

From Tacit Knowing to a Theory of Faith¹

Richard L. Gelwick

Key words: Michael Polanyi, tacit knowing, a theory of faith

ABSTRACT

Both Polanyi and many of his interpreters saw the implications of tacit knowing for restoring the Augustinian principle that faith precedes understanding. Polanyi's contribution to the rediscovery of the essential role of faith in the achievement of knowledge has, however, had a limited impact in science, philosophy, and in Christian theology. Polanyi's epistemological contribution, nevertheless, is much more than a restoration and a reformulation of tradition. Tacit knowing provides a new vehicle for deeper interpersonal understanding.

This essay is a beginning attempt to propose how tacit knowing provides a theory of faith and why a new theory is now needed. Just as process philosophy changes metaphysics, tacit knowing changes epistemology. Just as a change in metaphysics reorients concepts, language, perspective, and worldview, tacit knowing affects basic terms and worldview. One of these changes is to provide a new way of discussing the relation between faith as trust or *fides qua creditur* and faith as a set of beliefs or *fides quae creditur* so that faith is replaced by the tacit dimension. A second change then is to widen the range of faith from a religious framework to the total framework of knowing or epistemology. A third change is to coordinate and integrate the vast contributions of evolutionary biology and neuroscience into the general epistemology of our age. These changes are all nascent in Polanyi's writing, but await an adequate theoretical development as a theory of faith.

1. Polanyi's epistemology developed from his experience over his lifetime and led to his theory of tacit knowing, the central principle of his philosophy. His four major books show a development toward tacit knowing and then an application to the achievement of meaning in society.

- a. His first book length treatment of the epistemological problem of our time was in *Science, Faith and Society* in 1946. The book is what I call his inaugural address for his epistemological career. Within this elegant discussion, many of the primary notions that will later flower into tacit knowing are present. Chief among his discussions are the fiduciary components in traditional authority, a community of inquirers, apprenticeship, intuition, and the process of scientific discovery. Guiding Polanyi's argument for political and intellectual freedom is the role of faith in guiding us toward finding and serving the truth. He speaks passionately for a free society guided by commitment to transcendent ideals. (Polanyi once told me that T.S. Eliot said that he thought that *Science, Faith and Society* read with the excitement of a novel.) In this book, Polanyi has not yet found the heart of his epistemology: how a society confused and often dominated by a mistaken understanding of science can be reformed through a new, improved theory of knowledge.
- b. Freed from teaching duties, Polanyi produced over a number of years many articles, radio addresses, and lectures (including the Gifford Lectures of 1951-52) that culminated in the publication of *Personal Knowledge* in 1958. The problems raised in *Science, Faith and Society* are approached with the general thesis that all knowledge from the most exact sciences to religions and worldviews is personal and rooted in tacit components and coefficients. *Personal Knowledge* is a panoramic laboratory of analysis and demonstration of the evidence for the tacit dimension in Polanyi's epis-

temology. Here Polanyi boldly aligns his fundamental findings from across the academic fields with the principle of the Christian traditions that faith precedes understanding and also that growth of knowledge and discovery are like the Pauline paradigm of grace and faith (*PK*, 266, 285). *Personal Knowledge* earned for Polanyi an important reputation in universities, professional societies, and international conferences; he received visiting professorships and appointments in advanced studies groups such as the Center For Advanced Studies at Stanford University. He chaired grant-funded programs such as the several conferences sponsored by the Study Group on the Foundations of Cultural Unity and the Study Group on the Unity of Knowledge. As Polanyi lectured across the world, he kept working and trying to condense into theoretical simplicity his driving insights into the fiduciary nature of knowing that is rooted in our personal and embodied being in the world.

- c. This desired goal of theoretical simplicity was achieved with the Terry Lectures at Yale in 1962 and published later in 1966 after many lectureships and revisions. In *The Tacit Dimension*, Polanyi presents the theory of his epistemology and briefly applies it to the grand crisis of culture. Compared with the over four hundred pages of *Personal Knowledge*, *The Tacit Dimension's* ninety-two pages seem incredibly concise. The point, however, is that Polanyi sets forth here with clarity and evidence the far-reaching principle that makes possible human knowing. The principle is tacit knowing which consists of the way we rely subsidiarily upon clues in order to attend to a focal awareness. This principle can explain the universe of human knowing and judgment by emergence through biological and cultural evolution to the development of societies that now struggle for truth, freedom, and justice. Strikingly, Polanyi consistently maintained that faith precedes understanding and is thus best understood in terms of tacit knowing; this is especially important for a theory of faith, as I will later argue.
- d. After the publication of *The Tacit Dimension*, Polanyi began the task of bringing together his epistemological discovery with its relation to his driving concern for a free society and human responsibility. To the crisis of modern culture, rooted in a mistaken, powerful, and intellectually attractive cultural bifurcation of the knower and the known, the tacit dimension is applied more explicitly as a principle and remedy. Though hindered by his age, Polanyi managed to produce a series of six papers on the subject of meaning that would become the basis of his final book, *Meaning*. The term “meaning” itself tells what tacit knowing leads us to find. Meaning is achieved through the deliberate and surprising acts of ourselves in cumulative cultures arising out of a long history of evolution and human striving. At our current stage of history, we are faced with destructive influences from the pervasive disease of the objective ideal of knowledge that denies the tacit dimension essential to human knowing and flourishing. Professor Harry Prosch, one of the members of the conference on “The Crisis of Culture” in 1972 sponsored by the Consortium for Higher Education Religion Studies in Dayton, Ohio, was asked by Polanyi to coauthor the book. In 1973-74 during a sabbatical at Cambridge, I also worked with Polanyi on Prosch’s final draft of *Meaning*. *Meaning* expands further tacit knowing’s fundamental role in all cultural life. Prosch, following Polanyi’s guidance, emphasizes intellectual freedom and a free society as essential for the long term nurture of human knowing and responsible action. The application of tacit knowing to major domains of human knowing is demonstrated again, but a new step is made by focusing on the way tacit knowing illuminates the achievement of meaning from self-centered integrations of subsidiary clues to a focal target as in a scientific discovery to the self-giving integrations of subsidiary clues to a focal target as in metaphors, art, and religious frameworks. Here Polanyi adds a new feature to tacit knowing. In perception and the physical sciences, the clues or subsidiaries are of little interest except insofar as they contribute to what is focused upon. In poetry, drama, painting, myth, and religion the self-involving subsidiaries are of more intrinsic interest than the focal target to which they contribute. This difference between the intrinsic interest of the subsidiaries

between science and poetry, myth and religion clarifies the common ground of tacit knowing in all cognition but indicates their differences.

2. Polanyi's popularity across the world promised at first a possible rethinking of the role of faith in knowing. Those impacted, however, mainly took Polanyi to be important because he was a renowned scientist challenging the dominant view of authoritative and reliable knowing and claiming a place for personal judgment and religious faith in all knowing. This view of Polanyi was based mostly on Polanyi's *Science, Faith and Society* and *Personal Knowledge*. It does not follow through Polanyi's last two epistemological works. Consequently, tacit knowing is usually not sufficiently incorporated, mistakenly assuming it is basically another version of the earlier works.

3. After finishing my dissertation using Polanyi's thought at Pacific School of Religion in 1965 ("*Credere Aude: Michael Polanyi's Theory of Knowledge And Its Implications For Christian Theology*"), I anticipated that as Polanyi's work became more widely known in theology there would be significant notice and impact. In the spring of 1965, I published my first journal article on Polanyi, "Michael Polanyi—Modern Reformer" in *Religion in Life*, and I received almost immediately a complimentary letter from Ian Barbour with a request for more papers if I had any. Barbour did, in his magisterial works on science and religion, often take note of Polanyi's thought on the human element in science and the roles of community and tradition. In 1970, Langdon Gilkey, in his book *Religion and the Scientific Future*, went further than Barbour (in *Issues in Science and Religion*) in making through Polanyi and others a case for the religious dimension of ontological ultimacy in science (40, *et passim*). In 1980, Thomas Torrance and a conference of theologians and scientists produced a book of seven essays on Polanyi's "integrative way of thinking which heals the cultural split between science, the arts and theology and brings to light a gradient of meaning rising through them all to the higher intangible levels of reality" (see the book cover).

4. The Polanyi Society began with a large number of persons in the fields of religion and philosophy of religion meeting annually at the American Academy of Religion. Here we explored extensively the implications of Polanyi's thought about faith in religious studies, philosophy, theology, and social science as well as many other issues relevant to Polanyi's thought. Nevertheless, Polanyi's original contribution to epistemology has had a helpful but limited creative impact in changing the general understanding of faith within theology and science.² There is much in the Polanyi Society's work that explores the premise that faith precedes understanding and the ways that tacit knowing has enriched and illuminated that principle.³ On the other hand, even with the expansive growth of religious studies in universities and colleges, the role of faith in knowing remains a problem in the academic and public domains. Unfortunately, as we painfully experience today, the term "faith" in public and general university discourse is still misunderstood as indicating subjective and unexamined beliefs. Paul Tillich wrote in *Dynamics of Faith* in 1957:

There is hardly a word in religious language, both theological and popular, which is subject to more misunderstandings, distortions and questionable definitions than the word "faith." It belongs to those terms which need healing before they can be used for the healing of men. Today the term "faith" is more productive of disease than of health. It confuses, misleads, creates alternately skepticism and fanaticism, intellectual resistance and emotional surrender, rejection of genuine religion and subjection to substitutes. Indeed one is tempted to suggest that the word "faith" should be dropped completely; but desirable as that may be it is hardly possible. A powerful tradition protects it. And there is as yet no substitute expressing the reality to which the term "faith" points. So, for the time being, the only way of dealing with the problem is to try to reinterpret the word and remove the confusing and distorting connotations, some of which are the heritage of centuries (ix).

Tillich's judgment remains true today, but we have had at hand in Polanyi's formulation an answer to what we indicate by "faith." Polanyi's approach came to Tillich too late in Tillich's life for him to appreciate well Polanyi's epistemology. Polanyi and Tillich, who met in 1963, were what Durwood Foster aptly and regretfully called in 2009, "A Dynamic and Uncoordinated Duo." It is in Polanyi's demonstration and conception of tacit knowing that we meet the depth of his epistemology. His work contains the basic evidence, terms, and concepts for recovering the basic meaning of faith in the biblical and western religious traditions. Polanyi anticipates that his epistemology will enliven religion and theology, but he humbly left the development of the theology and philosophy to their practitioners.

5. Looking at Polanyi's major writings from 1946 until his death in 1976, it is striking to see his persistent epistemological aim is to bring new life to society and religion in the future. In all four of his books featuring epistemology, the final paragraphs are like a calling or a commissioning for theologians and philosophers to carry on his mission. Notice Polanyi's anticipation that his theory of knowledge will lead to a major contribution to society and to religion.

First, the last paragraph of *Science, Faith and Society* in 1946, which is virtually Polanyi's inaugural address for his project of post-critical thought, states that "...modern man will eventually return to God through the clarification of his cultural and social purposes. Knowledge of reality and the acceptance of obligations which guide our consciences, once firmly realized, will reveal to us God in man and society" (84).

Second, *Personal Knowledge's* last paragraph is where Polanyi completes his discussion of knowing and being and the rise of sentient centers to the appearance of humans who can study and know the world: "We may envisage then a cosmic field which called forth all these centres by offering them a short-lived, limited, hazardous opportunity for making some progress of their own towards an unthinkable consumption. And that is also, I believe, how a Christian is placed when worshipping God" (*PK*, 405).

Third, note *The Tacit Dimension's* last two paragraphs:

I have tried to affiliate our creative endeavors to the organic evolution from which we have arisen. This cosmic emergence of meaning is inspiring. But its products were mainly plants and animals that could be satisfied with our manifest moral shortcomings and with a brief existence. Men need a purpose which bears on eternity. Truth does that; our ideals do it; and this might be enough, if we could ever be satisfied with a society which has such shortcomings fatally involved in its workings.

Perhaps this problem cannot be resolved on secular grounds alone. But its religious solution should become more feasible once religious faith is released from pressure by an absurd vision of the universe, and so there will open up instead a meaningful world which could resound to religion (*TD*, 92).

Finally, *Meaning*, begun by Polanyi and completed by Harry Prosch, states:

We must somehow learn to understand and so tolerate—not destroy—the free society. It is the only political engine yet devised that frees us to move in the direction of continually richer and fuller meanings, i.e., to expand limitlessly the firmament of values under which we dwell and which alone makes the brief span of our mortal existence truly meaningful for us through our pursuit of all those things that bear upon eternity (*M*, 216).

6. The ambiguity of the word “faith,” as Tillich suggested, and its multiple uses combined with the skeptical attitude toward unproven beliefs obscure and hinder the initiation and development of a philosophical understanding of the priority of faith in knowing for our world today. The word “faith” connotes unquestioning belief, belief in God, belief in religion, belief in a particular religion, only a particular religion, complete trust, confidence, loyalty, good faith, bad faith, and sincerity. “Faith” is also used by opponents of religious belief as a description for persons who accept unproven beliefs and irrational views such as belief in spite of the evidence. When persons discuss “faith” the default stance is often one of skepticism. Polanyi’s target is the skeptical attitude toward any fiduciary component in knowing. Yet even religious believers and theologians need help to clarify and make sense of their usage. Nevertheless, in Polanyi’s epistemology all people know by “faith” whatever their beliefs are. As Andy Sanders has shown so well in his 1988 work, *Michael Polanyi’s Post-Critical Epistemology*, Polanyi is a fallibilist (227-264). All of our knowing seeks a bearing on reality but it is not completely final.

7. After many years of expounding Polanyi’s epistemology in courses, conferences, and publications, I now recognize that for intellectual clarity, philosophical adequacy and coherence, the term “faith” is like the word “God.” Outside of a limited theological context, the word “God” implies a supernaturalistic frame of reference. In a similar way, “faith” carries an irrational connotation that defeats its substantial role in knowing. Recently in teaching a seminary course on “Faith, Science, Religion and Society,” I decided to begin with Polanyi’s *The Tacit Dimension* in order to define faith and set up the basis for relating faith to science, religion and society. One day while we were discussing tacit knowing, I had to make explicit the connection between this concept and faith. I found myself saying:

Tacit knowing is what faith is. Faith is a way of relying on for attending to a focal awareness or concern. Relying on is a trusting activity of the self. Everything we do from ordinary skills such as walking, speaking, thinking, and eating we do by relying upon countless subsidiary elements for reaching a focal aim.

At first my explanation did not immediately succeed but gradually it did. As we turned to varying relations of science and religion in terms of conflicts and confrontations, contrasting and independent views, points of contact and dialogue, and confirmations and integrations as John Haught and Ian Barbour categorize them, we began to discover how tacit knowing helped to show why these differences exist. Usually one could turn to the background of the speaker and discern what kind of subsidiary awareness likely formed the outcome of the person’s views. It helped to show the way the tacit dimension determines our knowing. This experience led me toward recognizing that teaching that faith precedes understanding works better when persons can see the basic structure of tacit knowing.

8. Further reflection since that course has led me to the conclusion that tacit knowing needs to be developed into a theory of faith. My attempt here is only a beginning, but it is a necessary step for “faith” to become a more universally helpful word.

- a. The first step of providing a theoretical statement is already accomplished in *The Tacit Dimension*’s presentation of tacit knowing. *Personal Knowledge* and *Meaning* provide evidence and application of tacit knowing on a comprehensive scale so that tacit knowing is shown to be the basis of a general theory of knowledge that shows the essential fiduciary component in all knowing.
- b. The second step is to develop more explicitly the priority of tacit knowing in all knowing. For faith to be understood properly today, religious groups and their theologies must begin to recognize that all knowing—from established beliefs about facts, doctrines, practices to hypotheses about the way reality is—are based on the working of our tacit powers of learning, thought, and understanding.

The usual way of arguing that everyone actually operates with some form of basic assumptions does not carry enough intellectual force. Emphatically, tacit knowing is a universal principle underlying all knowing and discovery in science, creative religious experience and practice. Tacit knowing is basically an operational disclosure of faith. So reformed, the term faith can be applied within Christianity again as the primary principle of knowing that it is. As long as faith remains as a term for only religious discourse, we support the continuation of the separation of religion from its connection with the rest of life, the separation of mind and of body in our worldviews, and the persistence of scientific objectivism.

- c. During my academic life as a professional in higher education beginning in 1954, I have observed the growth of process theology from its second and third generation of thinkers after Whitehead. When I began studying Polanyi in 1962, I found myself with almost nothing to read about Polanyi's epistemology except some very brief and often mixed reviews. I took heart from the fact that Whitehead's *Process and Reality* of 1929 did not begin to flower with influence until after his death and even then his influence depended on the openness and freedom of a few centers of higher education, especially the University of Chicago. It was not until the 1970's that the thought of Whitehead and of Charles Hartshorne expanded into the wider world of churches and of theology due to the beginning of The Center for Process Studies at The Claremont School of Theology led by John Cobb and David Griffin. It may take a similar development for Polanyi's epistemology to make a similar impact. In the meantime, we can begin to develop tacit knowing as a better way to express and to interpret faith just as process theology and Tillich's existential theology has helped us to reinterpret and understand the nature and meaning of God for today.
- d. There are two major ways that the term "faith" is used by the church since it began trying to formulate and to systematize its basic beliefs. One is the way of *fides qua creditur*, the faith by which one believes. The other is *fides quae creditur*, the faith which is believed. These two Latin phrases contain the two poles of Polanyi's tacit knowing, the subsidiary awareness and the focal awareness. Foremost in Polanyi's thought is that the subsidiary leads to the focal awareness. *Fides qua creditur* is a theological expression of our subsidiary awareness. Our reliance upon our subsidiary awareness in order to know is a trusting activity that we tacitly and mostly naturally do. Tacit knowing includes both the mindbody subsidiaries and the focal integrations by which we believe. It must be emphasized that all knowing begins in a trusting mode that is as tacit and personal as breathing. Or we might say all knowing begins in our "mindbodyliness" to use William Poteat's neologism. *Fides quae creditur* is the theological expression of what we believe or what we accept. Therefore, tacit knowing contains the two fundamental sides of faith, the act of trusting, *fides qua creditur* and the cognizing of what is our focus, *fides quae creditur*.
- e. In everyday usage and even often in religious speech, the one term "faith" for both the act of trusting and the statement of beliefs is confusing. The saying "You have to have faith" may mean trusting in a process to lead toward fulfillment *or* it can mean a particular set of beliefs such as "you must believe that Jesus is the Christ." Polanyi's distinction between the tacit and the explicit clarifies this problem. All persons as knowers have, to use a phrase from H. Richard Niebuhr's 1951 *Christ and Culture*, "little faiths" as they work out their lives (239). The little acts of trusting as we grow, mature, work, play, and find direction need a bearing on more than the immediate choices of existence. They need a bearing on the greater reality in which we live and have our being. This process of working out our lives is very much the interplay of the subsidiary and of the focal in tacit knowing and implies a relativity of the faith that is believed. Every act of trusting is a renewing of a former focal awareness or revising it in light of the totality of our continuing experience which leads to a another major feature of tacit knowing.

- f. Tacit knowing is an active mode of being. Finally, there is no fixed or static knowledge. All knowing is an action from the moment it begins to the moment it is saved in practice or records to the moment it is followed or used and revised according to our experiences, practices, skills, patterns of culture, apprentices, masters, or traditions. Until one interacts with received knowledge, or experiences it, cognitive experience is not proximal and distal enough to become our knowing.
- g. Carl Rogers in 1962 said at lunch with Polanyi “that tacit knowing is gerundive knowing.” Grammatically, Rogers is not only correct, but more important he is highlighting that Polanyi’s view of knowing is verbal. Polanyi’s book *Personal Knowledge* which meant so much to Rogers is truly about doing, acting, and being. One of the largest flaws in the objectivist model of knowing is its separation of knowledge from knowing itself, a philosophical mistake that as Polanyi often said was saved only by practices that ignored the philosophy itself.
- h. Significant for clarifying religious usage of faith is that the biblical roots of faith are verbal and close to Polanyi’s tacit knowing. The Hebrew word for faith is *emunah*; it generally means firm or steadfast, a description of someone or something holding on or standing strongly. In the well-known text used by Augustine to support his statement “unless you believe you will not understand,” Augustine refers to the prophet Isaiah (7:9) standing firm and trusting in God’s righteousness. Similarly in Paul’s letter to the Romans, he draws upon the prophet Habakkuk standing bravely at his watch post and teaching “the righteous live by their faith” or standing firm with God’s promises. In the gospel according to John, the noun for belief is avoided and the active word “believe” is used instead. Perhaps most generally, the biblical story that calls Israel and the New Israel is an action story calling for a response and continual deciding to stand in relationship to God’s covenanting promises. In a sense, a large part of modern misunderstanding of Jewish, Christian, and Islamic teaching is to convert it into a completed past perfect tense, a faith or tacit knowing finished with no continuing present or future. This knowing produces a static set of beliefs without correlation to worldviews of our time. Someone once said that there ought to be a word like “faithing” so that people could more easily avoid thinking first about assent to a set of doctrines instead of learning what they are asked to be trusting in now. Tacit knowing is a step in that direction.

9. Tacit knowing, however, is not faith in faith. Tacit knowing has an object or focal target bearing on an aspect of reality. Two of the most helpful developments showing this difference are in the areas of (1) evolutionary biology and neuroscience and (2) the psychology of faith development. Several examples suggest that these fields converge with Polanyi’s tacit knowing.

First, Polanyi’s development of tacit knowing in *Personal Knowledge* drew upon a vast range of pre-articulate and articulate purposive biological phenomena before the current neuroscience developed significantly (see *PK*, 69-124, 327-405). One area of evolutionary science that accords with Polanyi’s appreciation of religion is represented by David Sloan Wilson’s work on altruism in group selection described in his 2002 book *Darwin’s Cathedral*. Wilson takes a controversial approach which is gaining some ground. He takes the daring step of joining evolutionary development from the gene level to the group level capacity for survival through altruism, a merger that leads to religion. He argues that natural selection works at multiple levels from beginning cellular life to humans. Human groups are a continuation of an emerging altruistic principle. At first glance in the battle for survival, altruism might seem to be the way of death for an organism and its DNA. But Wilson thinks that genes with high prosociality have a better chance of enduring than genes without sociality. Finally, Wilson sees religion as an evolutionary development through its function of bringing about group cooperation.

Tacit knowing with its structure of relying on and attending to a focal target to find adaptation to surrounding reality fits the altruism found by David Sloan Wilson. As Polanyi described in *Personal Knowledge*, there is in evolution a process of organisms exploring and finding what he calls “rules of rightness,” meaning processes, or behaviors that work. At the highest levels of human development, such as in science, social and mutual support for finding true results are essential for success.

Second, Eric Kandel, in “The Molecular Biology of Memory Storage: A Dialogue Between Genes and Synapses,” his Nobel Laureat Lecture in 2000, reports on his pioneering work in neuroscience on the storage of memory. In *Tradition and Discovery* (36:2), Walter Gulick reviewed insightfully and helpfully Kandel’s work and found that “Polanyi’s epistemological theory, although established on quite different grounds, accords well with Kandel’s description of how the brain operates. In particular, Polanyi’s theory of tacit knowing seems to be both enriched and validated by Kandel’s account of how memory functions” (73). By studying invertebrates such as the giant snail, *aplysia*, Kandel found that there are “no fundamental functional or biochemical differences between the nerve cells and synapses of humans and those of a snail, worm, or fly” (Nobel Laureat Lecture 2000, 395).

Gulick points out the scientific interests of Polanyi and Kandel overlap on the “dynamics of tacit knowing.” Virtually the same kind of signaling molecules in the neurons of simple animals are also found in human brains. Evolution seems to use the same set of genes repeatedly in slightly different ways. Furthermore, Kandel’s work on memory uncovers brain processes that correlate with the subsidiary awareness (called implicit memory in Kandel’s work) and explicit awareness (called explicit memory). In a detailed discussion, Gulick shows how Kandel learned that short-term memory is converted into long-term memory that forms the skill of riding a bicycle or other integrative feats. This area of neuroscience deserves extended discussion and pursuit, but its basic implications are in line with Polanyi’s theory of tacit knowing developed at a neurological level. One possible implication of Kandel’s work, it seems to me, is that it may suggest a possibility for enriching Wilson’s work on prosociality leading to religion. The short-term memories selected and retained by long-term memory seem to be selected by association of feelings such as fear and happiness. Kandel states that “In the course of studying classical conditioning, Pavlov discovered two nonassociative forms of learning: habituation and sensitization. In habituation and sensitization an animal learns only the about the features of a single stimulus; it does not learn to associate two stimuli with each other” (2006, 76).

Next, Kandel goes on to distinguish two important different functions of habituation and sensitization. He says, “In habituation the animal learns to ignore a stimulus because it is trivial, whereas in sensitization it learns to attend to a stimulus because it is important” (76). These two different functions found in our brain seem to underlie the more complex operations of our knowing. Gulick points out their role in the three types of tacit animal learning that Polanyi identified as trick, sign, and latent learning. More significant is that habituation organizes perception. Animal habituation discards responses that do not serve a useful purpose in favor of ones that do. This function would comply with Polanyi’s view that discovery in science is made by ignoring trivial data and paying attention to coherent data for making contact with reality. Gulick’s work here has pointed to an area of immense significance to pursue. For the present purpose, I see it as a strong step toward establishing the importance of tacit knowing and adding a compelling reason for using tacit knowing to clarify the nature of faith. Besides Polanyi’s use of Gestalt psychology, we can now see tacit knowing through Kandel’s work in neuroscience.

Third, the developments of the psychology of faith, moral, and intellectual development done by William Perry, James Fowler, Lawrence Kohlberg, Blythe Clinchy and others have strongly pointed to the great role of tacit knowing in shaping our ways of socialization and moral behavior. This area has been more extensively explored by members of the Polanyi Society than evolutionary biology and neu-

rosience. In particular, Dale Cannon has called attention in *Tradition and Discovery* articles to this area of confluence with the depth of Polanyi's epistemology. Since religious faith is concerned about moral development and behavior, tacit knowing has already been recognized as a way to examine, expose, and to recognize how authorities, traditions, and social arrangements participate in and affect our values. A wider use of tacit knowing in faith development could help leaders, teachers, and the public understand the relation of what we conceive to be true and right to the grounds of those convictions.

10. In concluding this beginning attempt, I want to return to Polanyi's words about faith in the chapter in *Personal Knowledge* on "The Critique of Doubt:"

Christianity is a progressive enterprise. Our vastly enlarged perspectives of knowledge should open up fresh vistas of religious faith. The Bible, and the Pauline doctrine in particular, may be still pregnant with unexpected lessons; and the greater precision and more conscious flexibility of modern thought, shown by the new physics and the logico-philosophic movements of our age, may presently engender conceptual reforms which will renew and clarify, on the grounds of modern extrareligious experience, man's relation to God. An era of great religious discoveries may lie before us (*PK*, 285).

It is striking to me that if you take Polanyi's belief in the Pauline principle of justification by faith in Romans 1:17, you could restate it as follows: The one who is righteous shall live by tacit knowing of God's grace.

ENDNOTES

¹This essay is Richard Gelwick's hitherto unpublished paper presented at the Polanyi Society-sponsored conference at Loyola University, Chicago in June 2012. The ideas developed here complement Gelwick's recent February 2014 *Tradition and Discovery* essay, "A Clue Toward Knowing Truth and God: Polanyi's 'Forms of Atheism.'" Together these late essays reflect Gelwick's emphasis upon the centrality of faith and truth-seeking as a key to Polanyi and the relevance of a Polanyian perspective. This essay was edited for publication by Walter Gulick and Phil Mullins after Gelwick's death on June 29, 2014.

²Robert John Russell's 2009 *Tradition and Discovery* essay, "Polanyi's Enduring Gift to Theology and Science," assesses Polanyi's contribution to theology and science. Russell notes Polanyi's emphasis on personal knowledge, the community of knowers in science, the tacit dimension, and the use of Polanyi's fiduciary approach by Ian Barbour, Thomas F. Torrance, John Polkinghorne, and John Haught. Russell's survey shows Polanyi's usefulness and compatibility with significant leaders in the science and theology discussion. There is not, however, recognition of any revolutionary change due to Polanyi's epistemology.

³Among a wealth of Polanyi Society scholarship on tacit knowing and its bearing on the understanding of faith is John Apczynski's 1993 *Tradition and Discovery* essay "Polanyi's Augustinianism," and Walter Mead's two unpublished Polanyi Society annual meeting papers, "Some Reflections on the Unknown and the Unknowable and the Relevance of These Concepts to the Epistemological Endeavor" (November 22, 2003) and "A Polanyian Resolution of the Age-Old Conflict Between Faith and Reason" (November 17, 2006).

REFERENCES

- Apczynski, John. 1993. "Polanyi's Augustinianism," *Tradition and Discovery* 20 (1): 27-41.
- Barbour, Ian. 1966. *Issues in Science and Religion*. New York: Harper & Row.
- _____. 2000. *When Science Meets Religion*. New York: Harper Collins.
- Cannon, Dale. 2007. "A Serendipitous Convergence: Blythe Clinchy and Michael Polanyi," *Tradition and Discovery* 34 (1): 9-14.
- _____. 2007. "How Clinchy's Two Minds Become One Flesh: A Response to Blythe Clinchy's Essays," *Tradition and Discovery* 34 (1): 32-39.
- Foster, Durwood. 2009. "Michael and Paulus: A Dynamic and Uncoordinated Duo," *Tradition and Discovery* 35 (3): 21-39.
- Gelwick, Richard L. 1965. "*Credere Aude*: Michael Polanyi's Theory of Knowledge and Its Implications for Christian Theology." Ann Arbor: University Microfilms.
- _____. 1965. "Michael Polanyi—Modern Reformer," *Religion in Life* 34/2: 224-234.
- Gilkey, Langdon. 1970. *Religion and the Scientific Future*. New York: Harper & Row.
- Gulick, Walter. 2010. "Polanyi's Epistemology in the Light of Neuroscience—A Review Article." *Tradition and Discovery* 36 (2): 73-82.
- Haught, John. 1995. *Science and Religion: From Conflict to Conversation*. New York: Paulist Press
- Kandel, Eric R. 2000. "The Molecular Biology of Memory Storage: A Dialogue Between Genes and Synapses," Nobel Laureat Lecture 2000 available at NobelPrize.org.
- _____. 2006. *In Search of Memory: The Emergence of a New Science of Mind*. New York: W. W. Norton & Company.
- Mead, Walter. 2006. "A Polanyian Resolution of the Age-Old Conflict between Faith and Reason." Unpublished Polanyi Society Annual Meeting paper for November 17, 2006.
- _____. 2003. "Some Reflections on the Unknown and the Unknowable and the Relevance of These Concepts to the Epistemological Endeavor." Unpublished Polanyi Society Annual Meeting paper for November 22, 2003.
- Niebuhr, H. Richard. 1951. *Christ and Culture*. New York: Harper & Brothers.
- Polanyi, Michael. 1946. *Science, Faith and Society*. London: Oxford University Press. Chicago: University of Chicago Press, 1964.
- _____. 1966. *The Tacit Dimension*. Garden City, NY: Doubleday.

_____. 1958. *Personal Knowledge*. Chicago: University of Chicago Press.

_____ and Harry Prosch. 1975. *Meaning*. Chicago: University of Chicago Press.

Poteat, William H. *Polanyian Meditations*. Durham, NC: Duke University Press.

Russell, Robert John. 2009. "Polanyi's Enduring Gift to Theology and Science," *Tradition and Discovery* 35 (3): 40-47.

Sanders, Andy. 1988. *Michael Polanyi's Post-Critical Epistemology: A Reconstruction of Some Aspects of Tacit Knowing*. Amsterdam: Rodopi.

Tillich, Paul. 1957. *Dynamics of Faith*. New York: Harper & Brothers.

Torrance, Thomas F., ed. 1980. *Belief in Science and Christian Life*. Edinburgh: The Handsel Press.

Wilson, David Sloan. 2002. *Darwin's Cathedral*. Chicago: University of Chicago Press.