notion of meaning. Does the meaning of existential meaning lie in the context itself apart from human knowing, or does it only come into existence as a function of human thought? Math and music are cited as mainly having existential meaning, and it would seem that some appreciator of music and some human understanding of mathematical symbols and their largely logical relationships would be needed for these disciplines to be meaningful. But then Polanyi seems to opt for a view of existential meaning apart from human knowers when he goes on to say, “All kinds of order, whether contrived or natural, have existential meaning . . .” (PK 58). But don’t all things, or the great majority of the virtually infinite world of things, have some sort of order? Don’t they fit into some kind of casual network at some level of analysis? To equate existential meaning with all examples of order in the world seems to stretch the term beyond usefulness. Some clarification is needed.

- (3) Subsidiary meaning. Polanyi describes particulars as having meaning insofar as they contribute to and sustain a whole. He says that “when something is seen as subsidiary to a whole, this implies that it participates in sustaining the whole, and we may now regard this function as its *meaning*, within the whole” (PK 58). Although Polanyi makes this comment as a basis for describing denotative and existential meaning, subsidiary meaning seems different from either of them. The shape of a person’s mouth contributes to the recognition and meaning of a physiognomy, but this is not denotative meaning, as the mouth does not mean the face, nor does it seem to be the existential meaning of a context. Elsewhere Polanyi says effort is needed to perceive a meaningful whole (for instance, TD 6), and effort implies that subsidiary meaning comes into being through an act of integration rather than being a mere ordered context like existential meaning.

This third usage of the term “meaning” is crucial to Polanyi’s creative epistemology. At different points Polanyi describes the structures of knowing in terms of two types of awareness, in gestalt terms of part/whole, but most importantly in terms of the subsidiary/focal distinction. The identification of meaningful wholes is a tacit accomplishment in which the parts have a meaning. Polanyi says that “in a gestalt the parts *have* a meaning and the whole which they form *is* their meaning. . . The several moves of a skill *have* their meaning in the successful act which *is* their meaning. Words and sentences *have* a meaning in the message which *is* their meaning.”³ Note, however, that subsidiaries come in several rather different forms. Skills that contribute to meaningful actions are physiological in nature; dispositions, habits and memories are complex sorts of subsidiaries that influence outcomes; and words are human constructions or conventions.

- (4) Focal meaning. The fourth usage has just been indicated: focal meaning is the product of the integration of parts into a whole. In a broad sense, all consciousness has some content (is intentional in Brentano's terminology) and thus could be said to denote this content. However, in its narrower, more common usage, denotation is understood as a function of linguistic meaning, the uniquely human exemplification of this fourth type of meaning. Words which *have* conventional meanings are integrated via grammatical rules into a phrase or sentence the meaning of which *is* the personally intended focal meaning. Not all linguistic expression is denotative; some uses of language may be simply expressive, interrogative, or unfocused and thus may not denote an intended specific object. So on this narrower, more usual usage, denotative meaning (the first type described above) can be seen as one particular usage of linguistic meaning. Moreover, not all focusing is inherently linguistic in nature. Like other animals, we may simply focus on an image or pattern or signal, not a specific denoted object. Thus focal meaning may occur in a variety of forms.
- (5) Consummational meaning. We still have not discussed the notion of meaning that Polanyi sees as central to his philosophy: meaning lost and regained in society. This is meaning as experienced purposefulness or significance. When experienced, it is manifest in a sense of well-being. When not experienced, it leads to despair. The title of Polanyi's 1970 article, "Why Did We Destroy Europe?" refers to consequences for society resulting from widespread nihilistic loss of meaning in this fifth sense.

How are these five types of meaning related to each other? Or is the use of a common term to refer to these aspects of being a linguistic convenience that is not expressive of any real commonality? I believe that these types not only can be but should be shown to be derived from a common root. My task in what follows is to set forth the systemic perspective that can illuminate a full-fledged theory of meaning. Because of Polanyi's pioneering work, a systemic understanding of meaning can go far beyond the anemic linguistic notions of meaning that seem so important in the analytic tradition of philosophy. Following Polanyi's lead in PK Part Four, a robust, systemic theory of meaning will be set in an evolutionary, emergent, and indeed cosmological framework.

Three Orders of Cosmic Emergence

Meaning is an emergent feature of being carried out by some living being. This is the basic claim I shall seek to substantiate in what follows. In attempting to show how the various meanings of meaning are systematically related, it is helpful to take a genealogical/evolutionary approach in order to see how meaning's many manifestations *emerge* within the structure of the cosmos as a whole. This is in effect the approach Polanyi takes, and in the process he distinguishes between a) the realm of physics and chemistry, b) the emergent realm of living things, and c) the crowning emergence of humanity.⁴

I accept Polanyi's distinction between these three basic ontological domains. Like Polanyi, I don't find it helpful to state that there is meaning or significance in the realm of matter and energy in itself. However, unlike Polanyi, I see the lack of meaning in the cosmos apart from life as consistent with my claim that order apart from purpose does not produce meaning.⁵ To explain why I posit meaning as coming into being only

with the rise of life, I will indicate how in each of the three realms a different notion of causality and a different reach of influence has emerged to make each unique as a distinctive ontological order.

First Order Emergence: Dynamo-Physical World. This is the realm of matter and energy in their dynamic interaction. The laws of physics and chemistry are inherent in the dynamic structure of this order. There is no evident purpose or meaning in this dynamic realm. Rather the evolution of the dynamo-physical world seems structured by three components: the nature of *matter-energy* itself, somewhat “lumpy” *initial conditions* inherent in the Big Bang, and *constraints* that emerge as the universe expands.⁶ Also implicit in this order of being as it expands are tendencies toward the emergence of different ontological levels as guided by processes of self-organization, for instance, as expressed in movement towards states of equilibrium. The Big Bang may be regarded as a basic singularity, whereas the process of cosmic unfolding is essentially dyadic in nature. This order of being is headed to no discernible meaning-endowing climax. It has no controlling center. With expansion from its virtually pinpoint origins, surface, shape, and contiguity have taken on important constructive roles in processes of emergence. From the microcosm to the macrocosm, this order is ruled by various blind types of causality subject to different forces at different levels and scales of complexity. At the level of the atom, the strong force prevails, whereas for us humans, gravity is an important causal force. A chemist may see significance in how a catalyst may cause a certain chemical reaction, but the significance is in the knowing, not in the chemicals themselves. Similarly, recounting “a brief history of time” as Stephen Hawking tells it produces meaning in the form of a causal narrative about cosmic expansion, but the meaning is a function of the telling, not of the process itself. Any reductive theory that seeks to explain the processes of life solely in terms of the dynamo-physical world robs life of meaning and significance, because while the dynamo-physical order has the potential to support the emergence of meaning, in itself it has no meaning.

It will be evident that I reject Polanyi’s notion of existential meaning insofar as he claims it is found wherever order is found. Yes, the dynamo-physical world is replete with order and order-creating processes, but not with meaning.

Second Order Emergence: Biological World. Living things can be distinguished from non-living things by the fact that their functioning is self-centered. They are what Polanyi calls active centers (see PK 336, 344, etc.). The many parts of active centers are coordinated in healthy beings in support of the organisms’ survival, both as individuals and species. Their purposeful functioning can be contrasted to the mute centerless unfolding of the dynamo-physical world. The aim of living things is not only to survive, but also to thrive as individuals and through reproduction to pass on that ability to live to descendants. The most primitive living things, the archea and bacteria, are barely more than chemical machines, yet as cells each is a tiny independent being seeking to divide and replicate itself as fast as possible. Indeed, all living things, whether single celled or many celled, plants or animals, possess a degree of autonomy or self-regulation⁷ that transcends complete determination by external influences upon surfaces and internal structures. Even such seemingly unified and ordered but inert entities as atoms, crystals or stars may be seen as deterministic resolutions of clashing properties. As Polanyi emphasizes, living beings introduce achievement into the world—success or failure in relation to increasingly complex ends (PK 331, 345; SM 60).

Thus each living being may be seen as a little world set within a vastly larger encompassing world. The workings within this little world are of a different order than the workings of the outer world. Living beings have an inner and an outer. All the impacts coming from the outer world, even those produced by other living things, are leveled off into different types of affordances (to use Gibson’s helpful term).

So is it fitting to speak of meaning within the biological world? Yes indeed. Because living beings have telic features related to their maintenance and survival—purposes such as feeding, reproducing, and countering enemies—they must have inner processes that accomplish these ends. The functions that achieve internal goals are meaningful to the organism. At its most basic level, then, meaning may be equated with teleological functioning. That is, biological processes introduce an additional dimension to physical cause and effect. More specifically, organisms must be able to gather information relevant to their survival and interpret it in terms of actions that ensure survival. Primordial forms of subsidiary and focal meaning are found within the biological world. Further elaboration on meaningful processes in the animal world (upon which I will focus) will be forthcoming after the third emergent order is discussed.

Third Order Emergence: Human World. Given the vastly extended scale of increasing complexity and enhanced ability to respond to their niches from single-celled bacteria to the mammals, it may seem ridiculously presumptuous to claim a third order of emergence for humans. What makes us so special? In brief: discursive symbols. I will again insist on the absolutely essential distinction Susanne Langer makes between signal awareness and symbol-produced conception.⁸ All animals, including humans, learn to adjust their behavior to the signals our environments provide with respect to the availability of food, the presence of danger, and the opportunities for reproduction. Animals often also develop their own signals to communicate the existence of life enhancing opportunities or threatening dangers. The difference between signals and symbols is one of function. A phrase like “Look out!” can be a signal if it calls forth a reflex action like jumping out of the way of a bicycle or a symbol if it inspires reflection.

The dynamo-physical world is vast and centerless; the biological world contains little centers within this spatio-temporal vastness; the human world contains little human centers that dwell within both dynamo-physical and *cultural* vastness. That is, through language and other symbolic forms, humans can do more than engage their immediate surroundings. Through conception, we can reflect upon past events, project ourselves mentally into other places, plan future events, and in such ways escape the limitations of our spatio-temporal placement in the dynamo-physical world. Through language, we can consider alternative acts and the reasons that favor choosing one action over another. Rational choice is a novel type of causality in the cosmos; it is the essence of freedom. Linguistically based conception grants humans the ability to transcend their own perspective and empathize with the perspective of other humans. This ability is the basis of morality and self-consciousness.⁹ Also of great significance is the ability of humans to store memories, insights, predictions, etc. in writing, pictures, diagrams, formulas, etc., thus greatly enlarging the cultural realm in which we dwell. Moreover, the ability to expand our human powers of perception and action through increasingly robust technologies continually alters the external environment in which we dwell. The human world is an emergent phenomenon built upon the biological world which in turn is built upon the properties of the dynamo-physical world.

All five types of meaning in Polanyi’s thought have places within the human world. Subsidiary and focal meaning take on new, rich qualities within human consciousness thanks to the world-forming powers of discursive symbolism. We can denote all sorts of objects within human consciousness; denotative meaning is critical to thought. Even existential meaning can be seen to have a place in the human world if it is treated as an aspect of consciousness rather than as a characteristic of the dynamo-physical world. A picture exhibits what Langer calls presentational symbolism.¹⁰ Picture thinking—holistic (spatial) conception—complements linguistic thinking—discursive (temporally extended) conception. Seeing brings together presentational and discursive symbolism because our vision provides both picture-like context and linguistically infused focal

awareness upon which we can reflect. Finally, consummational meaning, nascent in the drive satisfactions animals experience, attains its mature human form through language because we can reflect upon the quality of our experience, considering the degree to which our values and purposes are lived out or thwarted.

Formulating a Polanyian Biosemiotics

Now that the qualities of the three emergent orders have been sketched out, it is time to examine the extent to which Polanyi's thought can deepen our understanding of how humans can regain consummational meaning in our time. For Polanyi, the key to regaining meaning is to ensure that we not fall prey to deceptive and fallacious frameworks of thought such as positivism and Marxism, which debunk the validity of the partially tacit values and purposes that are essential to experiences of consummational meaning. He seeks to unmask inappropriate reductionisms of all sorts insofar as they distort the fiduciary, higher level components and processes of all thinking and knowing. At the level of general theory, Polanyi replaces the false ideal of objectivism with a search for plausible philosophical and religious visions that support experiences of consummational meaning. Faith in such visions needs to be sustained by commitment to the practices that allow a person to dwell in purposeful and significant activities. At the level of epistemology, Polanyi reinvigorates the notion of skills that are utilized by persons within a from-to structure of consciousness. Tacit skills of integration and evocation are particularly important to his revision of epistemology.

I have been profoundly influenced by Polanyi's epistemology, but I have increasingly felt that his notions of integration, evocation, and the from-to structure of consciousness are too vague and general to capture important differences within and between the biological and human worlds. As already indicated, his notion of meaning is similarly vague. Perhaps most importantly, these overly vague and idiosyncratic notions tend to place those of us who love Polanyi into an island disconnected from much ongoing academic conversation, whatever the discipline.

So in the balance of this essay I will propose some revisioning of Polanyian epistemology intended to help reconnect Polanyian thought to some insightful strains of contemporary thought as well as increase its rigor. Several intellectual developments overlapping with or complementing Polanyi's interests were taking shape at the same time Polanyi was molding his own thought into its mature philosophical form. The semiotics developed earlier by Charles Peirce was increasingly being recognized as a great and broadly useful system of thought. Several philosophers, including two Hungarians, Ludwig von Bertalanffy and Ervin Laszlo, were developing a systems approach to philosophy. Closely associated with this movement, the notions of cybernetics, self-organizing systems, and by implication emergence were beginning to attract attention. Some biologists, reacting against reductionism and a narrowly defined version of Darwinian evolutionary theory, were searching for superior alternatives. One such person was the Dane, Jesper Hoffmeyer, a biologist with philosophical leanings. His *Signs of Meaning in the Universe* integrates the foregoing developments into a programmatic version of what has become known as biosemiotics. His subsequent work, *Biosemiotics: An Examination into the Signs of Life and the Life of Signs*, further consolidates the field of biosemiotics. Others who have made important contributions to this emerging discipline include Thomas Sebeok, Kalevi Küll,¹¹ Claus Emmeche, Donald Favareau, and Terrence Deacon (who, as co-author with Ursula Goodenough, contributed an article to *Tradition and Discovery* 30:3).

It will likely be evident from this brief description of the influences shaping biosemiotics that it has much in common with Polanyi's interest in meaning, evolution, systems, emergence, and spontaneous order

as a form of self-organization. Indeed, Polanyi's essay, "Life's Irreducible Structure," influenced one of the early theorists of biosemiotics, Howard Pattee,¹² and the article has been frequently cited in biosemiotic literature. To what extent, then, might Polanyian thought both enrich and be enriched by biosemiotics?

Let me begin to explore an answer to this question by sketching the ways in which a Polanyian biosemiotics is related to the operation of signs that Peirce called semiotics. Going beyond dualistic or dyadic thinking seems crucial in order to account for an organism's bounded freedom and ability to achieve purposes. A theory of causality incorporating higher and lower levels is needed to replace one level dyadic, deterministic cause and effect. Peirce's triadic semiotics can be tailored to fit the bill. Peirce's triads are comprised of an object, a sign, and an interpretant. Polanyi's from-to sounds dyadic, but his notion of "from" includes unspecified elements that can be extricated and set into a triadic scheme. For many years I have argued that it is beneficial to expand his underlying from-to framework into a triadic "from-via-to" conception that helps highlight the nature of the interpretive process.¹³ This view introduces an interpretative function existing on a higher level that draws upon lower level energies to activate, integrate, or otherwise transform lower level inert materials. The functional goals involved in such processes introduce the idea of achievement with respect to an organism's activity. Even when the interpretive elements are lifted out of Polanyi's "from," the "from" seems richer and better anchored in the dynamo-physical and biological worlds than Peirce's "object" because it is explicitly rooted in the body and its processes. The "via" in my formulation is closely related to Peirce's "sign"; it is the interpretive element in cognition and action. In terms of cognitive activity, Polanyi's "to" seems clearer than Peirce's "interpretant" in emphasizing the production of focal thought or intended action. Peirce's "interpretant" describes the outcome of the interpretive process, but his triads leave out both the lower level physiological processes that produce the interpretation and the higher level goals and standards that guide the process (in other words, he omits the facilitating body and the responsible person).¹⁴

In denying that there is meaning in the dynamo-physical world, I explicitly reject Peirce's attempt to articulate a universal theory of signs that includes non-living nature. While Peirce's project is admirable in its intention, my concern is that a universal theory too easily ignores ontological difference between different levels of reality and their distinctive types of causality. His approach is prone to lapse into a form of idealism. I see signs occurring as meaningful functions *within* living beings (what Thomas Sebeok terms "endosemiotics")¹⁵ as well as in a living being's meaningful reading of and relating *to* its external environment.

Polanyian Biosemiotics in the Biological World

How deeply or primordially are triadic relations a necessary interpretive feature of the empirical world? Terrence Deacon tries to trace them back to types of molecular exchange in his analysis of what he calls "autogens."¹⁶ While the processes Deacon explores may contribute to acts of interpretation, molecular activity alone does not cross the threshold into the biological world. I find Jesper Hoffmeyer to be persuasive when he states that "the cell forms the boundary, the lowest level at which it is reasonable to talk of true sign processes."¹⁷ Such basic biological processes below the level of mind as "protein synthesis, metabolism, hormone activity, transmission of nervous impulses, and so on" have been labeled "protosigns" by Giorgio Prodi.¹⁸ These biological events are different from such physical events as precipitation, magma crystallization, or sun flares for an important reason. An impure crystal is just that: an entity having no larger implication for the world, whereas a cancerous cell, toxic chemical in the bloodstream, or inadequate nutrition may result in a functional breakdown, the rise of a disease, or even death of a centered being. From a biosemiotic perspective, protosigns function as mediators in the biological world. "*From*" certain initial conditions calling for response,

protosigns in the “*via*” position provide the interpretative signals that release actions (the “*to*”) allowing the organism as a whole (the higher level) to realize its goals.

There are reductivist thinkers who challenge the claim that life represents an emergent order separating it from the laws of physics and chemistry. A typical claim on the part of reductive thinkers is that a living entity’s genes, in interaction with both its internal and external environment, determine the course of that being’s life. Reductionism treats complex, multilayered reality as if all were on the same level and subject to the same sorts of causal processes. As an alternative, Polanyi’s ontological vision of a many-layered universe is a powerful antidote. Emergence operates at different levels of scope and influence. In addition to the three ontological *orders* of emergence connected to the issues of basic cosmic orientation, there are many higher *levels* of functioning that set boundary conditions (constraints) upon lower levels within the complex structures of living beings. Denis Noble argues that genes, and indeed the whole DNA sequence of a species, are best regarded as codes that higher, emergent levels of physiological functioning may make use of.

In fact, the DNA just sits there, and occasionally the cell reads off from it a sequence that it needs, in order to get some protein produced. This looks very much like my hi-fi equipment reading the digital information on a CD to generate the real ‘action’: the music. So the first stage in the reductionist chain of cause and effect is not a simple causal chain at all. When a sequence is read off, that is an important event, which initiates a whole series of subsequent events. These are physical events. True. But it is the process of reading that matters, as well as the object that is read.¹⁹

The functioning of the cell, the reading, occurs at a higher level than organelle functioning. Ever higher are the functioning of a tissue, an organ, and the organism as a whole. In stressing the action of higher on lower levels, Noble’s reading is consistent with Polanyi’s earlier insistence that active subjective processes reflective of an organism’s drives or intentions must be added to the automatic, equilibrium-seeking processes characteristic of Gestalt thought. Active, higher level processes make Gestalt useful for understanding what it is to learn and interact intelligently with one’s environment. Polanyi stresses the importance of “our innate sentience and alertness, as manifested already in the lowest animals in exploratory movements and appetitive drives, and at somewhat higher levels in the powers of perception. Here we find self-moving and self-satisfying impulses of both purpose and attention which antedate learning in animals and themselves actuate learning” (PK 96).

Within an organism there is bottom-up as well as single level and top-down varieties of “from-via-to” causality. Pathogens interfering with normal functioning (the “from”) may jointly serve as noxious signals (the “via”) producing feelings of sickness and an interest in a remedy (the “to”). In response to this bottom-up crossing of levels, a person may take pills to fight the disease (a top-down action).

The meaningful functioning within and between levels in the biological world stands in contrast to change in the dynamo-physical world. To the initial conditions, specific configuration of matter-energy, and constraints that guide change in the first order of emergence, organisms in the biological world add meaningful functions maintaining the integrity of the active center’s life and survival. The function achieved is the meaning of each interpretive act. Function and meaning are not, obviously, directly observable in the spatio-temporal world even though they are dependent upon it and act within it. Descartes reified the distinction between materiality and such higher level phenomena as functionality by regarding matter and mind as substances, creating thereby an unbridgeable dualism. Triadic, multi-level analysis is by nature relational and explanatory

of change. Acts of interpretation take place within an embodied active center, the highest level of which may be regarded as the ultimate locus of responsibility for the organism's quality of life and survival. In the human world, that highest level is the person.

As the process of evolution unfolds over time, increasingly complex forms of interpretation develop. Within evolution, simple successful forms of response are retained by more complex beings.

In contrast to the engineer, evolution does not produce innovations from scratch. It works on what already exists, either transforming a system to give it a new function or combining several systems to produce a more complex one. If one wanted to use a comparison, however, one would have to say that this process resembles not engineering but tinkering, *bricolage* we say in French.²⁰

So the conservation of successful functions in increasingly complex beings eventuates in the many levels that co-exist in mammals. Humans experience upper levels simultaneously in the experience of multi-tasking.

Protosigns play important roles in human existence at a tacit, autonomic level, carrying out such tasks as adjusting one's irises to the amount of light, regulating one's heartbeat, and keeping one in balance. Signals are the next higher level of signs beyond protosigns. Signals provide significant bits of information about actuality within an individual's *Umwelt* (to use Jakob von Uexküll's term for the aspects of an encompassing environment within which a species dwells given its particular set of receptors and dispositions).²¹ There is no clear boundary between a protosign and a signal, for we are speaking here of a spectrum of signs. In general, protosigns are by nature beyond the reach of consciousness, whereas signals are responded to through increasingly sophisticated forms of awareness as one ascends from, say, amoebas to clams to robins to apes. A signal may elicit an innate response (reflex) or may evoke a learned response.

In speaking of signal responsiveness we have broached Polanyi's notion of tacit knowing. He helpfully expands the notion of sign (signal) learning by mentioning how animals also learn how to contrive means to ends (trick learning) and organize their learning in different sorts of mental maps (latent learning)—see PK 70-77. Signals involve animals in a non-conceptual world of time as well as space. To Polanyi's three pre-linguistic forms of learning it is helpful to add Langer's notion of presentational symbols to describe how perceptual information is organized into objects and patterns that can be remembered. To a fox, a certain smell indicates rain is coming, a feeling of wetness on the skin indicates it is currently raining, and puddles indicate to the fox coming out of its den that it has rained. By reading these signals, the fox may be said to understand its *Umwelt*.

The allusion to Langer's notion of presentation symbolism at last gives us a basis for becoming clear about the difference between signals and symbols. Signal responsiveness is immediate and informative but lacks the reflective quality of conception, whereas symbol-based conception makes possible reflection, planning, and other cognitive activities. Signal responsiveness allows an animal to learn environmental patterns and respond intelligently to the world, but the capacity to organize experience via presentational symbolism grants an animal the ability to perceive the world. Human consciousness adds yet another layer to experience through discursive symbolism. Non-human animals do not possess the capacity to learn vocabulary and grammar and apply it intelligently to experience of the world. But that does not mean non-human animals don't have intentions, learn skills, dream, etc. My dog's twitching muscles and rapid eye movement when he

sleeps indicate he also dreams, thus having conceptual experience quite separate from any need to respond to signals. Sometimes my corgi doesn't quite know whether to go outside or stay inside; I can observe him rocking back and forth at the door as he tries to decide between these two alternatives. The fox keeps in mind the rabbit's scent even though it may momentarily lose trace of the spoor it is following. This sort of memory is more than just habit; it is non-discursive conception that only presentational symbols, not signals, can provide. Thus there is a difference between the "from-via-to" of signal responsiveness found among all living beings, the from-via-to of presentational symbols found among more developed animals, and the from-via-to of discursive symbolism found only among humans. And human action will typically rely upon each of these triadic processes.

We have now discussed several factors that are instrumental in forming an animal's Umwelt. First, the sort of receptors an animal has set limits to what information about the environment it may receive. Presumably the animal receives a steady diet of information from these receptors in the form of sensation, the great majority of which is ignored as it is not relevant to the animal's current interests. Second, an animal has innate or learned schemas that resonate to patterns of interest and in a sense designate which sensation is attended to by the animal in a specific context. Such patterns of interest function as signals allowing an animal to respond in innate or learned ways (although subject to error) to phenomena in the animal's environment that bear on its purposes of the moment. Third, the processes of presentational symbolism allow the animal to perceive and/or conceive an objective world that stands over against the essentially subjective processes of itself as a centered being.

Polanyian Biosemiotics in the Human World

Before discussing further the all-important type of symbolism humans alone enjoy, namely language, it is important to consider how much we rely upon lower level functions. Autonomic processes mediated by protosigns at different levels go on continually in our bodies. Our receptors provide ongoing information about the world, although we let almost all this information flow by unobserved. We learn skills that we may utilize without focal attention to what we are doing. What we perceive and learn is indwelt in visceral, spatial, and temporal schemas that constitute the internal mapping Polanyi calls latent learning. Mapping seems the right word, because a key aspect of our remembered experience is organized in the form of presentational symbolism. It is analogical and holistic, whereas language, comprised of words, is basically digital.²² Because language is so noisily at the forefront of our consciousness, it is easy to overlook what a huge role the analogical, holistic aspect of latent learning plays in human experience.

Usually the gap between our analogical understanding and our digital speaking is not obvious, for they tend to be intertwined in experience. But there are those occasions where we understand something but struggle to find the words to adequately convey our understanding. Then the distinction is obvious. I suspect that the distinction here is what Polanyi is seeking to articulate when he contrasts denotative with existential meaning and describes the latter as contextual, which implies being presentational or analogical in nature.

Hoffmeyer sees the necessity for human existence of both digital codes, such as are embedded in DNA and in vocabularies, and "analogical codes [operating] in ecological space."²³ He speaks of code-duality.²⁴ However, while the analogue-digital distinction seems really insightful, I find it misleading to speak of an analogical *code* as being present in the action of subjects. Is not the better distinction that of digital code and interpretative or integrative activity resulting in the holistic character of experience? Polanyi's view that

subjects carry out skill-based integrations that are fallible seems more helpful than speaking of analogical codes. Insofar as meaning is experienced and not just stored, it would seem always to be analogical in nature. It would express what Kant termed the unity of experience.²⁵ Only stored meaning, whether in vocabulary, CD or film, may be digital in nature.

The distinction between presentational symbolism, which is analogical in nature, and discursive symbolism, which in its use of words is largely digital, may help increase our understanding of how scientific discovery works. The foreknowledge that Polanyi claims can guide the process of discovery seems typically to be grounded in the presentational symbolism of perception and its analogical internal mapping. “Perception has this inexhaustible profundity because what we perceive is *an aspect of reality*, and aspects of reality are clues to yet boundless undisclosed and perhaps as yet unthinkable experiences” (KB 79). After intuitively anticipating an otherwise unsuspected coherence in nature, the successful scientist follows a gradient to discovery by finding words or formulas which more and more accurately match or evoke these tacit holistic patterns inscribed in our analogical understanding. Imagination, in which presentational symbolism is typically tethered to discursive symbolism, serves as the mediator between perception and thought in Polanyi’s view. Still, “the imagination alone does not achieve invention or discoveries, but merely evokes a spontaneous, integrative event which brings about the discovery” (SEP 327-328). In discovery, an imagined pattern connected to language or formula coincides with the presentational evidence derived from perception. We then experience the “ah ha” of solution, of coherence, and we concomitantly experience the consummatory meaning that accompanies satisfaction of a quest.

Interpreting scientific discovery as being guided by analogical understanding has more going for it than the psychological, phenomenological account I have just offered. The non-discursive understanding we share with animals is shaped by perceived environmental signals. Environmental signals embed us in empirical reality, and it is empirical reality that science seeks to decipher and explain. Words, on the other hand, are conventional symbols that may or may not be expressive of empirical reality. The process of scientific discovery, then, is an attunement of our language so that it articulates the real order presented in environmental signals (which in modern times often have been amplified through technology).

It is even more crucial to have a triadic interpretation of human consciousness than triadic interpretation in the biological world. Our minds are never failing fountains of symbolizing. Even when we sleep and are essentially disconnected from perceptual information, our minds keep generating dreams of greater or lesser intensity. The “via” of the human “from-via-to” represents both the presentational symbolism we share with at least the primates plus the discursive symbolism that humans alone have. Presentational symbolism supports a kind of picture thinking as its “to;” discursive symbolism represents the almost insuppressible human need to use language in thought and intentional action as its “to.”

The “from” of the human “from-via-to” pattern is thick. It refers indirectly to many lower level “from-via-to” functions involving protosigns and signals. It is also thoroughly temporal in nature. In the ongoing stream of experience what emerges in thought or action is frequently dependent on what we have just been thinking or doing and the social or physical context in which this has occurred. Sometimes what is most important in the “from” dimension is what another person has said or done, sometimes what we gather from a piece of writing or the media, sometimes presentational environmental signals, etc., but typically the “from” builds upon our immediately preceding thoughts.

It is important that a Polanyian biosemiotics avoids the tendency found in many epistemological schemes to atomize moments of knowing. The tendency toward epistemological atomism is exhibited to some degree in Whitehead's great stress on a concreting occasion or in Peirce's emphasis on signs rather than bodies, communities, etc. If one overstresses the subsidiary-focal, tacit-explicit or from-to relations in Polanyi's epistemology, one can be guilty of this sort of atomism. But Polanyi's attention to the influential role of tradition in thinking and acting, to spontaneous processes involving many elements or agents, to the importance of practices, to convivial communities, and the like, place his epistemological concerns properly in the broader spatio-temporal context that a comprehensive philosophy must provide. The "from" dimension can be analyzed in terms of many levels. The biologist can unpack the physiological functions and anatomical structures that make cognition possible; the psychologist can speak of the roles of memory, desire, fear, and such factors in behavior; and the sociologist can root the "from" at a transpersonal level in social mores, status-seeking, ideological beliefs, and the like to make generalizations about group behavior.

Because discursive symbolism is what is uniquely distinctive in human existence, more needs to be said about linguistic meaning. The "via" of language gives rise to human conception. Words used in thought or expression have connotations, that is, a range of associated notions that may be meant by the speaker. The way words are open and can refer to a variety of related objects or ideas is what gives language its scope and power, but which can also lead to misunderstandings. Connotations are then one type of meaning in human consciousness, a type of meaning that is not particularly thematized by Polanyi. A second type of linguistic meaning is denotation, which Polanyi, as we saw, does mention. Words may be used to refer to particular objects which will generally be clear in context. The "from-via-to" of human consciousness always eventuates in connotation, but not always in denotation. Thus one can almost justify talking about a quadratic rather than triadic functioning of some human consciousness: (1) *from* background skills, memories, ideas, and sensation (2) *via* language (3) *to* the connotations of conception (4) *to* reference to some object(s) in some respect. This is a process of *personal* knowing, as the subsidiaries relied upon, the language used, and the interests and intentions guiding the cognitive process are all attributable to the discriminations of a *person*.

The freedoms opened up to humans by language are quite remarkable. The way we cobble together words is governed by proper syntactical rules, and the words we use have fairly narrowly defined meanings. But there is room for personal creativity in both syntactical arrangement and in words chosen. In discursive thought, we can escape from the here and now into rich realms of artistry, history, technology, and the wonder of the world. Some thinkers emphasize that we are born into a pre-existing world of linguistic meaning from which we cannot escape. Polanyi's portrayal of the significance of tacit understanding to the process of thinking is one of many ways of demonstrating shortcomings in restricting thought to linguistic activity. Nevertheless, the role of language and cultural convention is powerful in shaping personality and the way we live, as his contrast between Azande and Western consciousness demonstrates.²⁶ Because the "via" of language facilitates the emergence of a new cosmic order, the human world, it is best not to lump it together with other subsidiaries as Polanyi does with his too simple "from-to" structure of consciousness.

Meaning in Biosemiotic Purview

We now have grounds to answer the two questions raised at the beginning of our inquiry. 1. Yes, there is a connection between linguistic meaning and meaning as significance. 2. The linkage is explicated in the evolutionary, biological view of biosemiotics. Using language is one quite powerful way, among many, of expressing significance or purpose. The meaning of language in an evolutionary perspective is a development from the emergence of purpose in the universe with the advent of life. Human meaning is an embodied phenomenon capable of manifestation in all sorts of actions, including thinking, emotional outburst, and intentional actions. Confining the analysis of meaning to linguistic phenomena is a truncated way of dealing with the many levels of human reality.

It is to Polanyi's everlasting credit that he expanded our understanding of meaning beyond its traditional arenas of language and significance. By emphasizing the importance of the tacit dimension, by setting forth his view of anthropogenesis, in his emphasis on embodiment, in his introduction of the importance of "interest" in the construction of meaning in *Meaning*—in such emphases, the overall thrust of Polanyi's thought is implicitly an example of biosemiotics. His notions of subsidiary and focal meaning give functional depth to semiotic discussion. In this essay, I have sought to iron out some of the wrinkles in his thought so it can be explicitly seen to be an attractive version of biosemiotics. And so this exposition leads to two further questions: 1. Will Polanyian biosemiotics be a platform that supports growth in thought?²⁷ 2. Can it help facilitate the process Polanyi started of regaining consummational meaning in our world?

Endnotes

¹“From the Polanyi Archives: The Lecture Series: Meaning Lost and Regained,” *Polanyiana* 15:1-2 (2006), 69.

²This is also the tack that Harry Prosch takes in his presentation of Polanyi's philosophy. “I have organized this book on his philosophy around the notion of what he thought ails the modern mind and how he thought it can be cured” (*Michael Polanyi: A Critical Exposition* [Albany: State University of New York Press, 1986], p. 8).

³“Meaning Lost and Regained,” 74.

⁴Polanyi's affirmation of these three orders is more typically implied than explicitly stated. As an example, the three orders are inherent in the following quotation, which also supports my claim that there is no meaning in the non-living world. “While the first rise of living individuals overcame the meaninglessness of the universe by establishing in it centres of subjective interests, the rise of human thought in its turn overcame these subjective interests by its universal intent” (PK 389).

⁵Polanyi does not consistently claim that the world of physics and chemistry lacks meaning. Sometimes he is ambiguous regarding the reach of meaning:

We have just shown that living things, individually and in general, are also oriented toward meaning, and it is clear. . .that man's whole cultural framework, including his symbols, his language arts, his fine arts, his rites, his celebrations, and his religions, constitutes a vast complex of efforts—on the whole, successful—at achieving every kind of meaning. We might justifiably claim, therefore, that everything we know is full of meaning, is not absurd at all, although we can sometimes fail to grasp these meanings and fall into absurdities. (*Meaning*, p. 179)

Such passages suggest that sometimes Polanyi affirms what I called “cosmic meaning,” which I defined as

“the processes, structures, and relations that make possible order, purpose, and achievement in the cosmos rather than chaos and perpetual arbitrariness” (“Polanyi and Langer: Toward a Reconfigured Theory of Knowing and Meaning,” *Tradition and Discovery* 36:1 [2009-2010], 27). Cosmic meaning would seem to join the power within the cosmos to produce emergent features with Polanyi’s notion that there is meaning where there is order. On due reflection, however, the phrase “everything we know is full of meaning” in the foregoing quotation is telling: without our knowing them and their consequences, physical processes (as in some yet undiscovered galaxy) are meaningless.

⁶I am indebted to Marcello Barbieri’s “A Short History of Biosemiotics” (*Biosemiotics* 2 [2009], 221-245, especially 224) for this formulation of the basic components of the first emergent order. Interestingly, Howard Pattee, a pioneer in biosemiotics who emphasized the importance of adding constraints to matter-energy as a necessary component of the dynamo-physical world, was influenced by Polanyi’s exposition of boundary conditions—see Barbieri, 224. Thanks to Phil Mullins for giving me access to some of the writings on biosemiotics I rely upon in this article.

⁷Humberto Maturana and Francisco Varela have influentially termed this self-replicating, self-regulating autonomy “autopoiesis”—see their *Autopoiesis and Cognition: The Realization of the Living* (Dordrecht, Netherlands: D. Reidel, 1980). Just as constraints direct the course of cosmic evolution in the dynamo-material order, so new organic constraints emerge to guide the ontogenesis and phylogenesis of life. Eliseo Fernandez puts it this way: “By submitting to more exacting constraints organisms paradoxically enjoy new forms of spontaneity and freedom of action not to be found among inert objects” (“Energy, Semiosis and Emergence—The Place of Biosemiotics in an Evolutionary Conception of Nature” [paper delivered at the Eleventh Annual International Gatherings in Biosemiotics, New York, June 21-26, 2011, 2]).

⁸Susanne K. Langer, *Philosophy in a New Key: A Study in the Symbolism of Reason, Rite, and Art*, 3rd ed. (Cambridge, MA: Harvard University Press, 1957), Chapter III.

⁹Jesper Hoffmeyer argues that because language allows a person to take the viewpoint of another individual, it is possible to look back at oneself from that other perspective. Hence the rise of self-consciousness and with it feelings of self-judgment and alienation. In Hoffmeyer’s version of “meaning regained,” an extension of empathy to all life-forms is key to the healing of our various alienations. See Jesper Hoffmeyer, *Signs of Meaning in the Universe*, trans. Barbara J. Haveland (Bloomington, IN: Indiana University Press, 1996), pp. 132-136.

¹⁰Langer, pp. 96-97.

¹¹Küll has made many of his significant articles available on-line at www.zbi.ee/~kalevi. I wish to acknowledge with appreciation his gift to me of some of the resources that I cite in this essay.

¹²In his “Irreducible and Complementary Semiotic Forms” (*Semiotica* 134-1.4 [2001], 343), Howard Pattee states that it was Marjorie Grene who introduced him to Polanyi’s thought in 1966.

¹³Polanyi most closely approaches an explicitly biosemiotic triadic view in his article, “Sense-Giving and Sense-Reading.” He says that “the triad of tacit knowing consists in subsidiary things (B) bearing on a focus (C) by virtue of an integration performed by a person (A)” (KB 182). This formulation properly identifies the need for an agent to be involved in tacit knowing, but it seems to ignore the several levels of integration that are typically involved in knowing. The notion of a person is functionally situated at a level of reflective awareness that is several levels higher than the physiological acts performed in tacit knowing. The autonomic adjusting of one’s eyes when one enters a dark room is not really carried out by a person; it is a biological event, yet it is involved in knowing what is in the room. The recognition that different levels of integration are involved is left unclear in Polanyi’s triad. The simplest idea of a Polanyian biosemiotics promoted in this essay envisions a number of coordinated processes often occurring simultaneously at different levels of embodiment. Each of the three elements in a particular triadic process exists at the same level of embodied

physicality. However, personal knowing is a higher level process which effectively coordinates such lower level events as neuron firings, just as a person's decision to run controls lower level leg muscles and the act of talking activates lower level vocal chords.

¹⁴Robert Neville argues persuasively that for human interpreters, Peirce's triad needs to be expanded to incorporate a fourth dimension. "An interpretation is an existential act, a way of engaging the object by means of a sign that represents it in a certain respect. If the object is a river, for instance, 'brown' represents it in respect of color, 'southward' in respect of direction of flow, 'in the Midwest of America' in respect of place, and 'Mississippi' in respect of name" (*Realism in Religion: A Pragmatist's Perspective* [Albany: SUNY Press, 2009], p. 180—see also p. 137). The person who takes the object in a certain respect is the presupposed fourth aspect to be added to Peirce's triads.

¹⁵Thomas Sebeok originated this term in his *Contributions to the Doctrine of Signs* (Lanham, MD: University Press of America, 1976), p. 3.

¹⁶See Terrence Deacon, *Incomplete Nature: How Mind Emerged from Matter* (New York: Norton, 2012), Chapter 10 and p. 307 in particular.

¹⁷Hoffmeyer, *Signs of Meaning*, p. 78.

¹⁸The quotation is from Thomas A. Sebeok, *Global Semiotics* (Bloomington, IN: Indiana University Press, 2001), p. 37.

¹⁹Denis Noble, *The Music of Life: Biology Beyond Genes* (New York: Oxford University Press, 2006), p. 7.

²⁰Francois Jacob, *The Possible and the Actual* (New York: Pantheon, 1982), p. 34, quoted in Eric R. Kandel, *In Search of Memory, : The Emergence of a New Science of Mind* (New York: Norton, 2006), p. 235.

²¹See Jakob von Uexküll, *A Foray into the Worlds of Animals and Humans*, trans. Joseph D. O'Neil (Minneapolis: University of Minnesota Press, 2010 [original 1934]), 44-52, where the Umwelt of a tick is considered.

²²It is Hoffmeyer who has alerted me to the usefulness of the analogical-digital distinction for analyzing experience. He points out that there is a split between genetic material's digitally coded messages and the analogical nature of subjective responses to information leading to action. He suggests there is a division between "the analogical reality of experiences and the digital reality of language" (*Signs of Meaning*, p. 111).

²³Jesper Hoffmeyer, "The Swarming Cyberspace of the Body," *Cybernetics and Human Knowing* 3:1 (1995), 17, quoted in Claus Emmeche, Kalevi Küll, Frederik Stjernfelt, *Reading Hoffmeyer; Rethinking Biology* (Tartu, Estonia: Tartu University Press, 2002), 15. Shortly in the essay I question Hoffmeyer's use of the term "code" in speaking of the communicative force of analogue presentations. Codes suggest conventional contrivance. I agree with Hoffmeyer that analogue body language communicates emotions (see *Biosemiotics*, pp. 85-86), but body language seems better understood as a learned kind of signal (emphasizing the need for sensitive interpretation) than as a code. Gregory Bateson's distinction between digital communication as based on conventional signs and analogue communication as involving real magnitudes (*Steps to an Ecology of Mind* [New York: Ballantine Books, 1972], pp. 372-374) is a useful first approximation of the distinction between the digital and the analogical.

²⁴Küll argues for code plurality rather than code duality. See his "Biosemiotics and Biophysics—the Fundamental Approaches to the Study of Life" in Marcello Barbieri, ed., *Introduction to Biosemiotics: The New Biological Synthesis* (Berlin: Springer, 2007), pp. 173-174. William Wimsatt also argues for a multi-variant, biological pluralism as the best philosophical avenue to an understanding of reality, a perspective congenial to the Polanyian biosemiotics set forth in this essay:

The rich backwoods of evolution (Darwin's tangled bank) is a heterogeneous, multi-level tropical rainforest, with converging overlapping branches, and patterns of intersecting order, residents, and connections at a variety of levels, but no *single* stable foundational bedrock that anchors everything else. Yet this multiple rootedness need not lead to "anything goes" perspectival relativism, or an anti-naturalist worship of common sense, experience, or language. It yields a kind of multi-perspectival realism anchored in the heterogeneity of "piecewise" complementary approaches common in biology and the study of complex systems." (*Re-Engineering Philosophy for Limited Beings: Piecewise Approximations to Reality* [Cambridge: Harvard University Press, 2007], p. 12)

²⁵For Kant, the unity of consciousness is based upon synthesis. "Synthesis of a manifold (be it given empirically or *a priori*) is what first gives rise to knowledge. This knowledge may, indeed, at first, be crude and confused, and therefore in need of analysis. Still the synthesis is that which gathers the elements for knowledge, and unites them to [form] a certain content" (*Critique of Pure Reason* A77, B103). With his emphasis on the integration of parts to form wholes, Polanyi seems to follow Kant in making unity dependent upon conceptual integration. I favor a more nuanced view. We seem to bathe in the input of our various receptors, which gives us information too vast to respond to intelligently. So consciousness is in a sense a tuning out of this vastness to attend, at a given moment of interest, to that which possesses some emotional heat. I find it useful to distinguish between unity and focus. Our experience is seated in a plentitude of information that provides background unity. Focus is provided by pattern recognition and utilization plus integration. Pattern and synthesis work in different ways at different levels of awareness. Signal responsiveness is governed virtually entirely by pattern recognition. Perception involves both pattern recognition and integration. The role of integration in visual perception is especially obvious, as our sense of a three dimensional world requires the integration of information provides by two eyes. Likewise, understanding the meaning of words in a sentence is an integrative activity, but understanding what the meaning refers to is sometimes largely a matter of pattern matching. In sum, Polanyi's appropriate recognition of the importance of integration needs to be supplemented by an appreciation of the importance of schema-based pattern recognition and sensitivity to the different dynamics at different levels of awareness.

²⁶It would be a mistake to speak of *the* Western worldview as if there were some one stable perspective. In his book *Mediated: How the Media Shapes Your World and the Way You Live in It* (New York: Bloomsbury, 2005), Thomas de Zengotita argues that movies, Internet, television, and other media form the *via* through which many persons experience the world today, and mediated people perceive that reality and truth are social constructs. The result is that persons in our mediated society see their identities and lifestyles as options, which is quite different than the tradition-based worldview that Polanyi accepted as the norm in the West. So then, is it more appropriate to emphasize the pluralistic nature of worldviews these different lifestyles represent, or is the fact of mediation itself definitive of the Western worldview today? And if the latter, can one really call it Western when as a result of globalization mediation is a worldwide phenomenon? In any case, Zengotita's thesis illustrates the potential for a rich conversation about the *via* within Polanyian biosemiotics.

²⁷I allude here to the title of Polanyi's important 1941 article, "The Growth of Thought in Society" (*Economica* 8, 421-456). Nascent within this article are philosophical themes that came to the fore in his subsequent thought.

Gregory Bateson's Re-Visioning of Epistemology

Will Stillwell and Jere Moorman

ABSTRACT Key Words: Gregory Bateson, Noel Charlton, Michael Polanyi, systems theory, cybernetics, context, play, aesthetics, Polanyi's criticism of objectivism, double bind. *The following three related contributions jointly serve to lift up elements of the thought of the anthropologist Gregory Bateson that can be fruitfully compared with elements of Michael Polanyi's thought. In a brief introduction, William Stillwell reviews Bateson's life and developing interests. Stillwell also provides, in a creative dialog form akin to Bateson's own dialogs, a short review article on Noel Charlton's Understanding Gregory Bateson: Mind, Beauty and the Sacred Earth. The third piece is Jere Moorman's short 1991 essay (now out of print) discussing Polanyi's ideas about tacit knowing and their connection with Bateson's ideas about the double bind.*

[Editor's Note: For some time now, Polanyians have been linking Michael Polanyi and the anthropologist/polymath Gregory Bateson. At the 1991 Kent State conference, for example, there was a session entitled "Knowing: Polanyi and Bateson Compared" in which Jere Moorman, William H. Williams and Gregory Markowitz presented papers. Most recently, writers in the new area of "biosemiotics" (see the Gulick essay in this issue), which aims to produce a new paradigm in the life sciences, have drawn on both Bateson and Polanyi to frame their approach.

Following are three related articles that engage Bateson's thought in different ways. The first article, written by Will Stillwell of the Center for Studies of the Person, is a brief biographical introduction to Bateson which charts the genesis and development of his unique slant on knowing and living. Following this is Stillwell's review of a book on Bateson's thought by Noel Charlton. Stillwell's creative review, reminiscent of a Platonic dialogue, although atypical for *TAD*, effectively captures one aspect of the spirit of Bateson. Some of Bateson's writing (see, for example, Part I of *Steps To An Ecology of Mind*) took the form of a metalogue, a conversation (between a father and a daughter) about a problematic subject in which the structure of the conversation is itself relevant to the subject. Finally, Jere Moorman's paper on Bateson's double bind, which was published in *From Polanyi to the 21st Century: Proceedings of a Centennial Conference, Kent State University, April 11-14, 1991*, Richard Gelwick, ed. (Polanyi Society: University of New England Press, 1997), 820-822, is re-printed here in slightly modified form to be available to a larger audience. Moorman ably articulates one way to connect Bateson's ideas with Polanyi's philosophy.]

Gregory Bateson: A Brief Biography

Will Stillwell

Gregory Bateson (1904-1980) was a man of ideas. Yet I, and perhaps others, too easily float out the "ideas" we might be able to use from their context of an individual-within-his-life. When I refuse this alienation of ideas-from-authorship, I am better able to realize, respond, and even celebrate "personal" knowledge.

Bateson's father was the renowned English biological scientist William Bateson. His third son, born

in 1904, he named Gregory after the Austrian monk Gregor Mendel. Mendel's experiments in breeding peas and tracing inherited characteristics had recently been re-discovered and proposed as the explanatory basis for Darwin's theory of evolution. William coined the term "genetics" and was the world's first academic professor of that subject.

The Batesons were part of England's educated elite. William had an immense influence on Gregory's life. Ambitious for his sons to be scientists, he still daily read aloud to the family from the Bible, whose thinking he greatly respected but did not believe. William's central, but unfulfilled intellectual quest, was to understand (and promote) evolution as a process through which passing material is shaped by pattern and form and symmetry. Gregory's mature work in various scientific disciplines incorporates his father's framework; his use of pattern, form, and symmetry influenced the evolution of his thought. A colleague of Gregory's in his later years characterized his mind as "feminine...he sits on an idea and develops it like a big ovum."

Bateson always thought of himself as a naturalist. From his "English botanizing childhood" through Cambridge University in Natural Sciences to his end of days, he tramped through woods and swamps turning over old logs to find beetles and slugs. But by the age of fourteen, Gregory was the only surviving son, and he intensely felt the weight of his father's ambitions focused on him. He lived in strong ambivalence, seeming to be in (sometimes playful) rebellion against his serious English childhood culture.

To escape his father's shadow, Bateson took a Master's degree in anthropology, working from the mid-twenties to mid-thirties in New Guinea and Bali. Here he met, wed and worked with his soon-to-be-more-famous wife, Margaret Mead. During World War II, he became a United States resident. With the war effort, he focused his work on national character and morale, helping the Allies understand each other across cultural differences and devising propaganda to inflict upon enemy "weaknesses."

By the end of the war, Bateson living in New York, was estranged from manipulative knowledge, estranged from Mead, and learning from daily Jungian depth analysis while engaged in developing cybernetics and information theory.

He loved to analyze the "shapes of thought." For hours, he and companions would play "20 Questions," by modified rules. Instead of "animal, vegetable, or mineral?" their initial category was always the binary discrimination—"abstract" or "concrete"? He was critical of Rene Descartes' fundamental substance dualism and (like his father) had never given up on biologist Jean-Baptiste Lamarck's early nineteenth century contention that mind and body are a unity. Although his discipline title was anthropologist, all forms of life—human, animal, and plant—were what were important to Bateson. The games and the cybernetics opened a way for him to think about the unity of language and thought and living organized patterns. Through the language of "information," he was able, first in human social life, and then in the wider biological sphere, to describe recursive causal systems as "relations between things to reflect forward upon their organization."

Through the fifties and sixties, Bateson was an independent scholar, living on foundation grants and short-term academic positions for the most part. Divorced from Mead (who through her professional social networks surreptitiously continued to find financial aid for his career), he married again, and then again. This is the period in which his relational theories came to be regarded as important for understanding psychological distress. Living in California, Bateson produced the "double bind" theory purportedly explaining the social genesis of psychosis. This theory tying diagnosis to family interaction patterns has not been supported by scientifically tested evidence. Yet derivations and similarly constructed hypotheses have become part of a great

renewal in studying psyche and society, and produced an explosion in methods for successful psychotherapy for the individual and family.

Woven with this work in psychology, he sought to understand communication patterns of various animal species including dolphins and otters. He became fascinated with “play,” and lived at home along with dogs and gibbons and octopuses in tanks.

He read aloud to his children. One of his repeated favorites was Samuel Coleridge’s *Rime of the Ancient Mariner*. He brought to America the watercolor his natal family had hung prominently, William Blake’s *Satan Exulting Over Eve*. Bateson’s “rebellious romantic” Blake was one of his favorite thinkers: “Energy is eternal delight. Energy is the only truth and is from the body.” This painting featured in his dreams for years, and Bateson saw in it a nuanced depiction of natural morality and love. Bateson claimed that Blake “saw through his eyes, not with them,” and “knew more about what it is to be human than any other man.”

Bateson worked in and contributed to many disciplines, including psychology, anthropology, and evolutionary ecology. His publications are numerous. The problems raised within disciplines led him to successive phases of learning and insight from which he developed multiple overlapping examples and parables concerning his small set of highly abstract themes. Epistemology seems to be his central intellectual concern: he explores the place of the knower in what is known, and how we can know anything. Here is one particularly interesting, potent area where his and Polanyi’s thought overlap.

Citing a William Wordsworth poem, Bateson heard the poet learning about himself as a creator while gazing at the primrose. Unity (the validity of which depends on belief) is created in human self-reflexive recognition. Gregory Bateson contributed a lifetime of disciplined thought concerning the appreciation of form and coherence. He saw truth’s precise skeleton in these factors at work (and play) in the communicational regulation of the biosphere.

During the seventies, Bateson wrote books for a more general audience, and became a wise-man persona for the American counter culture. His legacy in the environmental movement remains strong, even though he himself was skeptical about his efforts doing any good at all. He died in a California Zen center in 1980.

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Charlton on Bateson: A Dialogic Response

Will Stillwell

Charlton, Noel G. *Understanding Gregory Bateson: Mind, Beauty, and the Sacred Earth*. SUNY Series in Environmental Philosophy and Ethics (Albany: SUNY Press, 2008). Pp. 292. ISBN: 978-0791474518, \$74.50 hb; ISBN: 978-0791474525, \$26.35 pb. \$16.17 Kindle.

Adult: I read this book that helped me to understand more deeply what Gregory Bateson thought, and how he thought. I have been attracted to his work since the early sixties, and some of his thinking has informed my own.¹ His writing and teaching had what I considered a well-deserved reputation for great clarity that—just as I and others expected a climax of knowledge—suddenly dropped into difficult obscurity.

Teen: So he tricks you?

A: Well, I sure got tangled. My interest was in his portrayal of social relationships. He addressed the topic concretely, yet he always embedded his discussion in a wider context of relationships between “parts” and “whole.” For example, even his explanation of how human alcoholics are trapped into their addiction by their own thinking is titled, “The Cybernetics of Self.” I mean, “What?”

T: Alcoholics trick themselves?

A: Yes—and they aren’t alone! Also those of us who don’t have a substance to blame play similar kinds of tricks on ourselves. That, of course, messes us up, and messes with the others with whom we communicate.

T: So Bateson communicates in a tricky way about how the rest of us communicate in a tricky way, and we all get in a mess trying to understand. What’s that got to do with cybernetic self?

A: Yes, our mess he called a “muddle” (he grew up as an educated Brit.). Even though early in his career he migrated to the U.S., he personally kept a kind of distance from (and was amused and sometimes horrified by) American culture, as well as Western cultures generally. His daughter described Bateson’s life as “full of loose ends and unstitched edges” and he said that “ideas are the only thing that seems worth doing.” He honed his ideas carefully, carefully, and as Noel Charlton traces in this book, developed their many strands over his lifetime.

In the thirties, Bateson was seeking to understand the process of scientific thought through an explanatory process “within which the principles of explanation could be seen and studied.”² By the forties, he began contributing to cybernetics, the newly-emerging field of communication and control of information. Here, in descriptions of messages’ systemic forms and patterns as they convey information, he found the exemplary explanatory process he had sought. He proposed that any living systemic “whole” functions in self-regulation and regulation of information from its constituent “parts.” He suggested that living systems are best understood through concepts such as “ideas” and “messages” and “information,” rather than through concepts such as “energy flow.” Such systems operate through relationships of events and constraints on those events, differently than through the cause and effect models used to describe inanimate physical particle relations.

T: I guess he’s into information. It’s all pretty abstract. So what’s the big deal for you?

A: Our addictions, and our muddles in general, have to do with our appetites for isolating the “parts,” our ability to ignore the contexts in which, or in reference to which, the parts have any meaning or existence. Contexts are more abstract; they are philosophical principles, but we’ve kept them peripheral to our consciousness. We mis-name them “feelings.” They are more archetypal; they are always on another scale than any content.

Y'see, "parts" exist because we communicate in language, we break up the whole into its communicable bits. This is what we do! We seem to have to. But each bit in itself is necessarily wrong! in its separation from its context! Language is linear and not isomorphic with the world, not up to the task of describing the world which is anything but linear.

T: I hear you're exercised about this, but we're stuck with language—it makes us human after all. Are we to go back to all those gestures (like you right now)?

A: We think between the "parts." Let's say I think I have a problem: "why can't I stop drinking before I go over the edge?" If my solution is: "I need self-mastery, a stronger will power" then I've muddled, as my solution comes from a similar level of abstraction without involving the context to the problem or the context to the solution. I set up a challenge between opponents—both located in my divided self—"I can" versus "I cannot" resist drinking. My meaning for my self comes from testing my strength. This is dysfunctional communication or thinking. And Bateson shows that we all do it all the time, as here in our practical lives and also in our philosophical lives—for example in our attempts to understand the mind/body "problem."

Trying to control any part of the cybernetic system from another part inside the system breaks the process of self-regulating circuitry that the system needs to restrain itself. The system goes into "run-away," periodic, repeated arousal and satiation that induces us to even further linearity of effort, further frequent short-cut short-circuit solutions.

T: What would be a systemic solution then?

A: Ah, a systemic response...this is where Bateson, having diagnosed the problem, often slides away from a climax. Were he to respond sincerely it might be something like, "How is a noun like a leaf?"

T: Bummer.

A: Yes, but he's keen that we not "obscure our own vast darkness"—conceal what we don't know. Charlton in his book helps readers understand what Bateson is up to with such a response, and how it really is helpful. Charlton also contributes in ways he believes pragmatically furthers Bateson's legacy of thinking into our era.

T: So, how is a noun like a leaf?

A: Bateson said that a mind is that which accomplishes learning. And learning is all about response, not stimulus. He suggests we attend to how and what the perceiver or receiver learns, not the source or presumed content of the disclosed message. Ambiguities, loose ends are necessary for reflexive thought. Differences provoke consternation and can lead to new mental pattern formation, which is learning.

T: Yes, but...

A: But you try it—How is a noun like a leaf?

T: Well...they're both things, but not in the same way; they're both nouns, actually, but that doesn't make them

the same. Both are parts of some other thing larger, the phrase or the tree, which makes those two similar too. And then there are other different parts of phrases or trees too...Both can be pointed or soft, both can wave (I guess that's because they are nouns to that verb), both can be long-winded...

A: So, what have you been learning?

T: This is a trick, all right. I don't know. Something interesting, a little trippy, but I can't say exactly, they're not the same but...

A: Mind is the incarnation of metaphors. The primal method of mind's work is comparing patterns ("leaf" and "noun") and finding them partially, and perhaps strangely, equated. You compare your response of any present seeing to what a memory of what you've seen in the past. The difference you notice is qualitative, a ratio, not the quantification such as results from our mainstream logical thinking. Difference continues to wake up the response/memory process, producing patterns, "the dance of interacting parts" that never finishes.

T: Whoa. So *this* is like *that*, but not completely. I can see...but how come "the dance" never ends?

A: How many fingers on one hand? Another Bateson question. We answer "five," or maybe "four" if we think he's tricking us with "thumb." But his answer is a trick of a whole different dimension, "four intervals between the fingers." He's focusing on how the entities complement and compete, on the relationships-between, more than on the objects or things in relationship. Making relations is the way mind works, a process as a circuit of information-transforms occurring in the relationships between things. Some parts of mind are embodiments of one kind of information, other parts "know" something else. The uneven distribution of information within the circuit keeps a potential for a mind to continue learning by comparing. But you *compare*—you don't *choose between* the leaf and the noun; they're both patterns that inform each other. Bateson thought that *the* problem of today's world was that we humans don't realize this delicate process, and by imposing our human purposes on nature and one another we do choose—let's say the noun instead of the leaf—and by so choosing break the circuits. Choices of this kind—purposeful other than considering the contexts—result in runaway escalation (this line of thought he applies to warfare, psychopathologies, and environmental destruction among others).

T: So if I get what you're saying, humans are destroying the dance in which we're dancing by choosing a tango instead of maybe, an old-time...fox trot?

A: Yes—no...more like, supposedly for our benefit, making polarities and choosing one over the other—always purposefully choosing the tango, at the expense of the similar but different fox trot.

T: *This* is destroying our minds?

A: Well, "purpose" dissects the universe. Our present-day arguments over evolution are framed in ideas of "design" *or* "adaptation." Both these ideas are dissections. Both cut us away from the whole; and we cut up our opponent to follow our purpose.

There's something else primal here. Most learning is covert because mind is a primary process, mostly not conscious. So, yes, continual application of conscious purpose while ignoring contexts can be a bad guy for our long term health. But beyond that, mind is a process much bigger than human mentalization, human

brains. Mind, the mental processes Bateson's been describing, is a characteristic of the ecological whole, of all living being. Bateson declares that the whole living biota functions as a mind, a mind dancing its evolution.

T: If earth's ecology and its evolution functions like an unconscious mind, as he says, then the ecology must circulate something like "ideas," must keep some "ideas" in "memory," and "learn" by comparing any new information with the old; and then changing, maybe, if the bits of information are different enough.

A: Right. An ecology consists of any element and its context-environment: like zebra plus grass (plus lion, hyena, giraffe, rain, locust etc.). That relationship of linkage between them, what he calls the "interface," is the relationship where all the comparison and modification or maintenance action occurs. Of course it gets complicated, there are many scales of process—nested levels of elements-and-context—like genetic, cellular and behavioral learning.

And the truth about this that matters, is the fragility of so-called "climax" ecologies, in which optimal numbers and varieties of living beings are in some sort of relatively steady state mutual interrelationships— serving each other and holding each other's tendency toward maximization in check.

T: O.K. I get that. I suppose that your world of human relationships can be understood with some sort of "climax ecologies" too, if "noun" is anything like "leaf."

A: And there too, Bateson sees rampant pathology. He and Charlton also, want us to re-access our systemic wisdom. "All theories of evolution are of mind and God," Bateson was heard to mutter.

T: Ahh, The Divine Solution!

A: Well, not so fast, think mind and God as patterns like leaf and noun. Take "God." Bateson was a naturalist, not a religious man, but knew a lot about religious minds. I take "God" in this context to mean in part accepting, praising, giving over one's own purposes to trust the wisdom of a greater context (mind or God) that I do not (he'll say can not) understand.

This is a beauty of Charlton's volume. He traces the career-long developmental evolution of Bateson's thoughts on aesthetics as it becomes his approach to accessing systemic wisdom. For Bateson, human bodies and their rhythms are the basis of our various aesthetic values, and a route into primary process thinking. Our engagement with beauty brings in more context to join conscious-purpose: it's the beginning of that recursive epistemology that is characteristic of mind. It's not subjective, not "entertainment;" it is a mental process similar to that carried out by genetics in the natural world. He claims we're genetically conditioned to like the patterns we find in life that form themselves the way that we do. They're convivial to our systemic survival.

T: Wow, quite a jump. I'm fascinated.

A: Some say witches are boundary-jumpers, inverters of ideals, perhaps takers-on of dark, animalistic qualities as they move between realms. Bateson quips that a witch is "creating puns on her context, changing the frame." Aesthetics is play, engagement caught by play. So is dreaming. Play allows us not to be captured by the frame of our memorized categorical boundaries, to enter primary process thinking.

T: It's kind of magical; now you see it, now it's something different, or ephemeral. I see how we could consider it a different sort of trick to our ordered thought-world: What sort of message is this? Black-humor magic?

A: Beauty's engagement of us plays with our contextual magic—our world-image—and the mundane details of real objects in relationship. The action is in the interface-relationship: at the interface of conscious and primary thinking, at the choice of neither at the expense of the other, at the integration of intuition and intellect. The beautiful is a processing ecology.

T: Art, or aesthetics, results in ugliness too, or at least refers to it.

A: I'm liking our conversation; yes, play and art throw ambiguity into the rules of communication. Relationship exploration may result. And we don't know where the exploration will lead. Gestalts created at the interfaces are economical, prone to ambivalence. Thus, many generations of people, and many more generations of earth's life treat new information with immense conservatism, keeping true to "memories" in their traditions.

T: And we hope the memories contain enough flexibility to handle any big changes...

A: ...in the information they take in from the contextual circuit they inhabit.

T: The overall picture I'm getting from what you're saying is that this untidy man, Bateson, explained or created or discovered a rather complex and elegant thought-structure that exists as, thrives in, and even itself celebrates the play of untidy nature.

I guess his "wisdom," if such it be, is the gracefulness of this single, unified world-mind. I can see why he references God in respect to this. But it seems to me that with our purposeful activities again we humans end up as the "sinners" who upset the self-corrective, self-maintaining system. Out of Eden we come.

A: Well, if the Edenic tradition of loss informed by Bateson's graceful wisdom is only a conceptualization, the spirit in it may indeed already be lost.

Bateson is deeply concerned with the sacred. But divinity (mind) he experiences is not transcendent, it is immanent and built into the cybernetic circuitry of the natural living biosphere.

He understands that we, patterned like our Adam and Eve, cannot from within control the natural complex circuit of life. That's why, he realized, we have invented (or been found by) the gods. Gods are beings endowed with cybernetic circuit characteristics (grace) whose unfathomable actions function to correct our naïve and prideful, straight-line attempts to control our lives.

T: So gods are the immune system of a society, of our species.

A: In their beneficence they optimize, do not maximize. That is their cruelty. That is their perfection. And that is their mystery.

T: People tell me, I haven't lived long enough to compare, that the very concept of anything sacred is disappearing from our daily lives. We're supposed to be less interested in that kind of mystery and solution...so I

guess we're losing the immunity from ourselves that goes "there but for the grace of God." But Bateson too, seems to sort of explain-away God.

A: I'm not sure that the sacred is going to take this lying down. Y'see, Bateson contends that our systems of logic—how we think we think—generate paradoxes when we try to apply their straight-line cause and effect to the living world. Mystery inevitably erupts again and again because our languaged (including mathematical) reasoning separates parts from whole, and opposes the separate parts against each other.

But we're entranced by what we don't understand. It holds a secret, and secrets tempt our curiosity, fear, and desire to come out and play.

And some of us fall into enlightenment—we come to know the secret. But only by thinking and experiencing "beyond" (or in a way other than) the cause and effect logic most of us trust.

T: I'm ready for you to tell me the secret.

A: Ha! The secrets that are told can be expressed only again in the logics of languages, which sooner or later lead again to paradox, to mystery. But at least listen to how Bateson approaches through art, citing the poem by Coleridge, "Rime of the Ancient Mariner." Maybe you remember the plot, the old man is obsessed with telling his story to guests trying to get away to a wedding. He holds them first in his grip and his look, then his story further entrances.

On a sea voyage his ship has been cursed, his shipmates say, due to his killing a passing albatross. The sail-ship is becalmed; no rain, no water, no food. He becomes the lone survivor, he accepts his guilt. Despairing, he wears the dead bird tied around his neck. A moonlit night...he watches serpents in the sea swimming and flashing and coiling:

O happy living things! No tongue
Their beauty might declare:
A spring of love gushed from my heart,
And I blessed them unaware:
Sure my kind saint took pity on me,
And I blessed them unaware.

From that moment on, conditions change. The albatross falls from his neck into the sea, rains and breeze appear, the ancient seaman makes his way back home to share his story with those who can hear.

"What I am suggesting," Bateson writes, "is that the nature of matters such as prayer, religion, and the like is most evident at moments of *change*—at moments the Buddhists call Enlightenment...[W]hile Enlightenment may involve many sorts of experience...notice how often Enlightenment is a sudden realization of the biological nature of the world...a realization of *life*."³

Paradox occurs and frustrates at the interfaces when we're using our usual logics. The sacred epiphanies reveal the secret, mysteriously relating events of now (parts) in beauty and awe opening us to the endless surround (whole).

T: I'm thinking that a "sacred" event involves a "faithful" person, one who acts from her own, or our own, incapability, and trusts...the doing in the whole?

A: And I blessed them unaware.

T: I think you think what's necessary is metaphoric thinking. So religion is necessary? Or art? Or being faithful? To keep some sort of immunity to the danger of our common logic?

A: What do you see as the sacred, secret zones of our culture?

T: Sex! Uh, death...uh...maybe the reasons for faith, for living...

A: Topics that adults play around with, but don't really seem to have adequate answers to tell. At least when you want to know. I like your list. Myself—as a pair to sex—I'd add love and violence in our relationships as a part of our secret treasure. Metaphor, aesthetics, and appeal to sacred matrix are trying to approach all that.

T: Uh huh. It seems almost any metaphor would do the trick.

A: "There are few things as toxic as a bad metaphor."

George Lakoff and his colleagues gathered evidence that many metaphors in English are rooted in body orientation and movement of an individual.⁴ This physical action is the basis of our cause-to-effect logic. Long before that, Elizabeth Sewell⁵ convinced me that *most* of our language has roots in metaphoric imagery; and that over time and use some metaphorical terms become reified" (that is, slip from being "X is like Z" to "X is Z").

T: Oh. As we talk, and you gesture, the "leaf" and the "noun" cease being partially similar and partially different, but are made the same in our thinking. But that takes the play out of it!

A: It helps us believe in certainties, saves us from the bother of thinking about that again, and takes us away from remembering how we're living in faith. And some of the metaphors are deadly: the metaphor of personal muscle power transformed to an objective measurable "force" for our discipline of physics; it also metamorphosed into the idea that there is real force (power) that one human holds in relations to others. This "false heuristic" tempts us to straight-line solutions relying on political power.

But, to be sure, inventive humankind keeps coming up with new metaphors, new artistic expression, and new sacred forms. Bateson saw us making these metaphors into real "tautologies" across human history. All cultures do this: "trick" their people unaware into particular life ways and morals and beliefs by assuming reality is what their (metaphoric) map tells them it is.

T: We understand from the basis of these unconsciously accepted "buried" metaphors that are hard-wired as fact into our social practices. Is that it?

A: Uh huh. This is the point where Charlton's book takes off from being a study and explication of Bateson. Other people have been inspired by Bateson's ideas in fields of psychotherapy, communications, ecology and anthropology.⁶ Charlton inquires how Bateson's brilliant, late-in-life insights concerning living in sacred

knowledge might help save us from our folly: the destruction of our ecosystems and ourselves, the destruction of the mind of nature.

T: More of Bateson-type trickery, I hope.

A: Well, then you'll be disappointed. Part of Bateson's legacy is that he remained to the end reluctant to reify his metaphors. He was comfortable in untidy indefiniteness, with pointing and teaching and learning and hoping some of the rest of us would get the essential—that mental phenomena are epistemological. For him every question is always enclosed in some wider *question*.

With great and genuine heart, Charlton chooses to consciously seek a goal set of ethics that would bring about a real, sustainable, self-correcting mind-circuit in which humans are participants. He leads us on an aesthetic plan.

About a quarter of his book is devoted to first, exploring other thinkers and activists whose work is partially commensurate with Bateson's thoughts, and second, building a notion of the moral and political forms that a sacred nature ethic might take. His careful manifestation of his own tacit understandings cover a wide range of possibility in venturing where Bateson himself would not tread.

T: Hmm...but another toxic metaphor?

A: Gregory Bateson believes we cannot be conscious of the nature of the sacred, or the nature of beauty which might get us there. Noel Charlton weaves Bateson's thoughts through the ideas, "feelings," and practices suggested by, among others, Lovelock and Margulis, Naess, Macy, Midgley, O'Murchu, Fox, Primavesi, Abram, and Spinoza.⁷ He suggests possibilities and continues a process through which bodies and minds relating together, can pursue our goal, a sacred commitment to earth's life. I hesitate before what seems a purposive ontology supposedly mapped on purposeless reality. I find Charlton's journey provocative, desperate, stimulating, sad and hopeful.

Endnotes

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²Gregory Bateson, *Naven*, 2nd edition (Stanford, CA: Stanford University Press, 1958), p. 281.

³Gregory and Mary Catherine Bateson, *Angels Fear: Towards an Epistemology of the Sacred* (New York: Macmillan, 1987), p. 74.

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⁷ James Lovelock, *The Revenge of Gaia: Earth's Climate Crisis and the Fate of Humanity* (New York: Basic Books, 2006). Lynn Margulis, *The Symbiotic Planet* (New York: Basic Books, 1998). Arne Naess, *Ecology, Community, and Lifestyle: Outline of an Ecosophy* (Cambridge: Cambridge University Press, 1989). Joanna Macy, *Mutual Causality in Buddhism and General Systems Theory* (Albany: SUNY Press, 1991). Mary Midgley, *Gaia: The Next Big Idea* (London: Demos, 2001). Diarmuid O'Murchu, *Evolutionary Faith* (Maryknoll, NY: Orbis, 2002). Matthew Fox, *Original Blessing* (Santa Fe, NM: Bear & Co., 1983). Anne Primavesti, *Sacred Gaia* (London: Routledge, 2000). David Abram, *Becoming Animal: An Earthly Cosmology* (New York: Pantheon, 2010). Benedict Spinoza, *Ethics* (New York: Citadel Press, 1988 [1677]).

Michael Polanyi's Tacit Knowing and Gregory Bateson's Double Bind

Jere Moorman

A student needed a date for the prom and sent in her requirements to a computer dating service. She wanted a date who was fun, playful, short, liked water sports and enjoyed wearing formal attire. The dating service sent her a penguin. Matters became worse when the computer dating service would not listen to the student's complaint that an understandable, but terrible mistake had been made.

I offer the joke about the penguin as an example of the double bind made famous by scientist Gregory Bateson as a possible cause of schizophrenia. I offer it also as an example of the results of strictly following the ideal of scientific detachment with its assumptions that the whole can be reduced to the parts or that the amassing of facts will impersonally lead to conclusions which are real and true.

The objectivist ideal of scientific detachment was rejected by scientist-philosopher Michael Polanyi in favor of his ideal of personal knowledge with its recognition of personal, unformalizable, unspicifiable tacit mental skills as the grounds on which all knowledge is pursued and held.

My thesis is that objectivism, the ideal of scientific detachment rejected by Polanyi, is like a double bind; and that Polanyi's conceptual reform, personal knowledge, with his recognition of tacit knowing as a fundamental fact of consciousness, offers a palliative to the distorting effects of both the double bind and the ideal of objectivism which he rejects.

Bateson's double bind is a communication, sent in the context of an important relationship, in which there is a contradiction between messages at different logical levels—and a rule in the relationship which prohibits or punishes any sort of a comment on the contradiction. An example would be a parent verbally inviting her child to give her a hug, and non-verbally sending a message of hostility. The child doesn't know which level of the message to believe. He is left to respond to an oscillating, and untenable situation.

The double bind is proposed all through the writings of Bateson as a possible determining factor of schizophrenia, the schizophrenia following repeated exposure to this contradiction between logical levels—the

object level and the meta-level—which deals with what the object level is about; and the prohibition of “third level” alternatives attempting to clarify or comment about the contradiction. The double bind theory eschews the option of just leaving the field—an option not open to the dependent child or the disturbed schizophrenic. The schizophrenic, in other words, becomes unable to tell whether a message is literal or metaphorical—or just plain contradictory. He acts out a strategy, which seems bizarre to others, in his attempt to make sense of his perceived “un-decidable” situation—he attempts to find a break-through to the contradiction, which proves to be a “break-down” in terms of what is commonly considered “normal.” Normal life is full of the contradictions between levels that plague the schizophrenic, but the ability to comment on the contradiction is generally available; if not, a communications breakdown is apt to occur with the concomitant, bizarre, if not schizophrenic, break-through or break-down strategies for coping with the contradiction and misunderstanding.

Bateson points out that the double bind can also lead to creative discoveries, such as the hindsight of jokes and the insight of scientific discoveries. He points out that the schizophrenic response is also a creative attempt which has either gone wrong, or which no one but the schizophrenic understands. The structures of hindsight and insight are similar; and both deal The structure of all three situations: hindsight, insight and foresight are similar; both deal with the different logical types and kinds of awareness in communication that may be resolved at the focal level of meaning: seeing the humorous, unexpected meaning of the joke and laughing, or seeing how all the evidence leads to a coherent scientific discovery.

The penguin story illustrates both the creative (breakout) and destructive (breakdown) potential of the double bind: a person hearing the story as a joke does a double take at the appearance of the penguin, and more or less “gets the point” of the joke. He has a mini-transcendent experience and a good laugh. The person actually seeking such a date for the prom at the last minute has the same double take, but perhaps is not so amused.

Consider the demand to “be spontaneous”, a potential double bind in that a literal attempt to be spontaneous precludes spontaneity and evokes an oscillation—double take—similar to that which occurs in humor. The result of such a demand is a focusing too narrowly on the parts and failing to see the necessary characteristics of the whole. The command to “be spontaneous” looks like helpful advice but actually makes things worse, and may preclude finding a creative solution. The “be spontaneous” paradox is of the same structure as the “liar’s paradox”: an example where focal attention is directed to the subsidiary elements of an action, potentially leading to self-consciousness, contradiction and oscillation between logical levels. This oscillation may also be seen as what happens when a musician looks too closely at the subsidiary notes to a musical composition—he becomes what we might, using Poteat’s phrase, call a person who is “note sensitive and melody deaf” (*Polanyian Meditations*, 202).

In the case of the penguin story, focal attention directed to the subsidiary elements of a problem leads not to an ideal date, but to a date which is literally “provable” but false. The ideal date cannot be obtained by amassing facts about the date requirements and putting focal attention on these “impersonal” clues, although the scientific ideal of a strictly detached, impersonal, fully explicit knowledge assumes that it can. In the real world of computer dating services, the third level option may be available where the dating agency would adjust their mistake or the customer may refuse the date altogether by leaving the field—an option not as available to the schizophrenic or the small child.

In the real world of the scientist, Polanyi believes that, in spite of the ideal of a detached, impersonal knowledge, the grounds on which science is pursued is actually determined at every stage by indefinable, unformalizable, unspecifiable, personal, fiduciary, tacit powers of thought. The vision, the belief in something there to be known, comes first, and there are no strict rules that can account for the way such a vision originates and there are no strict rules for the verification or the refutation of a proposed solution. In the case of the ideal date, the seeker will know it when she sees it, but her vision cannot be reduced to a bunch of facts that can be fed to a computer dating service.

Polanyi believed that the absence of strict criteria on which to base our acceptance of knowledge shows that our confidence in our knowledge is based on non-strict, informal, tacit criteria. Data require interpretation, and the seeing of pattern and relationship is not inherent in the appearance of the data itself—interpretation and appraisal require an actively knowing, real person—one who is FREE to raise objections or seek solutions to apparently incoherent data.

Polanyi wishes to substitute for the impersonal ideal of scientific detachment an alternative ideal which gives attention to the personal, fiduciary involvement of the knower in all acts of understanding. He distinguishes between the tacit and explicit dimensions of knowing, and recognizes two kinds of awareness, focal and subsidiary. Focal awareness begins with the recognition of a problem—sometimes just a bare outline of a solution, an outline which may ultimately emerge into a more complete focal awareness, into an explicit insight which can be articulated, and hopefully recognized by others. This personal dimension is neither impersonally objective nor subjective, but is a responsible act—hazardous, yet claiming universal validity.

The distinction between the tacit and explicit, the focal and subsidiary can be illustrated by considering a piano player who looks too closely at the notes of a melody and his fingers while playing music. His playing will become self-conscious and clumsy. This disintegration and clumsiness occurs when focal attention is directed at the subsidiary elements of a comprehensive act, instead of through them. Since the two kinds of awareness are mutually exclusive, the piano player is in self-contradiction when he is focusing on the notes and his fingers while he is playing; he is modeling the higher logical type of the melody or tune at the lower logical level of the notes. He has detached himself from the pattern or the tune. The tune cannot be played with flair and style and a high level of skill by impersonally playing each note precisely. The piano player must actually dis-attend from the notes, not attend to them; he must indwell the notes, making the notes function subsidiarily in the act of tacit knowing and doing. In other words, he must do something like “casting his mind forward” (*PK*, 56) towards the meaning of the individual notes, i.e., towards the melody he is seeking to play competently, towards the pattern of the music. The clumsy piano player condemns himself to such “melody deafness” by embracing the false ideal of “objectivism.

The structural contradiction of the self-conscious piano player exemplifies the pathologies of both objectivism and Bateson’s double bind. Both Bateson and Polanyi assume that there are always at least two levels to knowledge, the level of the particulars and the level of the meaningful pattern or relationship. It seems to me that ideal of objectivism fails to recognize the subsidiary kind of awareness—the “from” and the “via” involved in a person’s getting to human interpretation and meaning: i.e., embodied personal skills and habits, and the level of language and logic (rationality) which are needed to make sense of the embodied particulars.

But the very denial of the personal when it is said that “this knowledge is impersonal” employs language using personal, embodied skills that contradict what the statement affirms. The second part of the double bind, the inability to comment on the contradiction, is built into the ideal of objectivism because embodied skills are regarded as merely subjective and thus unreliable in comparison to logic.

Polanyi’s alternative form of objectivity, personal knowledge, with its recognition of the unformalizable personal, fiduciary, tacit component in addition to the level of language and logic offers an alternative to the distorting ideal of scientific objectivism, as well as to Bateson’s double bind.

Tacit knowing will not eliminate the hazards of the penguin problem, but it may offer a framework for better understanding how “penguin” sorts of misunderstanding show up in our communication, and allow for the discovery of more suitable interpretations and meanings.

Electronic Discussion List

The Polanyi Society supports an electronic discussion group that explores implications of the thought of Michael Polanyi. Anyone interested can join. To join yourself, go to the following address: http://groups.yahoo.com/group/polanyi_list/join. If you have difficulty, send an e-mail to James van Pelt (james.vanpelt@yale.edu) and someone will see that you are added to the list.

WWW Polanyi Resources

The Polanyi Society web site (polanysisociety.org/ or polanysisociety.com/) provides information about Polanyi Society membership and meetings. The site also contains the following: (1) digital archives containing all issues of *Tradition and Discovery* and its predecessor publications of the Polanyi Society going back to 1972; (2) indices listing *Tradition and Discovery* authors, reviews and reviewers; (3) the history of Polanyi Society publications; (4) information on *Appraisal* and *Polanyiana*, two sister journals with special interest in Michael Polanyi’s thought; (5) a link to the “Guide to the Papers of Michael Polanyi,” which provides an orientation to archival material housed in the Special Collections Research Center of the University of Chicago Library, Chicago, IL 60637; (6) photographs of Polanyi; (7) links to a number of Polanyi essays (available on the Polanyi Society web site and other sites), Polanyi’s Duke Lectures (1964), as well as audio files for Polanyi’s McEnerney Lectures (1962), and Polanyi’s conversation with Carl Rogers (1966).

A Teaching Philosopher: The Work Of Jerry Gill

David Rutledge

ABSTRACT Key Words: postmodern, teaching, scholarly productivity, post-critical, metaphor, language, embodiment, diagrams, interdisciplinarity, architectural thinking.

This is an overview of the publications of Jerry Gill, sketching his background, common themes in his work, and some strengths and weaknesses in that work. I note the accessibility of his treatments of postmodern philosophy, and the usefulness of these works for undergraduate classrooms. The “search for a post-critical philosophy” of religion, language, epistemology, and education has given direction to Gill’s career.

Over the last forty-five years, few if any scholars with an interest in Michael Polanyi and his concerns can match the productivity of Jerry Gill. Since completing his Ph.D. at Duke under Bill Poteat in 1966, Gill has published an amazing number and range of books (17 thus far, both authored and edited) and articles (well over 100) that extend the discussion of post-critical thinking into areas beyond philosophy, showing a special interest in introducing students to the perspectives that readers of *Tradition and Discovery* take for granted. His work can serve as a major resource for teachers of Polanyi’s thought.

While in the present essay I will not attempt a complete or exhaustive treatment of Gill’s work, I will sketch some of his general themes, look briefly at some of his books that illustrate how those themes are treated, and end with a consideration of his work’s strengths and weaknesses. I should confess that while I do not know Gill personally, and am certainly not familiar with everything he has done, I am not a neutral critic, having published a positive review of one of his books (*On Knowing God*, 1981), and urged that SUNY Press publish the manuscript that became *The Tacit Mode: Michael Polanyi’s Postmodern Philosophy* (2000). But before turning to his writings, let me mention a few things about Gill’s career, for he has long maintained that one cannot overcome the malign consequences of the objectivist ideal without rejecting its insistence that ideas are purely mental, having no relation to the rich, lived context of those who hold them.

After growing up in the Pacific Northwest, “both a ‘slow learner’ and ‘culturally deprived’ as a youngster,” Gill attended Westmont College, a small Evangelical liberal arts school in California, where he was “a proverbial ‘late bloomer.’”¹ The point here is that it was only through sensitive, concerned teachers that Gill was able to move beyond his background, actualize his own potential as a thinker, and eventually become a teacher himself. A concern with teaching, and with introducing students to the excitement of intellectual life, remain primary throughout his career. After receiving an M.A. at the University of Washington, Gill went east to New York Theological Seminary where he extended his interest in philosophical theology and encountered one of the two “master teachers” who shaped him, Robert Traina. From New York, Gill traveled south to Duke University, where he completed his Ph.D. under William Poteat, his other “master teacher,” with a dissertation on Ian T. Ramsey’s thought. Both Poteat and Ramsey will remain great influences, as Gill’s intellectual perspective owes much to Poteat’s analysis of the trajectory of modern thought, and the time he spent studying with Ramsey in England produced not only a friendship, but several of his publications.²

After this training, Gill began a career striking for both its geographical and its intellectual variety—(I have sometimes thought of him as a kind of “Johnny Appleseed” of post-critical philosophy. He has taught

at colleges as diverse as Seattle Pacific, Eastern, Eckerd, Rhodes, Saint Rose, and Pima Community College in Arizona, where he now lives in retirement. He has also taught in China, and in study abroad programs in Greece and Finland, and has been the academic co-ordinator of the Borderlinks project in Mexico and Arizona. His writings have included books and articles on art (*Ingmar Bergman and the Search for Meaning*, 1969), on Native American religion (*Native American Worldviews: An Introduction*, 2002), on language learning (*If a Chimpanzee Could Talk, and Other Reflections on Language Acquisition*, 1997), on education (*Learning to Learn: Toward a Philosophy of Education*, 1993), as well as individual volumes on Polanyi, on Wittgenstein, and on Merleau-Ponty,³ and volumes both edited and authored on introductions to philosophy and philosophical theology (*The Enduring Questions: Traditional and Contemporary Voices*, 7th ed., ed. 2001; *Philosophy Today*, No. 1 and No. 3, ed. 1968, 1970; *Philosophy and Religion: Some Contemporary Perspectives*, ed. 1968; and *The Possibility of Religious Knowledge*, 1971; *Borderland Theology* (2003); *Toward Theology*, 1982; and *Mediated Transcendence: A Postmodern Reflection*, 1989). His articles have appeared in organs as diverse as *The Harvard Theological Review* and *Christian Century*, *The International Journal for Philosophy of Religion, Mind, Metaphilosophy, Journal of Aesthetics and Art Criticism*, and *Philosophy and Phenomenological Research*, among others. This partial recital of Gill's publications is not simply a tribute to his industriousness, but shows the breadth of concerns that his post-critical perspective opened up for him, and the many resources he has made available to undergraduate teachers. Each of his books is enriched by the complex interests and experiences Gill brings to it, particularly his ability to communicate these ideas in clear and accessible fashion.

Stepping back now from a simple listing, can we discern common themes in all this work? Let me attempt a sketch of the ideas that seem to connect these disparate activities that shows the personal center of thought that unifies the years and the writings.

(1) Fundamental it seems to me is Jerry Gill's pre-occupation with the postmodern or post-critical situation of western culture.⁴ In many of his books, Gill begins with a sketch of western thought since the time of Descartes--sometimes a few paragraphs, sometimes several chapters--in order to set up the problem which he is addressing, which usually deals with the weaknesses of modern philosophy, and the need to consider postmodern alternatives.⁵ He is not an intellectual historian, and so these treatments do not attempt a thorough argument for the dominance of critical thought since the 17th century. One could easily fault such sweeping "set pieces" for their brevity and generality, particularly perhaps in his later books, but in this case as in others, we need to keep in mind that many of Gill's books are written primarily as introductions for students or interested intellectuals who do not have extensive backgrounds in Enlightenment thought or phenomenology. It is also the case that trying to write with enough rigor to satisfy the Academy's "experts" tempts one to bend one's thought to the rules of critical philosophy, which would prevent any radical alternative to that tradition ever arising.⁶

A strength of this repeated narrative is that it locates Gill's own work in a much longer story that tries to make sense of a number of problems in modern intellectual life, a story that helps to answer Walker Percy's question, "Why does man feel so sad in the twentieth century? Why does man feel so bad in the very age when...he had hoped to see the dawn of universal peace and brotherhood?"⁷ It's a good question, and it seems to me that telling and re-telling a story of modern thought's decline is an effective way to situate readers so that they can hear Gill's attempts at answering it. Though this perspective appears to owe much to his time with Bill Poteat, there have been many others working in a similar vein, though perhaps not "connecting the dots" as obviously as Gill: for example, the work of Charles Taylor, who names Wittgenstein, Merleau-Ponty,

and Polanyi as men who shared a frustration with the malign effects of much of modern philosophy.⁸ See also the work of Marjorie Grene, who has a somewhat different list, but essentially tells the same story.⁹

What has happened, Gill argues, is that modernity's obsession with finding certainty through an indiscriminate application of the perspective of science to all of life led major thinkers from Descartes, Hume, and Kant to the logical positivists to build up a picture of human knowledge as purely mental, the property of an individual mind severed from any physical body, a mind that is passive, atomistic, and reductionistic to such a degree that its very effort to understand the world is vitiated. Critical philosophy is objectivist, focusing on the logical analysis of reality into discrete particulars, reducing the rich complexity of human experience to abstract parts that can be made explicit and quantified, in the never-ending effort of the modern person to find certainty, and to banish doubt. Gill focuses primarily on epistemology in telling this story, stressing the dualistic, visual bias in critical thought, and its tendency to reify the fact/value distinction in an effort to shore up its claims to a firm empirical foundation, safe from the eroding threat of symbolic, metaphorical language, and its natural corollaries, ethics and metaphysics.¹⁰

(2) After situating his work in the postmodern attempt to overcome modernism, Gill stresses in numerous ways the centrality of language in human cognition ("Linguisticity is, along with embodiment, one of the primary dimensions of the human way of being in the world"¹¹) and the need to overcome the critical tradition's misunderstanding of speech. His edited books on Ian Ramsey; his book on language acquisition (*If a Chimpanzee Could Talk*); his books *Merleau-Ponty and Metaphor* (1991), and *Wittgenstein and Metaphor* (1996); chapters in several of his other books on language; and a number of articles discussing different aspects of language, from myth to symbol to the first person personal pronoun--all of these indicate the importance of seeing human beings as preeminently speakers, and thought as always deeply implicated in language.¹²

In *Wittgenstein and Metaphor*, for example, Gill discusses approaches to metaphor by Tillich, Langer, Colin Turbayne, Max Black, Philip Wheelwright, Monroe Beardsley, Percy, Ricoeur, Merleau-Ponty, Gadamer, Barfield, and the philosopher Nelson Goodman, giving the reader a brief, but helpful tour through the varied notions of metaphor which he classifies as substitutionary, as interactionist, and as constitutive, with the ultimate aim of clarifying Wittgenstein's understanding of metaphor. Though the list above is quite varied, and Gill perhaps pushes too hard to make them all fit into his tripartite schema, the different explanations of how metaphors work, and how they are inextricably related to assumptions about the nature of language and knowledge, are helpful, and handled deftly by Gill. The reader is then prepared for a novel account of Wittgenstein's metaphors in his major works, and a discussion of his understanding of metaphor and its overall place in his view of language. In his discussion of the *Tractatus*, for example, Gill shows how the very "picture theory" which summarizes the abstract, visual, mathematical view of language Wittgenstein is developing has no place within that view because metaphor itself has no place within his theory; this is one of the important limitations of his early philosophy that is addressed later in the *Investigations*. While I do not think that Gill makes his case that "Wittgenstein views philosophy as an essentially metaphoric activity" (p. x), which is the argument of Part III, the careful description in Part II of his use of metaphors in the *Tractatus*, the *Investigations*, and in *On Certainty* I found fascinating. I admit that though having read Wittgenstein extensively through the years, I had never focused on the role metaphors play in his thinking, and how such a consideration enriches one's view of his philosophy of language. Gill's use of metaphor as a vehicle for getting at important features of a postmodern understanding of language is more convincing, it seems to me, than the details of metaphor itself which are presented in the book; but it is a fresh and interesting way to read Wittgenstein.

(3) In the quote from Gill in the last section, another of his common themes is mentioned, namely the importance of the body in human knowing, and how the neglect of this basic fact has distorted most of modern philosophy. This theme is to be expected, of course, in the work of one influenced by Merleau-Ponty and Polanyi and taught by Bill Poteat, but the consistency of Gill's employment of this theme is impressive. In *Learning to Learn*, for example, Gill shows quite convincingly that the educational philosophies of A.N. Whitehead, John Dewey, Paolo Freire, and Carl Rogers pay virtually no attention to the embodied nature of knowing, so that their views remain intellectualistic and abstract, inevitably distorting their accounts of teaching and learning. While he shows us how each of these men introduces important reforms into traditional education—Whitehead's organicism and contextualism; Dewey's emphasis on the experience of the learner responding to the environment; Freire's appreciation of the political context of knowing, and the need for liberating students from a "banking" model of education; and Rogers' attempts to involve the learner in all aspects of her education—each view is weakened by its blindness to the bodily basis of thinking and doing. As a counter-example, Gill employs the image of dancing, where dancer, dancing, and the dance all have a necessary bodily dimension. Though it seems to me Gill could have made more use in this book of Poteat's concept of the mindbody (which appeared some eight years before *Learning*), he does apply Polanyi and Merleau-Ponty's emphases on embodiment, and even suggests concrete ways in which this characteristic can be reflected in the classroom (pp. 216-224); he also repeats this theme in *The Tacit Mode* ("The Cruciality of Embodiment," pp. 44-50), in *Mediated Transcendence* (pp. 59-66), and in *On Knowing God* (pp. 70-72). It does seem that Gill acquires this emphasis in mid-career, for his earlier books (especially *The Possibility of Religious Knowledge*, 1971) do not elaborate the embodiment theme, perhaps because he also does not use Merleau-Ponty as much in the earlier work.

(4) Another feature of Gill's work on which one can depend is his innovative use of examples, images, and vocabulary to illustrate his points. This is readily seen in *Learning to Learn*, which devotes a chapter in each Part of the book ("The Knowing," "The Knower," "The Known") to practical applications for the classroom, but is also true of most of his other works. To consider just one, we find in *Mediated Transcendence* not simply the discussion of standard examples to illustrate a point (Kant on lying, 98ff.; abortion, 106ff.; William James' image of "total reflexion," 20ff., etc.), but also illustrations of "mediation" that I found quite helpful: the way in which emotion is mediated by the notes, beat, and key of a musical score (pp. 32, 150); the way in which the mind is mediated by, but is not reducible to, the brain (p. 44); the way in which persons are mediated by, but are not reducible to, their bodies (p. 45); the Polanyian example of the way in which language is mediated by speech, alphabet, words, and style, without being reducible to any one of these (pp. 123ff.); his use of examples of "signifying" in the black community of Memphis, or in popular music (pp. 135-136). When he applies mediation, then, to the idea of transcendence, claiming that God is mediated to believers not by taking them "out of the world," but by showing the divinity immanent in -- mediated by -- various aspects of the world, one has a clearer, more concrete sense of what he means.

Another interesting aspect of his effort to apply his ideas in concrete ways is Gill's use of diagrams to convey relationships between ideas. In *The Tacit Mode* (p. 39) and *Deep Postmodernism* (p. 122), Gill illustrates the structure of tacit knowing with essentially the same diagram, and, in *Learning to Learn*, he illustrates connections between his four major thinkers with another diagram (p. 35), and shows relationships between enrollment and curricula with another (p. 222).¹³ While one could criticize the specific features of such diagrams,¹⁴ their point, it seems to me, is simply that relationships exist between Polanyi's terms (explicit/tacit; subsidiary/focal) that will be seen more easily by some by being pictured. I have not felt that these diagrams were essential, but then I am familiar with Polanyian terms. I also note that Gill acknowledges

diagrams are not for everyone: he comments that his teaching mentor Poteat “was uneasy with my own penchant for diagrams” (p. 237)!

Finally, we should note here that Gill is fond of a particular vocabulary in discussing Polanyi or Polanyian themes. He argues that “axis” is the most appropriate term for the orienting center of a conceptual system, and that dimension the best word for the various aspects of experience -- social, moral, aesthetic, etc. Similarly, we find him using “vortex,” “fulcrum,” “vectors,” “symbiosis,” “relationality,” and “poles” or “polar” repeatedly -- all in an effort to escape the vocabulary of critical thought that emphasizes more static, isolated, atomistic models of knowing and being.¹⁵ This effort is not always successful. Consider, for example, this sentence: “The overall contours of my perspective are best projected by the image of a revolving and movable bipolar axis at the center of a horizon,”¹⁶ which seems to pile on the images a bit too much. The impulse is admirable, namely the desire to write in a way that escapes the discarnate abstractions of critical thought, and stresses the dynamic, relational character of the knower’s involvement in the world, as revealed by post-critical philosophy. But while the vision he conveys in his books considered as a whole is salutary, Gill’s specific formulations of this vision are not always successful.

Beyond the themes already mentioned, we can just mention Jerry Gill’s interdisciplinarity (art, film, psychology, literature, theology, as well as philosophy), his emphasis on intercultural understanding (seen especially in *Borderland Theology*; and in *Native American Worldviews*), and the incessant curiosity that leads him into new areas of interest, and provokes him to develop new competencies (his teaching in China, Greece, Finland, and Mexico; his taking up sculpture; the book *If a Chimpanzee Could Talk* on language acquisition). One could come up with a different list of the themes that thread through Gill’s work, but these should serve to indicate the protean, stimulating character of that work.

Having pointed you positively, in a brief sketch, to certain distinctive elements in Gill’s work, let me mention also weaknesses in that work which certainly do not destroy its usefulness, but which are problems nonetheless. First, looking at Gill’s books and articles as a whole, one sees a certain amount of repetition of subjects, approaches, and formulations. This is not surprising or unique to Gill, of course; perhaps anyone writing so much would inevitably do the same. But in describing the tacit, mediation, postmodernism, or human language, we sometimes find the same thinkers, the same examples, and the same discussions used to make his points (for example, the work of Alan Pasch; the example of three men on a bridge witnessing a drowning, etc.). While Gill is obviously marshaling these resources for somewhat different purposes each time, the degree of repetition in how these resources are used occasionally causes the discussion to lose its freshness.

A second way in which his work sometimes suffers is in the brevity of his treatment of various thinkers, especially in the historical sections. For example, in *Mediated Transcendence*, Gill discusses the history of transcendence in western theology in nine pages, but deals with fourteen different thinkers in those pages, which means that his treatment is necessarily somewhat superficial (pp. 5-14). In *Learning to Learn*, we find these sentences: “The two traditional models of experience within Western thought are reductionism and dualism. Empiricism tends to be reductionistic and rationalism leans toward dualism” (p. 40). While this is not all he says about these models -- and some of it is quite sound -- such opening sentences convey a sense of over-simplification, of lack of depth, that does not help Gill win over his reader. Though I have not the slightest doubt that Gill is capable of conveying the complexities and nuances of philosophical history with precision and accuracy, his use of such quick sketches of schools of thought as quoted above weakens his

effort. Perhaps this occasional problem is best conveyed by an example from *On Knowing God*, where Gill writes: “This interpretation of Kierkegaard may or may not be correct. If it is not, it is difficult to maintain a high level of respect for him, since he failed to see the inconsistent and one-sided character of his own work” (p. 109). This verdict is delivered after just over three pages of discussion of Kierkegaard and his interpreters, and it seems to me presumptuous for Gill to claim that if his interpretation is not correct, then Kierkegaard is at fault!

I should also say, however, that in other places where he surveys a number of thinkers in relatively brief fashion -- as in Part Two of *The Tacit Mode*, or in the discussion of language theorists in *If a Chimpanzee Could Talk* -- I found Gill clear, accurate (in those cases where I could judge), and concise. And in *Learning To Learn*, his extended treatments of Whitehead, Dewey, Freire, and Rogers contained both nuance and qualification, and stimulated an interest to read more about them. He also makes occasional brief but interesting observations about thinkers that show his engagement with their thought (e.g., his comments on J.L. Austin in *Mediated Transcendence*, pp. 136-137, or on Foucault in *The Tacit Mode*, pp. 75-76). This is not, therefore, a sweeping condemnation of all of Gill’s work, but points to an occasional lapse; given the quantity of his writing, such lapses are perhaps understandable. The problem of providing sufficient background to an introductory audience is a difficult one, of course, with which every author of such texts struggles. One solution is to provide plenty of references to more specialized studies which can supply the necessary detail, and such references would, it seems to me, strengthen Gill’s presentation.

More interesting than the issue of thoroughness is what I think of as the “architectural” bent of Gill’s mind, that is, his preference for developing sometimes elaborate structures to encompass a thinker’s system of ideas. In *The Tacit Mode*, for example, Gill places Polanyi’s personal knowing within the structure of “a fresh axis,” which he elaborates through discussion of “the awareness dimension,” “the activity dimension,” and the “cognitivity dimension” of experience (pp. 10, 31-50). This way of construing Polanyi may or may not be helpful to the reader, but it is not Polanyi’s way of presenting the knowing experience, and it seemed to me to need more explanation or justification than Gill offers. Another example of this “architectural” way of thinking can be seen in *Learning to Learn*, where Gill approaches his task of developing a philosophy of education with an elaborate structure based on the metaphor of dance: dancing/knowing, dancer/knower, dance/known. But then each of these three parts begins with a consideration of four thinkers, whose views are repeated each time in relation to the aspect of knowing being considered, and on top of that, each part contains a tri-partite structure looking at the perspectives of the thinkers used, the activity at issue, and the practical patterns or applications that result. (The “Contents” page suggests this pattern, though one would have to read the book to see how obtrusive it sometimes becomes.) Though I thoroughly enjoyed the book, this structure seemed to me unnecessarily complex for the subject matter. While there is certainly nothing wrong with complex structures *per se*, but perhaps something simpler would have served the reader better.

Rather than point further to quibbles with particular formulations or approaches in his books, let me conclude with a reminder that anyone who teaches undergraduates, and wants an accessible way to introduce them to the problematic of Enlightenment thought in modern philosophy and the alternatives to it developed by thinkers like Michael Polanyi, will find Jerry Gill a helpful, useful resource. He sees the “big picture” in which western culture as a whole has been affected by critical thought, and gives students a story, a framework, within which they can go on to build a more satisfying, healthier understanding of knowing and of living. For a teacher to have maintained such a dedication to useful scholarship over his career while working essentially alone, without the resources of research universities or graduate students to support him, seems to me to speak also of his character, and to be admirable. Let us hope for more by him.

Endnotes

¹Jerry H. Gill, *Learning to Learn: Toward a Philosophy of Education* (Humanities Press, 1993), p. 145.

²Gill authored a book on Ramsey in the Contemporary Religious Thinkers series, *Ian Ramsey: To Speak Respectably of God* (1976); edited a collection of Ramsey's essays, *Christian Empiricism: Studies in Philosophy and Religion* (1974); edited a collection of general essays that showed Ramsey's influence: *Philosophy and Religion: Some Contemporary Perspectives* (1968); and published several articles on religious language from the analytic perspective that engaged Ramsey. Gill dedicated one of his books to Poteat, an edited collection, *Essays on Kierkegaard* (1969), and one of his books to Ramsey, *The Possibility of Religious Knowledge*, (1971). There is also an essay by I.T. Ramsey on "J.L. Austin and Michael Polanyi" in T.A. Langford and W.H. Poteat, eds., *Intellect and Hope: Essays in the Thought of Michael Polanyi* (Duke University Press, 1968). Gill's book on Polanyi is *The Tacit Mode* as already mentioned.

³*Merleau-Ponty and Metaphor* (Atlantic Highlands, NJ: Humanities Press, 1991); *Wittgenstein and Metaphor* rev. ed. (Amherst, NY: Humanity Books, 1996).

⁴Gill is aware that these terms are not synonymous, of course, but uses "postmodern" in deference to the majority usage today. See *The Tacit Mode: Michael Polanyi's Postmodern Philosophy* (SUNY Press, 2000), p. 1. Here he also distinguishes between constructive and deconstructive postmodernism.

⁵In *Learning to Learn*, there are several paragraphs in the Introduction; in *On Knowing God*, there are four chapters on critical thought, and in *The Possibility of Religious Knowledge*, Gill has three chapters that present his most detailed discussion of "The Problem."

⁶See Bill Poteat's comment on the need sometimes to ignore the Academy in *Polanyian Meditations: In Search of a Post-Critical Logic* (Durham, NC: Duke University Press, 1985), pp. 102-103.

⁷Walker Percy, "The Delta Factor," *The Message in the Bottle. How Queer Man Is, How Queer Language Is, and What One Has to Do with the Other* (NY: Farrar, Straus, and Giroux, 1975), p. 3.

⁸See his essay "Overcoming Epistemology," in *Philosophical Arguments* (Cambridge: Harvard University Press, 1995), pp. 1-19. Poteat gives his succinct version of the story in the Prologue to *Polanyian Meditations: In Search of a Post-Critical Logic* (Durham: Duke University Press, 1985), pp. 1-10.

⁹Marjorie Grene, *The Knower and the Known* (Berkeley: University of California Press, 1966, 1974), pp. 13-14. She names Dilthey, William James, Dewey, Whitehead, Bergson, Collingwood, and Erwin Straus, as well as Polanyi and Merleau-Ponty.

¹⁰See, for example, Gill's treatment of modernity in the opening section of *On Knowing God* (Philadelphia: Westminster Press, 1981), Part I; ch. 1 of *The Possibility of Religious Knowledge*; ch. 1 of *Mediated Transcendence: A Postmodern Reflection* (Macon, GA: Mercer University Press, 1989); and ch. 1, "The Basis of Modern Thought" in *The Tacit Mode*, among other places.

¹¹*Mediated Transcendence*, p. 111.

¹²Susanne Langer seems to be an important representative for Gill. See "Langer, Language, and Art" in *International Philosophical Quarterly*, vol. 34, no. 4 (Dec. 1994), 419-432, and ch. 1 of *Wittgenstein and Metaphor*.

¹³Gill has an article in *TAD* which summarizes this book: "Learning to Learn: Educating with/for the Mind-Body," *Tradition and Discovery* 20:2 (1993-94): 17-26.

¹⁴Ron Hall does this in a review of *The Tacit Mode* in *TAD*: 27:3 (2000-2001): 30-34. Hall is an acute philosopher, but his totally negative, dismissive treatment of Gill in that article, in contrast to my comments here, may owe less to his philosophical acumen than to his different assumptions about the nature

of book reviews. Or, perhaps, as we all do occasionally, he was just having a bad day.

¹⁵See, for example, ch. 2 of *Learning to Learn*; ch. 7 of *On Knowing God*; ch. 2 of *Mediated Transcendence*; ch. 3 of *The Tacit Mode*, etc.

¹⁶*Learning to Learn*, p. 5.

Notes on Contributors

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Jerry Gill (jslats@att.net) has taught for more than fifty years at six different U.S. institutions as well as abroad. He is the author of many books and articles on religion, art and education as well as volumes on philosophers like Michael Polanyi.

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Deep Postmodernism: A Review Essay

Dale Cannon

ABSTRACT: Key Words: modernism, postmodernism, deep postmodernism, constructive postmodernism, post-critical, tacit knowing, lived body, metaphysics, epistemology, meaning in language, Alfred North Whitehead, Ludwig Wittgenstein, Maurice Merleau-Ponty, Michael Polanyi, J. L. Austin, Jacques Derrida, Francois Lyotard, Michel Foucault, Jerry H. Gill.

This article is a review of Deep Postmodernism by Jerry H. Gill. In this book Gill juxtaposes and compares the philosophies of Whitehead, Wittgenstein, Merleau-Ponty, Polanyi, and Austin—philosophies that on the surface are very different but, examined closely, are remarkably complementary and convergent in respect of their challenging and revising key assumptions of modern thought relating to topics of reality, linguistic meaning, embodiment, and knowing. Their critiques resonate with several of the critiques of well-known postmodern thinkers but go deeper by reconstructing the key assumptions in question. I compare Gill's conception of deep postmodern philosophy with Polanyi's conception of post-critical philosophy. Gill's book is significant in setting out in one place the beachhead that these five thinkers (and others akin to them) have established in overcoming the philosophically sterile dead-ends that modernist and postmodernist thought have bequeathed us.

Jerry H. Gill, *Deep Postmodernism: Whitehead, Wittgenstein, Merleau-Ponty, and Polanyi*. New York: Humanity Books, 2010. Pp. 172. ISBN 978-1616141769. \$30.00 hb.

With this book, Jerry Gill has attempted to pull off a remarkable feat, a feat his Ph.D. advisor, William H. Poteat (my advisor too, by the way), sought to do in his graduate seminars at Duke. Poteat regularly brought several great philosophical critics of modernity (including three of the four Gill covers in this book) into dialogue with each other and with his students (*occasionally* throwing a modern or postmodern foil into the mix). Thereby, in the midst of this dialogical context, Poteat helped his students come to experience a radically different, liberating kind of reflection and sensibility about the human condition from the modern intellectual sensibility predominant in the academy to which they had long since become captive—indeed, to which they had become subtly enslaved. They came to experience a shift and liberation into what Polanyi and Poteat call a *post-critical* sensibility, that Gill in this book calls *deep postmodern*.¹ It wasn't just acquiring new thoughts that they hadn't held before but thinking things through, holistically and constructively, in a different, self-recovered way, as opposed to the self-absented kinds of thinking to which they had become accustomed. Gill's attempt comes off well in several respects, though the book's relation to its reader lacks the tacit interpersonal qualities that Poteat embodied in his own teaching and how Poteat geared them to the unique conceptual entanglements from which his students needed liberation. Gill's book pays little attention to its readers' need to undergo this shift from a critical into a post-critical sensibility and the challenges that that shift may entail. This may be due to Gill's supposition that the shift from the one to the other is a shift in basic assumptions rather than also a comprehensive shift in attitude and orientation of oneself toward oneself and the world. For Poteat and for Polanyi, I think, the problematic assumptions of modernity have perhaps more to do with the attitude and self-orientation that lies behind them than with those assumptions taken by themselves.

Nevertheless, in this review I want to call attention to the apt way that Gill seeks to expose his readers to these four thinkers—Whitehead, Wittgenstein (in his later work), Merleau-Ponty, and Polanyi—brought

into dialogue with each other on four different themes: reality, meaning, embodiment, and knowing, together plotting out essential features of a deep postmodern / post-critical sensibility.

Gill begins the book with a brief review of three of the principal critiques of modernism by well-known postmodernists (Derrida, Lyotard, and Foucault) and shows how each critique, while insightful, ultimately falls short of what is needed because, in Gill's terms, they don't go *deep enough*. Their critiques end up invalidating their own statements and positions no less than the modernist assumptions they criticize. What is called for instead is a more profound conceptual critique and constructive reform of the sort found in the four thinkers covered in his book. That is why Gill calls them "deep postmodernists" and the others "shallow postmodernists." The three critiques, in order, are as follows: "(1) Derrida and Lyotard question the modernist assumption that language has the capacity to represent reality and thought accurately in a fixed and stable manner, by showing there is no escape from ambiguity, vagueness, and historical-cultural-hegemonic bias. (2) Foucault and Derrida deny the modernist assumption that truth and reality can be reliably apprehended only if approached from a detached, historically and culturally unsituated, objective standpoint, for such a standpoint is utterly impossible to attain; indeed, the very presumption to do so masks a socio-political agenda. Lastly, (3) Derrida and Foucault debate modernism's assumption that a transcendence of social-cultural and personal prejudice can be achieved through constructing a complex, all-encompassing, monolithic system of thought, for any such efforts cannot escape projecting and reifying the set of conceptual prejudices with which it begins, closing it off from other perspectives."²

By way of contrast, the four thinkers in question, Gill claims, appreciate the truth of much of postmodernism by realizing the untruth of each of these modernist assumptions. By failing to replace these assumptions with anything better, shallow postmodernists cannot avoid drawing relativistic and nihilistic conclusions.

While fully acknowledging that their own perspective, as well as anyone else's, can lay no claim to being the 'final truth,' they [i.e., these four philosophers] have struck philosophical postures in which there remains the possibility of aiming at or striving for a correct understanding of the "way things are" in the world and in our daily lives. Whitehead, Merleau-Ponty, Wittgenstein, and especially Polanyi, are very careful to delineate their understanding of the dynamics of knowledge so as to incorporate the problems of relativism without undercutting the search for truth. (21)

Whereas the postmodern critiques in question end up being invalidated by their own criticisms, Gill's four thinkers go deeper and replace modernist assumptions with more sensible, deep postmodern ones. Moreover, they keep track of their own statements, arguments, and systems of concepts and are careful to show how they agree with these alternative assumptions and their own philosophical insights.

In the four chapters that follow, Gill gives exposition to the thinking of each of his four deep postmodern thinkers around four different themes and, with each theme, a different sequence of four sections, one on each thinker's understanding of that theme. The first thinker dealt with in each chapter is one whose work, particularly as Gill expounds it, gives special priority to that theme as compared to the remaining three: Whitehead on Reality, Wittgenstein on Meaning (in Language), Merleau-Ponty on Embodiment, and Polanyi on Knowing. On the whole, I found these sections to be more clear, easy to follow, and key to understanding that thinker's views on the other three themes though the latter may have come earlier in the book (as in, "Oh,

now I understand what his point was!”).

Chapter One takes up the theme of reality and how each of the four thinkers—Whitehead, Wittgenstein, Merleau-Ponty, and Polanyi—challenges the modernist paradigm of what is real according to Newton’s account of physical matter—a closed, deterministic system of determinate objects—and the correlative mirror theory of objective cognition that gets developed by Descartes and others, a theory paradigmatically exemplified, as Gill points out, in Wittgenstein’s *Tractatus*. By way of contrast, reality in these four thinkers is conceived as interactive and open-ended, organismic and in process, while our understandings of reality are relational and developmental, situated alongside or immersed within the reality being understood.

Both in his characterization of modernist thought and of these thinkers, Gill proceeds by identifying key metaphors at work in the view under discussion and then elaborates it in terms of these metaphors, bypassing what otherwise could be an overwhelmingly complex and lengthy account and making the ideas more easily grasped by his reader’s imagination. That strategy, of course, runs certain risks. Readers acquainted with any of these thinkers in depth and in detail may wonder why certain ideas and important passages are ignored altogether or only hinted at. Gill makes extensive and repeated use of metaphors³—often geometric metaphors, which to my mind seem to be more abstract than he may realize given his intention to make things more concrete through their use. Some of these metaphors he seems to have drawn from one or more of the four thinkers—e.g., reality as a “woven fabric” with warp and weft, drawn primarily, it appears, from Whitehead and Merleau-Ponty and “an axis [with its revolving constituents]” likely drawn from Wittgenstein—plus his own insightful anecdotes to illustrate or clarify a given point. At times Gill seems to revel in mixing or compounding the metaphors. The repetition of the metaphors, their use in contexts where their aptness is not always clear, and an occasional compounding of them makes for distraction from the concentration I needed to comprehend what was being discussed.

The principal problem with the Newtonian atomistic paradigm, according to Whitehead, on Gill’s account, was its presumption to take fundamental and indestructible particles moving about in a closed and finite universe as the primary objects of reality—i.e., to be the most real and concrete features of the world—whereas these notions are in fact highly abstract conceptual constructs designed to insure that we will be able “to locate, measure, and trace every aspect of the world around us” (29)—that is, to render the world objectified and quantifiable. Whitehead dubbed this “the fallacy of misplaced concreteness.” Accordingly, the world thus described by the hard physical sciences is not the world as it really and concretely is, but is a derived abstraction of certain of its features, however accurate, while ignoring others (e.g., the interactive relationships from which they arise) in service of specific purposes. Instead, Whitehead proposes replacing the static notion of objectified “physical objects” as the building blocks of reality with a much more concrete notion of reality as process and things as the outcome of “relational interactions that weave the fabric constituting the warp and weft of the cosmos” (29). In this way, Whitehead sought to develop a speculative metaphysical system and correlative novel lexicon that would serve in taking account of the whole of reality as a best approximation to its changing, ever-evolving, interconnected, and open-ended character. Most of the key metaphors and concepts that Whitehead introduces are biological or at least pertain to living things and life: organism, becoming, features of objects and objects themselves as emergent from relationships rather than vice versa, “actual occasions” as the fundamental actual entities, relationships as “prehensions” (which for Whitehead seems to be an adumbration of subjectivity at the microscopic level) between and among actual occasions, “societies,” etc. Later in the book, Gill summarizes, “He [Whitehead] thought of reality as a ‘society’ of interpenetrating and interacting ‘occasions’ or ‘events,’ which, when they cluster around a given axis, form

the various dimensions and ‘nexus’ that serve as the intersections among and between them. He saw reality as a vast cosmic web or fabric woven by the symbiotic and ongoing process of creativity and relationality” (85).

I want to mention here that the shift from the abstractness of the fundamental concepts with which we construe reality to a more concrete set of concepts is itself a mark of the shift from the modern to the deep postmodern (and from a critical to a post-critical sensibility). However, as Gill points out later in chapter four, Whitehead’s very attempt to devise what he hoped would be much more concrete turned out to be esoteric and abstract from commonsense and ordinary experience and extraordinarily difficult for the layman to understand. For such reasons, this attempt seems to me to fall, to some extent at least, under Whitehead’s own critique regarding the fallacy of misplaced concreteness.

On the surface very differently from Whitehead, Wittgenstein’s point of departure is a repudiation of the modernist insistence on the requirement in principle of absolute precision and complete knowledge (as in a fully explicit “picturing”). This false ideal, for Wittgenstein, is neither possible nor necessary, and so there is no need for everyday speech and ordinary language to be cleaned and tidied up after the manner of an ideal logical calculus; it is fine just as it is. Language has multiple functions beyond picturing reality that are embedded within what he called “language games,” ordinary human activities which in turn find their place within the “human form of life”—“a reciprocal interaction between persons, language, and our physical and social realities” (37). It is this “common fabric” (Gill’s metaphor) of reciprocal interaction that constitutes the “bedrock” (Wittgenstein’s metaphor) of our cognitive activity. There is no point to looking further for a more “ultimate” foundation. Other key metaphors Wittgenstein uses include game playing, tool using, going places, speaking as a doing of multiple kinds of things, doing as a form of knowing, getting “tasks accomplished,” “finding one’s way about,” language as a “collection of tools” or as the “layout of a city,” etc. Gill points out how Wittgenstein’s metaphors model language and reality, like Whitehead’s, as being in process and multifarious in its intentional activity, dynamic and transactional, interactive and open-ended, with distinctive forms emerging out of the give-and-take of reciprocal activity. Gill goes on to discuss how in Wittgenstein’s account the relation between reality and our grasp of it is a lot more flexible and reciprocally interactive (“symbiotic” Gill calls it) than the modern paradigm is able to accommodate.

Merleau-Ponty in Gill’s account implies a no less radical understanding of reality over against the modernist paradigm—namely, as “an unending series of interpenetrating organic fibers or tissues” (43). His starting point is the undeniably pervasive, crucial presence of “the lived body” [“the body as subject in the world” as distinct from “the body as object in a world of nothing but objects,” my phrasing drawn from Merleau-Ponty]—which Gill somewhat understates as “the embodied character of human existence and experience” (43). What Merleau-Ponty means by the lived body is a concept completely absent, please note, from the modernist Cartesian bifurcation of the world into *res extensa* and *res cogitans*. The lived body isn’t just a missing piece, however. For Merleau-Ponty it is the point of access to all of the rest and the interpretive key to solving most of the conundrums created by the modernist bifurcation: “The body is the vehicle of being in the world, and having a body is, for a living creature, to be involved in a definite environment, to identify oneself with certain projects and to be continually committed to them” (44, quoting Merleau-Ponty). The peculiarly interactive, intertwining, mutually participating, paradoxical role of our embodied selves with the world and all within it is a source of perpetual fascination at the center of his thought. Key metaphors for him include “closely woven fabric,” “interweave,” “intertwine,” “intervolve,” “organic networks,” “living tissue,” dynamically functioning organic bodily systems, “pregnancy” of possibility, and “flesh.” Particularly

important are the “intentional threads which attach us to the world,” which our best reflective efforts can at best “slacken” to bring them to our notice, but never sever in an objectivizing detachment. In this respect Merleau-Ponty establishes a deep postmodern, “middle position between the objectivism of modernism and the epistemological anarchy of much of postmodernist thought” (49). Gill points out the close kinship of much of what Merleau-Ponty has to say with Whitehead and Wittgenstein. “All such references lead us to the conclusion that for Merleau-Ponty the dominant model for reality is that of organic membranes perpetually intertwining with one another” (44).

My own impression of Merleau-Ponty in relation to Whitehead is that whereas each ends up saying similar things about the organic relationality of all things in the world and while Whitehead is certainly more systematic, Merleau-Ponty’s concepts and metaphors are much more concrete and accessible to a more commonsense, lay person’s understanding.

According to Gill, Polanyi contributes to the deep postmodern paradigm of reality as process and interaction with his key notion of reality as structured according to a series of emerging levels, or “strata.” Gill spends most of this section explaining this notion. What he does explicate is clear, important, and illuminating—e.g., in illustrating the principle of irreducible emergence of higher levels of reality by way of relating the story of the invention of the game of basketball by James Naismith in 1891. Gill keeps his account of Polanyi’s concept of emergence pretty much focused on the issues of irreducibility, supervenience, and marginal control rather than linking it in much depth to more controversial evolutionary issues such as the emergence of life or of human life in particular, let alone to recent research into these issues, though these topics are briefly mentioned. He emphasizes the open-ended and interactive character of Polanyi’s multi-leveled understanding of reality and how it resonates with the postmodern conception of reality of the previous three thinkers (though not in as much depth as I would like to see developed). However, Gill makes no mention of how Polanyi’s notion of levels of reality (more precisely, levels of the reality of “comprehensive entities”) was not Polanyi’s own point of departure but was, according to Polanyi, itself derived from and built upon (and perhaps overly dependent upon) his analysis of the from-to, tacit structure of perceptual gestalt-integrations. Though it may not at first seem relevant to the theme of chapter one, Gill might have taken up here Polanyi’s explicit paradigm of scientific knowing—namely, “knowledge of an approaching discovery” (*TD* 23-25)—which is where Polanyi makes what could be his most unique contribution to a deep postmodern understanding of *reality*. There Polanyi speaks of the act of discovery as a matter of making “contact with reality: a reality which, being real, may yet reveal itself to future eyes in an indefinite range of unexpected manifestations” (*TD* 24). This definition is not mentioned at all in Gill’s chapter on Polanyi’s account of reality or at any other place. Other uniquely Polanyian contributions to ontology that might have been mentioned but do not get discussed include: the reality of independent thought and humanistic ideals of truth, justice, beauty, and the good; the nature of reality in the humanities as well as in the sciences and their relationship; the ontological spectrum of living organisms that Polanyi spoke of as “ultra-biology” (a panorama of normative elements in the hierarchy of life requiring our critical participation to recognize and appreciate); the intimate relation between meaning and the real; and what Polanyi speaks of as the *being* of our knowing (via our embodied indwelling and acquaintance relationships with things, other forms of life, and other persons).

Some final comments on chapter one: Gill’s full title of chapter one is “Reality: Interactive and Open-Ended.” With this and the other chapter titles, Gill aims to encapsulate the elements common to the four thinkers on the chapter theme. More, I think, could helpfully be said by way of a summarizing synthesis for this chapter, but the subtitle does highlight two of the most important elements. Beyond these two, an

implicit theme running throughout the chapter (and the chapters to follow), but never explicitly brought out in the way that it deserves to be as a general feature of “deep postmodern” views of *reality* is the participation of the knower, alongside other knowers, in apprehending, acknowledging, comprehending, and in important respects constituting the reality known—as well as vice versa. Reality for “deep postmodern” thought is inherently relational toward us; we cannot refer to it (even as existing apart from us) without implicating our embodied acknowledgment. The very idea of reality standing alone or apart is incoherent for deep postmodern thought.

Chapter two takes up meaning—specifically the meaning and purpose of language—first in Wittgenstein, followed by Merleau-Ponty, Polanyi, and then Whitehead. Again Gill’s pattern is to articulate the modernist (and, particularly in this chapter, pre-modern “traditionalist”⁴) assumptions about language, highlight briefly the “superficial” postmodern challenges to these assumptions, and then follow with the four thinkers’ cases for radically different and deeper postmodern assumptions. In opposition to the assumption that the purpose of all language is “to accurately depict the facts comprising the world around us” (60) and to the superficial postmodernist critique that language must instead be entirely open-ended and incapable of any fixed meaning whatsoever, Wittgenstein directs us to look carefully at how ordinary language functions in concrete contexts of actual usage. Here meaning, purpose, and success in language depends not on fixed meanings and ideal essences but on the roles that words and phrases take on in the “language-games” of our lives, and as we move from one context to others having “family resemblances” to it. Ordinary language is not something “primitive” whose confusion, vagueness, and ambiguity needs a philosophical “fix” in accordance with some more perfect “ideal” language. No, the proper philosophical task is to extricate us from the philosophical perplexity that arises when we misunderstand how language is actually used in specific contexts by thinking of it in abstraction from these contexts.

Merleau-Ponty comes at this issue from quite a different though complementary angle. For him, both modernist and traditional views of language take language to be essentially incidental to the constitution of both the world and human life and having its meaning essentially stable and independent. On the contrary, language is an expression of my own bodily being, communicating as much by the way and how something is said as it is by what is said; it “plays an integral role in the actual weaving and shaping of both the world around us and of our own social being” (70f). Language is rooted in bodily “gesture” and gesture is already language and meaning on its surface. It is here, in connection with language, especially language in the “metaphoric mode” of “originating speech,” that Merleau-Ponty brings to light our participative role in constituting reality to be what it is for us and simultaneously constituting our own thought and being through it. “Therefore, our knowledge of the world, and thus of ‘reality’ is neither ‘subjective’ nor entirely ‘objective,’ but is, rather ‘inter-subjective’ in the sense that it arises within the push-and-pull of our mutual interaction with one another and with our environment” (73f).

Gill’s treatment of Polanyi on meaning in language draws primarily from Polanyi’s essay, “Sense-Giving and Sense-Reading.” Here Gill emphasizes Polanyi’s primary contribution as “the realization that grasping and imparting meaning through language is not fundamentally an intellectual process, but is rather the result of the [dynamic, as Gill emphasizes,] tacit integration of the particulars of our subsidiary awareness by means of our bodily interaction with them, what Polanyi terms ‘indwelling’” (75). “What one comes to know tacitly, by continuously integrating subsidiary factors into fresh, meaningful wholes [including the rules governing the underlying generative grammar], gradually forms the axis around and from which a native speaker operates in his or her own language” (77). These integrations are not all one way, for we shift back and forth,

sometimes dissolving the integration in order to attend to what is subsidiary and at other times re-integrating to a more profound meaning, and sometimes what is focal in literal meaning becomes subsidiary in symbolic or metaphoric meaning and vice versa. Through all of this, there is a dynamic interaction between imagination and intuition coupled with an inborn desire to be part of the surrounding community of other persons. To illustrate Polanyi's understanding, Gill recounts an anecdote of his one-year old daughter in the process of acquiring competence in speaking through chattering just like an adult on her toy phone with everything but the words. Again here, as elsewhere, Gill connects what he is here explicating with ground covered earlier, multiplying the connections based on the "family resemblances" between Polanyi's, Wittgenstein's and Merleau-Ponty's thoughts about meaning in language.

With Whitehead, Gill has to make several qualifications, as Whitehead's explicit view of ordinary language was that it was fundamentally deficient and in need of correction in order to carry through with his metaphysical intention to grasp the "essence of the universe" (82). However, Whitehead's corrections were more on the order of creatively stretching words in an intentionally metaphoric usage, rather than in accord with an ideal logical language of strictly literal meanings. Nevertheless, his work in various respects becomes, in Gill's words, "convoluted and extended," so much so that Gill admits his own difficulty in following Whitehead's development of his metaphysical system beyond its very beginning stages (86). Even so, Whitehead, along with Wittgenstein and Merleau-Ponty especially, stresses the interconnectedness of all of language with human activity and the world around us, which seems "to belie what he [Whitehead] has to say about the deficiencies of speech" (86). Though his effort to provide an accurate metaphysical account of the way things are in the universe places him more in the league of traditional and modern thinkers who have sought to "do" speculative metaphysics, his attempt to rework the enterprise from the ground up in a metaphorical mode in accord with the criteria of everyday experience qualifies him, in Gill's thinking, as a deep postmodernist.

Some final thoughts about chapter two: although the focus of the chapter is meaning in language, a theme set by Gill's fine exposition of Wittgenstein's views at its beginning, it is significant that meaning in a broader sense, and the relations between meaning and reality rightly understood, was a significant topic taken up by Merleau-Ponty, Whitehead, and Polanyi—as well as at some rare places in Wittgenstein's work—yet Gill has chosen to focus on meaning in language alone. Was the larger topic too much to take on? The elements common to each of the four thinker's views on Gill's chosen focus are identified in his chapter title: "Meaning: Contextual and Functional." Meaning is neither objectively fixed nor subjectively arbitrary, but is flexibly grounded in the shared purposes, mutual agreements, and contexts of human interaction with each other and the world. It needs no other foundation.

Chapter three focuses on embodiment—the center and basis of our engagement with everything in the world, including our ourselves—starting with Merleau-Ponty, then followed by Polanyi, Whitehead, and Wittgenstein. Interestingly, the body as this center and basis, considered in retrospect, is conspicuously absent from modern and shallow postmodern thought but also from most of traditional Western philosophy. Gill picks up and goes over again much of what he had to say about Merleau-Ponty's understanding of the body in chapter one but at a deeper level and, remarkably, more clearly (at least to me), bringing out the ubiquity of its usually overlooked presence in every dimension of our lives. It isn't our body considered in the third person as a sophisticated biological organism that he has in mind, but our body as our place in the world "here," oriented out toward an encompassing horizon, our body in its movement and interaction (its "motility") with others, and our body in its "momentum of existence" that has, prior to our deliberate intention, already committed us

to certain projects and a distinctive way of being-in-the-world. Gill quotes Merleau-Ponty, “Our own body is in the world as the heart is in the organism: it keeps the visible spectacle constantly alive, it breathes life into it and sustains it inwardly, and with it forms a system” (96).

Gill’s account of Polanyi’s understanding of embodiment takes a different tack than might be expected. He chooses to focus on the role of bodily activity in Polanyi’s account of the “construction” (Gill’s word⁵) of intellectual and scientific knowledge. He locates Polanyi’s position midway between the two more popular extremes of “the traditional objectivist” view, which has held that objectivity depends on eliminating the embodied personal dimension, and the more contemporary “conventionalist” view (which Gill goes on to associate or equate with “subjectivism”), which holds objectivity unachievable due to the impossibility of eliminating the embodied personal dimension. This point is sharpened by a comparison with the ideas of Peter Winch, who divides social sciences from natural sciences over this supposed incompatibility. To the contrary, Polanyi contends for a revised understanding of objectivity grounded in our interaction with the physical and social dimensions of our shared world through our bodies and through speech. It is within a community of knowledgeable experts holding each other responsible in passionate pursuit of truth about reality with universal intent that competent, though fallible cognitive judgments about that reality, transcending the biases and distortions of subjectivity, are reached. Gill goes on to bring out how Polanyi highlights the ubiquity of bodily based cognitive skills and the use of tools and instruments in science.

I find it noteworthy that Gill does not specifically take up in this chapter Polanyi’s insightful discussion (nor Merleau-Ponty’s) of how we know each other through empathetically indwelling each other’s bodies.

Whitehead does not focally take up human embodiment in the way Merleau-Ponty or Polanyi do, but when examined in light of what these two thinkers have to say about the human body, Whitehead’s philosophy exhibits a remarkable awareness that at the core of our participation in and knowledge of all of the processes going on around us and in us stands our bodies. He speaks of it as the “witness of the body” (105). Though elusive and usually overlooked, it is intimately involved in all aspects of our experience of the world. Toward the end of the section, Gill takes up Whitehead’s notion of the universe as “the body of God” (110) and as standing in relation to God much as our bodies stand in relation to us. I am left unclear though as to how this discussion relates to the overall theme of the book.

Lastly, Gill takes up Wittgenstein’s understanding of the body and, like Whitehead, we find that Wittgenstein doesn’t have much to say directly about the body or embodiment. But when examined in light of Merleau-Ponty and Polanyi’s understanding of the centrality of the body, much of what Wittgenstein has to say does reflect it as well. For Wittgenstein, linguistic meaning revolves around human *activity*, both in practice and in theory, kinds of activity that necessarily entail our embodied life. This is particularly evident in what Wittgenstein in his later writings speaks of the “integral” and “symbiotic” (113, Gill’s metaphors) connection of speech and embodied action, saying and doing (especially, what *shows* itself in our doing), in the “language games” of human life, and in his comparison of words and phrases to tools and other things we manipulate. Wittgenstein has much to say about reaching “bedrock” (a remarkably embodied physical metaphor) in and through our processes of justification. He writes (quoted by Gill) that the end of a justification process “is not an ungrounded presupposition: it is an ungrounded way of acting” (117). In Gill’s words, “The grounds for our justificatory processes, as well of our various language-games, is our common social activity, and while no justifications for these can or need be articulated, they reveal themselves tacitly in the course of our joint behavior patterns—they *show* themselves even though they cannot and need not be *said*” (117). This common

social activity, of course, revolves around our embodiment.

Some final thoughts about chapter three: this chapter seems to have a little more unity than the previous two chapters. Yet its title, “Embodiment: Integral and Axial,” strikes me as somewhat obscure and abstract in relation to the content; I’m left somewhat unclear about what it is supposed to mean, due probably to irrelevant connotations that the words continue to carry in my own mind, despite Gill’s repeated use of them in relation to our embodiment. The “lived body” (Merleau-Ponty’s phrase, though Gill doesn’t use it) is central and crucial to a deep postmodern sensibility; and, despite its elusive and tacit role, all else revolves around it. I think that is what Gill’s phrase basically means, but I’m left a little unsure.

Chapter four takes up the theme of knowing, first in Polanyi, then Wittgenstein, Whitehead, and finally Merleau-Ponty. The chapter claims to build upon Gill’s account of Polanyi’s theory of tacit knowing, and epistemology, in Gill’s estimation, is perhaps the most crucial element that distinguishes both “various forms of postmodernist thought from both traditionalist and modernist approaches” and “deep, constructivist postmodernism” from “its deconstructive counterpart” (119). These introductory remarks led me to expect Gill’s best work both in the first section on Polanyi and throughout the chapter. Unfortunately, on my reading, it seems to be one of the weaker parts of the book.

In setting out what he calls “the dynamics”⁶ of tacit knowing according to Polanyi, Gill immediately proceeds to lay out a geometric grid of three “dimensions” or “continua” (later identified as “vectors” because of their directionality) of human experience, which he presents as if it were Polanyi’s own analysis: first, there is an “awareness dimension” extending between subsidiary and focal poles (which Gill claims can equally well apply in a perceptual or a conceptual context), or between proximal and distal poles, or between attending-from and attending-to poles. He states that “what is focal in one situation may well be subsidiary in another, and vice versa, but no factor can be both focal and subsidiary at the same time” (121).⁷ Second, there is an “activity dimension” extending between bodily and “conceptual” (or “mental”) poles. Polanyi insists, writes Gill, that we are “always *in* or *with* our bodies in whatever activity we may be engaged” (122). Third, there is a “cognitivity dimension” extending between “tacit knowing” and “explicit knowing.” He explains that the third dimension “emerges from the intersection” of the first two: the convergence of focal awareness and conceptual activity yields “explicit knowledge” while the convergence of subsidiary awareness and bodily activity yields “tacit knowledge.” He then visually presents all three in the form of a diagram of three geometric axes which he says “should help make all of these distinctions and relationships at least adequately clear” (122). Note how Gill presents this, his own secondary analysis as if it were Polanyi’s own: “Having laid out the basic dynamics of the interaction between the awareness and activity dimensions of human experience, and having indicated how the two dimensions intersect and interact to produce the cognitivity dimension of human experience, Polanyi went ahead to delineate the particular features of the two poles of this latter dimension, those of explicit and tacit knowing, respectively” (123).

Gill’s portrayal of Polanyi is quite different from Polanyi’s own accounts as I read them, which start and develop by way of considering concrete examples of knowing familiar to us about most of which we know quite well but cannot specify, not abstract dimensions all of whose features are rendered specifiably explicit in an analysis or diagram presented in the third person (despite being about the tacit). It is in retrospect that Polanyi identifies the from-to, subsidiary-focal, proximal-distal, and gestalt-integrative aspects of awareness of the examples he cites, not in prospect. Though he might have, he does not differentiate a separate “activity” dimension (with bodily and conceptual poles) at all, nor a “cognitivity” dimension. Instead, he points out

that most of the subsidiary particulars from which we attend are in our bodies as we live and attend to other things from within them, and these are for the most part unspecifiable (at least by ourselves). When he talks about the conceptual aspects of our knowing, it is in connection with what is rendered explicit via the representative capacity of language and symbols. But more importantly, strictly speaking Polanyi does not as a result of his analysis present explicit knowing as if it were a different sort of thing than tacit knowing, even as opposite poles along a continuum (though occasionally to get his analysis off the ground, so to speak, he does speak as if the two were different things). Rather, Polanyi is intent upon bringing to light tacit aspects of every instance and feature of whatever we might suppose is explicit in knowing of whatever sort—i.e., the *tacit dimension* of our supposedly explicit knowledge. Moreover, the tacit aspects of which Polanyi speaks are not just the subsidiary aspects located within our bodies or the particulars of a physiognomy that we may be contemplating; they also include tacit intimations of as yet undisclosed aspects of that to which we are attending, the ways we reach out and indwell in a deepening acquaintance relationship with the things that occupy our attention, the way we attend from what has been heretofore rendered explicit (including scientific theories) as instruments of the reach of our imagination to discover new aspects of the reality partially grasped in the explicit account, and the mentoring way that skillful knowing is transmitted in traditions of expertise. For Polanyi, some knowledge is entirely tacit, but none is entirely explicit; what is explicit is not a separate or distinct kind of knowledge from tacit knowledge but is at best an aspect of the tacit knowledge of some person or persons.

Happily, Gill goes on in the latter part of the chapter to discuss a broad array of examples of tacit knowing of the sort that Polanyi cites, both everyday and scientific, and an account of how knowledge is acquired and authenticated basically in line with Polanyi's own account (though he does speak one more time of the "cognitive continuum extending and operating between the poles of explicit and tacit knowledge" [126] as one of the two major points stressed in all of Polanyi's writings on human knowing). Gill even quotes Polanyi saying "no knowledge can be wholly explicit" (125). There he stresses how, for Polanyi, tacit knowing is "logically prior to" and "more fundamental than" explicit knowing (127). He concludes that while many may suppose that taking the foundation of all our knowing to rest in a tacit dimension that we can never fully articulate or render explicitly justifiable will lead to skepticism, nevertheless "the reliability and veridicality of our claims to tacit knowing *show* themselves within the warp and weft of the fabric of our common social interaction" (128).

Gill's account of Wittgenstein's contribution to a deep postmodern epistemology draws on Wittgenstein's final work, *On Certainty*, which focuses on when is it reasonable and when unreasonable to raise doubts about knowledge claims such as that the external world exists. In this work, Wittgenstein takes on the critical project of modern philosophical method—namely, *to doubt claims unless and until they have been proven true*. That project has supposed that some sort of foundation of absolute certainty must first be established for any claim to knowledge to be credible. To solve this issue Wittgenstein turns to an examination of the language-game in which talk about doubting arises, for it makes no sense to doubt outside of such a context and for no specific reason. Nor does establishing absolute certainty or reasoning from such a condition have a role to play in the game. Being certain in the sense of being sure or confident, of course, does have a role to play, but this is a matter of affirming that one is in a position to know, that one has good reasons for claiming to know, and that others may rely on one's word. There the key is establishing the reliability of the judgment about the matter in question when there is some reason to question it. Doubting always presupposes a great many things that are not doubted and so appropriately comes only after and in a context of belief. Somewhere we must begin, in the middle as it were, with non-doubting in the midst of our common social life. In nearly all cases of claims

to knowledge, we take a person's statements to be true unless we have specific reasons to doubt them. In that case, the good reasons we will have for doubting rest on the confidence we have in the processes of making good judgments that we share together. That is to say, "The grounds of our justificatory processes . . . is our common social activities, and while no justifications for these need or even *can* be given, they reveal themselves tacitly in the course of our interactive behavior" (131). Toward the end of this section, Gill draws on Wittgenstein's deep postmodern view to respond to Richard Rorty's deconstructive postmodern attempt to move beyond mere skepticism about the possibility of finding ultimate truth by denying that the search for truth, because there is no final definition or criterion, is itself a meaningful enterprise. Despite Rorty's assumption that the later Wittgenstein supported his dismissal of philosophical questions as meaningless, Gill points out how Wittgenstein claimed that "philosophical problems, while not being strictly factual or logical in nature, do involve conceptual confusions that are both serious and resolvable." (134).

Whitehead's view on epistemology, Gill confesses, given Whitehead's idiosyncratic terminology, is almost overwhelmingly difficult to sort out.⁸ Accordingly, I found it difficult to follow Gill's own exposition. In brief compass, Whitehead's view seems to come down to this: in every cognitive context, "Both the epistemological subject and the epistemological object help define and constitute one another by means of their mutual, interactive and reciprocal relationship" (138). Relationships and processes such as this one in Whitehead's vision of reality, which he calls "prehensions," are prior and deeper and more real than any distinction we might make between subject and object as more or less unchanging, autonomous entities. It is by failing to appreciate this primordial interactive relationship between knower and known that virtually all the epistemological conundrums of modern philosophy derive.

Merleau-Ponty proceeds in a somewhat similar way to Whitehead in critiquing both the empiricist and rationalist schools of modern philosophy in their failure to recognize "the symbiotic and interactive quality of perception" (143)—the former in its psychological atomism that overlooks the holistic or *gestalten* character of perception, and the latter in its conception of the perceiving subject as a passive and static recipient cut off from the real world and incapable of accounting for error. For Merleau-Ponty, the gap between knower and known is "eliminated before it arises by virtue of our embodied involvement in and with the world, both physically [especially tactilely and kinesthetically] and socially" (145). Quoting Merleau-Ponty, "it is a fact that I believe myself to be first of all surrounded by my body, involved in the world, situated in the here and now" (145). This is the ground of my confidence in my own perceptions and judgments and those of others; there is nothing farther back or deeper down to which I can resort. In reaching this view, Merleau-Ponty follows in the track of Edmund Husserl's formulation of phenomenology, though he refines and reformulates it a good deal. Husserl's project was to return from all of our philosophical preconceptions and abstractions to a careful examination and description of the way things are given to begin with in our experience. He imagined he could make this project into a systematic science, but Merleau-Ponty pointed out that going completely back to the beginning of the givenness of things is not possible, for we are always already engaged. At most, as has been already stated, we can only "slacken the intentional threads" which attach us to the world and, in that slackening, bring to our notice how things arise in our experience out of our interactive engagement with them in the world. In the same way, our knowledge of other minds is mediated to us through our embodied engagement with them even before we come to think of our own selves as distinct persons.

A final thought about chapter four: Gill's title of the chapter is "Knowing: Dynamic and Tacit." Somehow I don't think the subtitle quite captures the overall thrust of the chapter, which is that for deep postmodern thought our knowing of whatever sort rests upon a ground of *pre-reflective* and *acritical*⁹ bodily

confidence in our connection with the world and our access to things, including ourselves. Being pre-reflective and acritical, it isn't readily available for our critical inspection and analysis, but we cannot help taking it for granted in all that we do and say in our ordinary lives.

A concluding chapter/epilogue takes up J. L. Austin's enterprise of "linguistic phenomenology." Gill takes it to be another example of deep postmodernism, complementing, summing up, and reinforcing the understandings of the four thinkers he has covered in his book. Austin's focus is upon uses of language that seek to perform actions in the world as distinct from presuming that the principal purpose of language is to describe states of affairs. Specifically, he gives special attention to "the use of conventional phrases in well-prescribed circumstances in order to perform an action *by uttering* them" (152). These he called "performative utterances" or "performatives." The overall point of his later work is that all speech is best understood as an activity consisting of different dimensions or "forces" that taken in context are best not evaluated simply as to their truth or falsity but also in terms of their appropriateness to other parameters of judgment. To get at these considerations, we need to pay careful attention to the details that normally go without notice of the many different sorts of what we say, when, and in what circumstances. In Austin's words, "Certainly, then, ordinary language is *not* the last word: in principle it can everywhere be supplemented and improved upon and superseded. Only remember, it is the *first* word" (161). This enterprise, with some hesitation, he ventured to call "linguistic phenomenology." It has several close affinities with the later Wittgenstein's methodology of examining ordinary usages of language and Merleau-Ponty's "slackening the intentional threads," Whitehead's idea of coming to know the world by being participants in its continuously unfolding evolution, and Polanyi's accrediting of our tacit cognitive powers in general, even when and as we question them in any particular instance. In his essay "Other Minds," Austin brings out how saying "I know" has a performative logic quite similar to saying "I promise." It is quite distinct from a description or a report. Even if it may turn out not to be the case that I know, as long as I have good reason to think that it is so and genuinely believe it to be I am entitled to claim that I do, for saying so is (in Austin's words) to "*give others my word: I give others my authority or saying [what I claim to know]*" (160). "This posture . . . enables one to stand in between the seeming arrogance of modernism, on the one hand, and the skeptical, 'hermeneutical suspicion' of deconstructive postmodernism, on the other hand . . . [I]t enables us to both acknowledge and make use of the dynamics of our knowledge of the world around us, including one another, without claiming to have 'arrived' at the final truth concerning reality" (155).

Some final reflections: I am still unconvinced that the phrase "deep postmodernism" or "constructive postmodernism" quite does the job that "post-critical" does to name what these five thinkers together represent. Perhaps I am too familiar with Polanyi's phrase and too enamored with its connotations. It clearly is not something with which intellectuals today are widely familiar, whereas in referring to "postmodernism" Gill makes use of a widely known term. But the phrase does name the central critical project of modernity—namely, to think critically in such a way that nothing is taken for granted, that there is given no place for the faith that the world and our knowledge of it is as we have pre-critically taken it to be—as something that these thinkers are convinced lies at the root of the problems of modernity and have sought to go beyond it. A *post-critical* sensibility is one where we are able confidently to reassume our engagements and passions and deepest convictions—indeed, our epistemological faith—though now chastened and more humble after having passed through the baptism of fire of modern critical thought.

Overall, *Deep Postmodernism* is an important book full of rich insight and correlations between these thinkers, more for what it attempts than for what it ultimately accomplishes. Few if any other books

have sought to set out in one place the beachhead that these five thinkers (and others akin to them) have established in overcoming the philosophically sterile dead-ends that modernist and postmodernist thought have bequeathed us.¹⁰ Jerry, I congratulate and thank you for what you have done. I hope it inspires others to continue this good work.

Endnotes

¹Gill doesn't make use of the term "sensibility," however. At the end of the introduction to his book he acknowledges that David Ray Griffin's phrase, *constructive postmodern* refers to much of the same thing as *deep postmodern* (25). Griffin identifies the view he advocates as "constructive postmodernism" in opposition to "deconstructive postmodernism." At a few points late in the book, Gill makes use of Griffin's phrase to refer to the four thinkers he is treating as "constructive" or "constructivist postmodern thinkers" (e.g., 118), sometimes in opposition to "deconstructive postmodernism." His use of these words rather than "deep postmodernism" at this late stage of the book suggests to me that in an earlier version of the manuscript he may have been using the phrase "constructive" and/or "constructivist postmodernism" throughout and that these passages were overlooked in the editing process. Very late in the book and in passing Gill mentions, with very little discussion, Polanyi's use of the phrase *post-critical* to refer to his own philosophy as getting at the same thing as *deep postmodern* (126).

²These three modernist assumptions, as Gill points out, are embodied in Wittgenstein's *Tractatus* (see p. 36 of Gill's book), which Wittgenstein completely repudiates in his *Philosophical Investigations* and later writings.

³For example, "woven fabric" with "warp and weft" or "warp and woof," "axis"/"axial," "polysignificant," "nexus," "diachronic" vs. "synchronic," "symbiotic"/"symbiosis," a "di-polar"/"bipolar" character of relations, "vector"/"vectorial," "vortex," "nodal point," "pivot"/"pivotal," "dynamics," "integral," among still others. Often his own metaphors are introduced in a casual way that seems to presume that the reader will understand perfectly well their meaning and have few if any qualms about the connotations they may bear in relation to their current context.

⁴Gill is a little confusing in his use of the word "traditionalist" when used to modify a set of ideas. Sometimes, he seems to be referring to pre-modern philosophical ideas (as if they were a single tradition) and at other times he uses it in reference to mainstream modernist ideas (especially Descartes, Hume, and Kant). At still another point, he uses it in reference to postmodernists.

⁵In using this word in reference to Polanyi, Gill gives no explanation or reference to social constructivist theory from which Polanyi explicitly distanced himself.

⁶I remain puzzled by Gill's use of this concept/metaphor. Mostly, what Gill has to talk about at this particular juncture of the book is his understanding of the *structure* of knowing, in which "tacit knowing" (as he understands it) plays a major part. This account is remarkably static rather than dynamic (I take these two concepts to be commonsensically opposed), and considerably different from and removed from Polanyi's own analysis of the structure of tacit knowing in *The Tacit Dimension*. Much of what I understand to be involved in tacit knowing is unfortunately absent. [For my own views, the reader may consult my article, "Construing Polanyi's Tacit Knowing as Knowing by Acquaintance Rather than Knowing by Representation: Some Implications," *Tradition and Discovery* 29:2 (2002-2003): 26-43.] I should say that Gill's use of "dynamics" later in the chapter (e.g., 125) exhibits a more active and interactive meaning.

⁷Actually, for Polanyi, what is subsidiary very often cannot be made focal, and not just for oneself.

⁸Because of these difficulties, I do not understand why Gill chooses not to draw upon any of the numerous helpful commentaries and secondary expositions of Whitehead by scholars who have wrestled at

length with Whitehead's metaphysical system and terminology.

⁹"Pre-reflective" is a concept Merleau-Ponty makes much use of and it fits well with much of Polanyi's understanding of the tacit underpinnings of our knowledge, though Gill doesn't make use of it. Similarly, "acritical" is a concept Polanyi makes use of that is particularly relevant to what Gill is driving at, though he doesn't make use of it either. Polanyi distinguishes "acritical" from both "uncritical" (or "precritical") and "critical" to refer to convictions that are not only prior to critical reflection (i.e., are pre-reflective) but are themselves presupposed by critical reflection.

¹⁰There are several editorial oversights in the book. One somewhat disturbing one appears early on (14) where Gill speaks of Derrida introducing the notion of "*différance*" but which Gill's spell-check editor appears to have mistakenly rendered "difference," making Derrida's point almost incomprehensible. Another, late in the book, occurs when Gill presents J. L. Austin's three fold analysis of a speech act (153). There Gill mistakenly identifies a speech act's "illocutionary force" as "*why* it is said." To the contrary, Austin means by "illocution" the *action* that is conventionally performed by saying what is said in these certain circumstances (e.g., making a promise). Its "force" is what effects or accomplishes this conventional (ritual) performance, not "*why*" it is said. Similarly, "locution," not "locutionary force," is *what* is said (e.g., saying "I promise . . ."), whereas "locutionary force" is the saying of it (or what produces the saying). And "perlocution," not "perlocutionary force," is the overall results or effects resulting from the saying (e.g. having someone take me at my word, among other things), whereas "perlocutionary force" is the bringing about of these results (or what produces them). In other places in Gill's book, words or phrases occasionally appear to be missing or a wrong word occurs in place of another. Sometimes misspellings occur. At one point, "Ludwig" occurs where "Alfred North" should occur.

Response to David Rutledge and Dale Cannon

Jerry Gill

ABSTRACT Key Words: Michael Polanyi, Whitehead, Merleau-Ponty, Wittgenstein, postmodernism.

This response to review essays (covering all of my major scholarly writing) by David Rutledge and Dale Cannon appreciatively affirms most points emphasized in their respective analyses. I acknowledge that my scholarship has served my teaching, as Rutledge notes; I frequently use diagrams because I believe they usually are pedagogically very effective. My writing has strong interdisciplinary overtones and I have special interest in religion, art and education. Slowly, I have worked to integrate the ideas of Polanyi and other important thinkers emphasized by my teacher William Poteat, and, as Cannon recognizes, this is not an easy task. I frequently use the term “postmodern” rather than Polanyi’s “post-critical” because the term engages the current philosophical dialogue outside of Polanyi circles. I believe that metaphorical thinking and speaking is the heart of our embodied, everyday discourse and it liberates our language and thought from the restrictions imposed by the “pseudo-objectivism” of the standard way of carrying on philosophical endeavor. I have focused on the epistemological rather than the existential aspects of Polanyi’s thought.

I must begin by expressing my very deep gratitude to everyone who brought this event about. I am deeply humbled by and pleased with what David and Dale have written. I also have learned a good deal about myself and my own ideas.

Let me begin by saying that I agree with everything David says concerning the limitations of my overall project. He has it right that I have always seen myself primarily as a teacher rather than as a scholar. It is the work in the classroom that has shaped all my writing. This accounts for my efforts to summarize briefly the thought of many complex thinkers, my frequent repetition of certain schema, and my dependence on charts and diagrams. I still believe that the use of such graphics strongly facilitates the students’ grasping of the main aspects of an issue.

In this regard I have to say that even though Bill Poteat did not care much for my diagrams, especially the one charting the main dynamics of Polanyi’s notion of tacit knowing, my students have always found them useful points of departure. Moreover, Michael himself told me that he thought that particular one was both useful and appropriate for comprehending the main thrust of his epistemology.

Also, David is surely right that I have a tendency to think “architecturally” or programmatically. That is to say, I am continually interested in what he calls the “big picture” with regard to the issues and thinkers involved in a given issue. As such, I am not nearly as interested in the details of a thinker’s overall thought as I am in the main drive of his or her approach to the subject. In short, I am not a “scholar’s scholar”, but rather an undergraduate teacher.

The contours of my thought have, as well, been shaped by my strong interest in interdisciplinary inter-connections. I think Polanyi’s insights are extremely valuable when applied to such fields as religion, art, and education. All three of these fields have played an important role in my own life, and thus I have been

drawn to try to understand them by means of Polanyi's angle of approach. The price one pays for this broad-scoped posture is inevitably less attention to detail.

Then there is the matter of the effect of my own life span on the development of my thinking. I published my first journal article in 1960 when I was just starting out as a teacher. My work with Bill Poteat, which began some four years later, opened many doors for me, but it took some time before I was able to take advantage of these fresh perspectives in the development of my own thought. I think his greatest impact on me was the way he sought to integrate the insights of such diverse thinkers as Kierkegaard, Merleau-Ponty, Wittgenstein, and Polanyi. This is my 53rd year as a teacher/thinker and I am still exploring the implications of the intersection of their respective perspectives.

It is in this light that I would explain my "short shrift" treatment of Kierkegaard. My *On Knowing God*, to which David refers, was an early effort to wrestle with these issues. In my later essay, "Faith Is As Faith Does", in Robert Perkins' volume, *Kierkegaard's Fear and Trembling: Critical Appraisals* (1981), I tried to make a fresh case for interpreting Kierkegaard's authorship. I suggest there that we should take his pseudonyms far more seriously than most interpreters have. I see him in control of his overall authorship, somewhat like Shakespeare, with his respective pseudonymous "authors" serving as his players expressing their own points of view rather than that of Kierkegaard. If we fail to interpret Kierkegaard in this way, I find his "blind faith" posture both irresponsible and irreligious.

Finally, David should rest assured that there are, indeed, more of my efforts yet to come. Unfortunately, some of these end up on the shelf for want of a publisher. I keep telling my wife Mari that "this is my last book", but she just laughs.

Now, to respond to Dale's extremely thorough and provocative review of my *Deep Postmodernism* book. It is obvious that Dale has gone over this book with a fine-toothed comb, not only detailing its content very carefully but interacting with it from his own perspective on these four thinkers. For this I am very grateful. Moreover, it should be obvious to the readers why it was so easy for me to give you "A" grades in all the courses you took with me fifty some years ago during my beginning years as a teacher. Our lasting relationship continues to be a great gift to me.

Now, with regard to my choice of the term 'postmodern' instead of 'post critical', I can only say that while I agree that the latter term is perhaps every bit as insightful with regard to the issues involved, especially in relation to Polanyi's thought, I think the former term engages the current philosophical dialogue outside of Polanyian circles more directly.

Also, about my pervasive use, or overuse, of metaphors rather than more straight-forward analytic terminology when unpacking the thought of these four seminal thinkers, it seems to me that it is precisely this strategy that is required when one is seeking to overcome both the traditionalist and modernist way of approaching the issues involved. Metaphorical thinking and speaking, which lies at the heart of our embodied, everyday discourse, liberates our language and thus our thought from the restrictions imposed by the "pseudo-objectivism" of the standard way of carrying on philosophical endeavor.

About my inability to thoroughly understand the intricacies of Whitehead's thought, as well as my failure to refer to the scholarly explanations of his philosophy (cf. your footnote 8), I must admit that I find

these “explanations” even more prolix and obscure than Whitehead’s own efforts. I have tried to do my best in this regard.

Finally, about my overall understanding of Polanyi’s thought. In my own work I have admittedly usually focused on the more narrowly epistemological aspects of his work and not upon its broader, more “existential”, if you will, aspects as have both you, Dale, and our mentor William Poteat. I guess I can only say that I have not written the book that you and/or Bill would have written.

To be more specific, Dale, you are correct that I should have prefaced my account of Polanyi’s insights into tacit knowing by saying that this is how I have come to understand them. Nevertheless, I must say that on two separate occasions Michael himself commented to me that he thought my diagram of the dynamics of his notion of tacit knowing was both accurate and helpful. I have found in working with students it has proven useful to begin with the diagram and its various components before moving on to the more experiential examples and explanations.

In conclusion let me say that this whole undertaking (reviewing my life’s scholarship) leaves me rather stunned. That others, especially such esteemed colleagues, would find my own thought worthy of this sort of examination is truly humbling. Thank you all from the bottom of my heart.

REVIEWS

David J. Kettle, *Western Culture in Gospel Context: Towards the Conversion of the West: Theological Bearings for Mission and Spirituality*. Eugene, OR: Cascade, 2011. Pp. xvi + 380. ISBN 13: 978-1-61097-184-3. \$44.00 pb.

The author's *magnum opus* *Western Culture* brims with theses and discussions, apparently the fruit of a thoughtful, caring, lifelong Anglican parish ministry shaped with a view to global mission and cultural engagement.¹ As its title suggests, this book articulates a Christian theology of mission and spirituality. It offers a rich way of seeing and engaging the world, beckoning the reader to a lifetime of processing. Indeed, the book offers a lengthy course of study, if not an entire philosophy of ministry, for a church. It could well be repackaged as one smallish book and 10 pamphlets.

The book is dense and lengthy. It has taken me some effort to understand its key claims. But the main reason that most churches might not be inclined to tackle the book is the very reason Kettle writes it. Kettle argues that Western culture has domesticated the Gospel of Christ, and that this domestication has resulted from its having imbibed, along with culture at large, the defective epistemological vision of the Enlightenment's theoretical paradigm. It is a dark time in the history of Christianity, says Kettle.

Conversion to Christ—the Christian Gospel—thus is sorely misunderstood. Even for the convert, the experience is soon betrayed. The Gospel's dynamic potential for engaging and reshaping culture has been damagingly sidelined. Kettle, therefore, writes to offer a fresh account of the Gospel that intertwines integrally with a fresh epistemology—intertwines in such a way that the Gospel (knowing and being known by God) shapes epistemology (all knowing), rather than the logical inversion of epistemology shaping

the Gospel.

People conversant with Polanyi's subsidiary-focal integration have therein been partially prepared to comprehend Kettle's account of the gospel.² In subsidiary-focal integration, the core dynamic of human knowing, the knower subsidiarily relies on clues to apprehend a focal pattern that transformatively reinterprets the clues as it binds them together in a superseding vision of reality. Coming to know the not-yet-known requires a risky, hope-born, responsible commitment; in this way knowing is supremely active. But integration turns the tables, and active becomes passive, as the knower submits to reality.

Since my first reading of Polanyi, I have felt that his account made profound sense of Christian conversion. To know God is to be known transformatively by Him. It takes risk and commitment, and it rightly involves an experience of what I call sweet terror. The Polanyian account indicates that a profound integration can radically change the significance and meaning of everything in your life. You find yourself in the same place you were, but your surroundings and your person are transformed. Kettle's proposals accord with my perception.

Kettle creatively defines the Gospel of Christ as "the approach of God as our ultimate context." *Context* might better be understood as *world*, in the Heideggerian sense. We should also connect it with the Polanyian integrative pattern. It is the reality that makes transformative sense of the clues, including me. God's reality changes—ought to change—everything. To know God, Kettle says, is to know Him knowing ourselves and our world. The from-to of subsidiary-focal integration, for Kettle, proves to be a lively two-way street. We may locate ourselves at the creaturely, proximal, pole; in grace, however, God invites us to locate ourselves at the distal pole, so to speak, to take

his world as ours (which it is most deeply): to position ourselves in his context or integration and engage the world from it. This bears on cultural engagement and mission. But do not mistakenly think this involves some dominating, tyrannizing view point. Knowing God cannot be a matter of impersonal knowledge, says Kettle. Knowing and being known by God involves us in radical submission and trust, immersion in mystery; for Jesus Christ, radical submission entailed horrific sacrifice.

Here are a couple other key motifs central to Kettle's account. First, *hospitality*. The approach of God as our ultimate context is definitively hospitable. He has welcomed and continues to welcome us, to be at home in his world. The approach of God is not a hostile takeover but an invitation to a feast—to communion. It is not oppressive; it is profoundly freeing. In this hospitable space we may become most fully ourselves and most fruitfully engaged with Him in the world and with others. But of course, to enter God's hospitable space is to find home, truly, but differently from what you might have been imagining.

Another: *breaking open*. When God approaches our context—our world, it isn't in order to fit into it, and it isn't in order to replace it. It is inevitably to break it open. Think here again of the transformative effect that an integration has on its clues, imbuing them with fresh meaning. Breaking open means transforming, taking what is there and making it more wonderfully itself. Kettle is careful to repeat that breaking open both preserves the receiving context and transforms it.³

Third: *signs*. The place in which God the host encounters us is the place which he breaks open. In this place we meet him, finding that this place is his and we are, and are in, his reality. That place is therein broken open. Any such "place"—whether the Eucharist, the earthly actions of Jesus Christ, his death and resurrection, the chemistry lab, a good book, the Holy Scriptures, a great friendship—any corner of the world or culture—has been or may prove to be such a place or sign. Experiences of beauty and goodness,

Kettle says, involve this; I would add that apprehension of truth does as well.

The Christian's life ought to be one of continual conversion in this sense, says Kettle. And like the hidden, slow, but inexorable progress of yeast leavening bread dough (here I use Jesus' picture of the kingdom), Christian conversion is ever breaking reality and culture open, graciously and hospitably.

Fourth, Kettle loves and suggests the metaphor of *sailing close-hauled*. To do this, I gather, is to point your sailboat into the wind, but slightly to the left or right of it. When you catch it, you know you have engaged reality, because you take off and skim across the water. It is an invigorating, satisfying feeling. Following Polanyi, engaging the real involves vectorial orienting; it is directional. In the ever-renewed coming of the Lord, we reorient—make continual course adjustments. We take *new bearings*—and fruitfully engage the real.

Fifth, *radical attentiveness*. This is the posture appropriate to apprehending God, or having been apprehended graciously by him. It involves ongoing, riskily trusting, openness to God. Kettle defines sin, by contrast, as *evasion* in either presumption or despair. Jesus, in his work on the cross, exhibited the ultimate refusal of evasion, underwent evasion's most horrific consequences, remaining radically open and attentive to God—and invited the most transformative breaking open of reality in his resurrection from death.

Radical attentiveness is thus humans' proper epistemic posture. But the Enlightenment's theoretical paradigm, as Kettle terms it, including its pretension to or rejection of "a God's-eye view," has entirely occluded any possibility of such a lively, personal engagement of and participation in the real. (It itself thus exhibits presumptive evasion of the approach of God.) If lived out consistently, not only God is left on the doorstep, but for everyone, reality is as well. As Polanyi said, on the theoretical paradigm, no scientific discovery could ever happen. But scientific discoveries do happen. (*Ergo*.) And to the point of the book, the

main key to redeeming the church of Christ from its domestication, to unleashing the Gospel to break open culture to the end of shalom, is fixing our epistemology to make the Gospel itself the epistemic paradigm.

This is Part I of the book, only a quarter of the book's length. Part II develops ten cultural orientations that intertwine with the West's defective epistemic vision. Once we have addressed the hermeneutical key of epistemology, says Kettle, these others offer points of entry through which the ever-renewing Gospel may hospitably break open human cultural and social contexts. The list indicates what Kettle is up to. My arrow may be read as "conversion to":

Sacred/secular → creation and new creation by God (Christian *saeculum*, a provisional, hospitable context for the secular);

Individualism/totalitarianism → community under God;

Enquiry (objective/subjective?) → attentiveness towards God;

Demonization and polarization (left/right) → divine bearings;

Consumerism → the abundance of God;

Tragic sense of life → the gospel of hope;

Personal fulfillment and spirituality → eternal life;

Rights and political correctness → God-given dignity;

Neoliberal capitalist ideology → commonweal of God;

Public facts/private values → sovereignty of God (the church is to host hospitable public space for the provisional secular domain in the name of Christ).

Each of these contains an extensive discussion and cultural engagement, meriting extended study. One need not agree wholesale with Kettle's specific stance on them to benefit from reorienting to his strategy, emulating his vision, and starting to sail close-hauled. If Kettle is right, the situation is dire, but the hope is real. As churches hear and respond, the dead may yet speak.

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¹In the tiny window of time between final manuscript submission and this book's publication, its author passed away. David Kettle did earlier write for *TAD* (21: 3, 27: 1, and 28:2)--we lament his passing. Additionally, he contributed to the Murray Rae collection, *Critical Conversations: Michael Polanyi and Christian Theology*.

²Kettle so presumes a Polanyian outlook that there are precious few actual references to Polanyi's texts. But obvious allusions to Polanyi's work include: from-to (dynamic, integrally held together; i.e., signs, involvement in mystery) (*passim*); clues (56); deeply personal dimensions of knowledge (responsiveness to God) (82); indwelling; integration; pattern (the context); (conversion as) an act of responsibility with universal intent (19); tacit commitments (of "deep culture," our orientation, our social imagination) (21); realism (the Christian faith sponsors the renewal of loving, demanding, pursuit of the real) (32, 81).

³Here is an example of my own to make the point. Pretend you are a piece of a 1000-piece jigsaw puzzle. Perhaps you are a lovely, muted, olive green. The approach of the puzzle doer sets you in her larger context, in which who you are is broken open transformatively: you are the reflection of holly in a burnished, candlelit, ancient pewter plate, an integral part of a festive Christmas grouping.

Anik Waldow, *David Hume and the Problem of Other Minds*. London/New York: Continuum, 2009. Pp. x+206. ISBN 0-8264-3304-9. \$44.95 pb.

In her book *David Hume and the Problem of Other Minds*, Anik Waldow argues that despite Hume's apparent skepticism he is capable of justifying a belief in other minds. She does this by demonstrating that, for Hume, our belief in other minds is a *natural belief* which never occasions mental irritation, and as such does not require correction through reason.

In order to establish this, Waldow begins, in chapter one, by explaining the role Hume's skepticism plays within a naturalistic project that seeks to contribute to the "advancement of knowledge" (7). At first glance Hume seems to hold that reason leads to

a skeptical destruction of our common sense beliefs (such as the existence of external objects), and undermines the possibility of knowledge. Yet, according to Waldow, Hume's purpose is instead to demonstrate the proper place of reason within inquiry. Waldow explains that, for Hume, reason is "indebted to our intuitions and natural beliefs" (37), in which the term "natural belief" is used to refer to those beliefs which cannot be established by reason but are nevertheless irresistible to the human mind (33-34). For instance, the "vulgar" espouse the natural belief, produced by the senses, that our perceptions are identical to unified external objects. On the other hand, Hume argues that reason clearly shows our perceptions to be interrupted and discontinuous, which demonstrates that they cannot be identical to a unified external object. Yet the philosophers' criticism of the naïve view of the vulgar is parasitic upon the very conception it criticizes. As Waldow points out, "it is the vulgar view that establishes sense perceptions as real objects. If we scrutinize this belief by an act of causal reasoning, we already need to have accepted the vulgar belief. Otherwise there would be nothing that reason could put to the test" (153). Thus it is the natural beliefs that provide the foundation for philosophical inquiry, and the role of skepticism is not to undermine knowledge but to "oppose speculation" (54). Waldow shows that, for Hume, the fact that a natural belief is not recommended by reason is not sufficient to show that belief is unjustified.

After discussing natural beliefs in general, Waldow moves to address our belief in other minds. She first answers how it is within a Humean framework that we can form such a belief (chapter two). Hume's "bundle" theory of mind would seem to preclude the possibility of having an idea of other minds insofar as we cannot have direct perception of another's mind (65). Yet, Waldow argues that Hume circumvents this issue with his notion of *sympathy*. This is the capacity we have to observe the behavior of another, form an idea of mental contents causing that behavior, and then convert that idea into an impression (79). Sympathy is important for Waldow because it involves attributing a mental cause to the physical actions of others (83).

What must be explained is how sympathy can allow for attributions of mental content to other's physical actions, thereby producing a general conception of mind. Waldow's answer is that "[w]hen Hume describes the mechanism of sympathy, he places the subject in a world that is inhabited by other subjects. From the very beginning it is thus assumed that there are other mind [sic] and the only thing that Hume ventures to explain are the cognitive channels through which the conception of other minds proceeds" (103). In order to explain how, through sympathy, the observation of the other's behavior can provide us with ideas about another's mental contents, we must assume that the world is in fact populated with other minds. For Waldow, this shows that quasi-Cartesian, solipsistic construal of Hume is misplaced insofar as his conception of mind implies the presence of other subjects (103).

While chapter two explains how the belief in other minds comes about, in chapter three Waldow turns to the question of whether this belief is justified. Hume, she writes, does not hold that all natural beliefs are justified since he allows that we can use reflection to recognize the flaws with these beliefs (151). The criterion of justified natural belief, according to Waldow, is that a belief does not result in any mental irritation and conflict (154). For example, Waldow invites the reader to imagine that scientists have created a sophisticated robot that acts and appears like actual humans in every respect except that the robot's laughter is followed by an outbreak of anger. In this case, we would initially observe the behavior of the robot, note the resemblance that the robot shares with us, and naturally conclude from sympathy that it has a mind. Yet, over time this initial belief would cause mental irritation when the robot acted idiosyncratically (155). Such irritation would occur because the belief that the robot had a mind would inhibit successful interaction (155), and would result in conflicting beliefs (158). Thus, as long as a natural belief promotes successful interaction and coheres with our existing body of beliefs it is not in need of correction by reflection and reason. In sum, Hume does not view reason as that which legitimizes beliefs; instead, Hume views reason "as a problem-solving instrument that needs to be consulted only in

the event of irritation and conflict” (167). Once a belief causes mental irritation, reason is warranted in setting out to correct it. However, because the belief in other minds does not engender any genuine doubt or mental irritation, there is no impetus to correct it with the use of reason (163). The belief in other minds, just as our belief in external objects, is exempt from the critique of reason so long as it coheres well with our overall body of belief, and promotes successful interaction.

Waldow’s book is excellent for its clear and detailed explanation of how Hume’s negative skeptical arguments can be integrated into his positive naturalistic conclusions about the formation of justified beliefs. She does a good job of placing Hume within the current philosophical literature on the problem of other minds, which makes her book of interest to more than just Hume scholars. My main criticism regards her claim that Hume believes reflection is capable of controlling and revising natural beliefs, a claim which opposes the common view, found in Kemp Smith (1949) and Gaskin (1974), that natural beliefs are irresistible (151). In favor of this interpretation, Waldow cites a passage in which Hume states that “very little reflection and philosophy is sufficient to make us perceive the fallacy” of the vulgar view of external existence (*Treatise* [hereafter *T*] 210). In my view, this passage does show that we can use reason to notice flaws in our natural beliefs, but not that reason can subvert natural beliefs. For instance, Hume states that those who deny the continued existence of external objects “maintained that opinion in words only, and were never able to bring themselves to sincerely believe it” (*T* 214). The fact that Hume thinks those who claim to have subverted the belief in external objects have done so “in words only” shows that one’s cognizance (at least during short periods of reflection) of a belief’s rational faults is not sufficient to eradicate it. This objection would not seemingly modify Waldow’s main claim that a natural belief in other minds is justified insofar as it promotes successful interaction and is consistent with our other beliefs. However, if correct, it may entail modification of how she conceives of epistemic responsibility for natural beliefs.

Additionally, Waldow’s interpretation highlights important aspects of Hume’s thought which may be amenable to Polanyi’s project. This may be a surprising claim, given Polanyi’s explicit criticisms of Hume as one who ascribed to the method of doubt. Even though, as Polanyi states in *Personal Knowledge*, Hume “openly chose to brush aside the conclusions of his own scepticism at those points where he did not think he could honestly follow them” (PK 270), Hume did not genuinely reject his skepticism. Because he failed to recognize that putting aside skepticism required expressing his “personal beliefs,” Hume’s “dissent from skepticism was strictly unofficial, forming no explicit part of his philosophy” (PK 270).

Yet if Waldow is correct, then Hume’s rejection of skepticism is not merely a peripheral afterthought, but instead a substantial reflection which shows that knowledge is fundamentally dependent on human subjects. Once this more nuanced understanding of Hume’s views is recognized, an interesting convergence with Polanyi appears. As opposed to specifying some objective and impersonal criteria for truth, Polanyi states that “[w]e might have a better chance of achieving the purpose of epistemological reflection if we asked ourselves instead why we do believe certain statements of fact” (PK 256). Waldow’s book shows that there may be interesting parallels between Hume and Polanyi on this point. As she argues, Hume is greatly concerned with identifying the faculties of human psychology that allow for the natural belief in other minds. Furthermore Hume holds that such natural beliefs, which depend upon facts about the human subject, are necessary for the functioning of reason and the “advancement of knowledge.” Of course, Hume has an important difference from Polanyi insofar as he believes the elements of cognition which allow for knowledge are universally shared facts about human psychology (thereby eschewing the particularity which Polanyi believes is essential to personal knowledge). Still Waldow’s book demonstrates that both Hume and Polanyi can be placed within a tradition of thought that posits reason as fundamentally dependent upon the characteristics of human subjects. My reflections on this point have been necessarily brief, but this sug-

gestion may provide fertile ground for those interested in the connection between Polanyi and Hume.¹

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