

Michael Polanyi's Search for Truth

MICHAEL POLANYI'S DARING EPISTEMOLOGY AND
THE HUNGER FOR TELEOLOGY

by Richard Gelwick

Abstract. The linking of Michael Polanyi's name with a center (now changed to another name) at Baylor University that espoused intelligent-design theory calls for examination of Polanyi's teleology. This examination attempts to put Polanyi's epistemology in the perspective of his total philosophical work by looking at the clarification of teleology in philosophy of biology and in the framework of three major features of Polanyi's thought: open and truth-oriented, purposive but open to truth, and transcendent yet intelligible. The conclusion is that Polanyi would not support intelligent design according to the nature of his own theory.

Keywords: William Dembski; freedom of thought; heuristic field; intelligent design; Michael Polanyi; potential stable open system; reality; teleonomic, teleology.

WHY ARE WE TALKING ABOUT TELEOLOGY?

In a series of lectures in 1973–74 at Cambridge University on science and religion, Arthur Peacocke noted the persistence of the teleological argument for God in spite of the philosophical criticism of David Hume and others. Michael Polanyi personally introduced Peacocke to me, and Peacocke arranged for me the status of associate and visiting scholar at Clare Hall so that I could study with his guidance the new biology at Cambridge and its theological implications and also work with Polanyi at Oxford.

Richard Gelwick is Professor Emeritus of the University of New England and Adjunct Professor at Bangor Theological Seminary. He served as Coordinator of The Polanyi Society and Editor of *Tradition & Discovery* from 1978 to 1999. His mailing address is 12 Prosser Rd., Harpswell, ME 04079.

[*Zygon*, vol. 40, no. 1 (March 2005).]

© 2005 by the Joint Publication Board of *Zygon*. ISSN 0591-2385

During that year I wrote the first draft of my book on Polanyi (Gelwick 1977) and also worked with Polanyi on the Prosch draft of *Meaning* (Polanyi and Prosch 1975).

I mention this historical note to indicate that the meaning of Polanyi's relation to teleology was not at that time a pressing question. Polanyi's sense of the rise of human life sat comfortably with me and also with Peacocke, although neither of us was focally concerned with teleology.¹ The major presumption was that Polanyi's work had provided a significant way of seeing that the structure of tacit knowing provided for science and religion a coherent way of understanding life from matter to energy, living cells, primitive forms of purposive activity, and finally to the human person.² This understanding saw in Polanyi at least two renewing philosophical principles for theology. One was the fiduciary basis of all knowing that recovered a common ground for scientific and theological dialogue. The other was the calling of the person and society to seek the truth, explore the universe with its potential meanings, and state their findings. In both of these philosophical reformations Polanyi was reopening a panorama of inquiry and of achievement of meanings closed down by the influence of the objectivist ideal of knowing.

While Polanyi in many instances pointed out purposeful elements, these did not rise to the level of teleology as about final cause or proof for the existence of a designing God but were mostly about the relation of subsidiary awareness and focal awareness, such as in using tools, using signs to indicate subsequent events, trick learning, drives, mathematics and logic, technology, propaganda, operational principles of machines, animal behavior, and the recognition of mind.

The persistence of the teleological notion that the creation is purposeful or teleological is generally accepted as justified by belief in God as creator, sustainer, and redeemer. Naive and sophisticated Christians alike usually agree that God is involved in the direction and outcome of history including the universe. But the kind of teleology is important in thinking about the meaning of purpose, goal, or end. The William Paley type of teleological argument for the existence of God is revived today, its proponents arguing that, given the complexity of life in the universe and its high improbability without divine guidance, there must be a divine designer (Dembski 1999; Davies 2001). This teleology goes much further than Polanyi did.

However, Polanyi criticized evolutionary theory for ignoring the obvious, that no chance collocation of atoms or of random mutations sufficiently accounts for the order in nature that rises to human consciousness (Polanyi 1958, 35). From the analogy of the structure of tacit knowing, with its subsidiary particulars integrated into a focal whole that was more than its parts, he drew the conclusion that nature was so ordered as it sought to resolve the potential of a stable open system (1958, 382–84;

1966, 29–52). The way of divine action in the world remains a central problem, however, as the Polanyi Society knows from its recent discussions of emergence with Philip Clayton (2002, 5–55) and Ursula Goodenough on the religious meaning of nature (Mullins 2001). Polanyi's view shows promise in providing a way for understanding the rise of human personhood in nature without the revival of the older teleology.

It was not until the renaissance of anti-Darwinism through the attack on the neo-Darwinian synthesis by the creationist outlook in the 1980s and the more recent attempt by some intelligent-design theorists to associate Polanyi's authority with their cause that clarification of Polanyi's relation to teleology became necessary. Of course, in relation to the creationist view, there is no resemblance between Polanyi's views and their introduction of a designing God in terms of a literal reading of Genesis. In the case of the intelligent-design theorists, it needs to be said that they have not yet taken Polanyi seriously enough to explain their understanding of Polanyi in the arena of Polanyi studies. They named a center at Baylor University in Polanyi's name without the endorsement of Polanyi's son and literary executor, but thanks to academic scrutiny by the Baylor faculty and others, that center has morphed into a center without Polanyi's name.³

CLARIFYING TELEOLOGY FROM PURPOSIVE PHENOMENA

The history of teleological criticism in philosophy, theology, and biology makes it important to set out a basic distinction.⁴ At the time of Polanyi's writing, this distinction was not as commonly made as it is today. In biology it has become necessary to try to distinguish purposive activity in organisms from Platonic teleology and traditional theological teleology. Ways of referring to purposeful activity have developed for talking about intrinsic purpose as purposes that are natural in a living organism and testable in a scientific way. Extrinsic purpose would be a purpose beyond the nature of an organism or an individual so that it functions for a state beyond itself. Extrinsic purpose applies more to the behavior of animals and of human beings manifesting intentional behavior. Further, some try to associate *telos* with biological phenomena but also to distinguish it from metaphysical and theological purpose by referring to such activity or behavior using such terms as *teleonomic*, *teleologic*, or *telic*.

Such linguistic modifications make it possible for biologists and philosophers of biology to discuss features of coordinated and directional life-form activity and behavior without suggesting a connection with a final cause as discussed by metaphysicians and theologians. On this basis, we can see in Polanyi a discussion of biological phenomena that belong to the family of terms *teleonomic*, *teleologic*, and *telic* even when he uses older language.

Once this basic distinction is seen in biology and in considering Polanyi's views, the task becomes more complicated. One task is to examine Polanyi's

use of telic or purposive language in biology according to the insights and concepts of philosophy of biology. How well in terms of philosophical biological views does Polanyi's telic language deal with such things as the prevalence of preferred states, closed feedback loops, and programs, the origin of such systems by natural selection, and the problem of reductionism? (Hull 1974) Polanyi consistently appeals for the recognition of "an ordering principle" in the story of evolution (Polanyi 1958, 35, 382–90). Particularly important is whether or not Polanyi has introduced, so far as biological science is concerned, an external principle.

The other task is to examine the "ultra-biology" of Polanyi's thought. The first task will clarify how well Polanyi works within the domain of scientific explanation. The second task will show the relation of Polanyi's thought to the larger purpose of his work as a valid epistemology for the recovery of belief in a meaningful universe. Of course, the critical issue at stake here is whether Polanyi saw evolution and the meaning of human life as guided by a metaphysical first and final cause, and, if so, what Polanyi meant by such a cause.

Regarding this second task, we can recognize the difference though not independence of the first task by looking at the consensus on the weakness of the Paleyan type of teleology arguing from the universe as like a fine watch to the necessity of a divine watchmaker. From a given effect, such as the shape of a flame or the emergence of sentient beings, that suggests Polanyi's ordering principle of a potentiality of a stable open system, we can only infer a sufficient cause for the effect. The sufficient cause is in the physics, chemistry, chance mutations, time and adaptation, and natural selection. What is missing in the world of reductionism is the admission of the whole as more than its parts. Such an admission does not introduce an external divine designer.

Polanyi's panoramic view of the finite process of evolution did not lead him to think that we could infer a divine creator. He did think that we could infer from emergence an ordering principle that he described as a potential stabilization present at that moment as the boundary conditions organized and leading to new levels of reality. Ultimately, Polanyi takes the finite process of evolution to the boundary condition of transnatural/religious integration, then leaves open the next step as an act of faith.

With this distinction in hand, between terms in discussing relations between parts and wholes in living systems and teleological thought as final cause in metaphysical and theological thought, we should note that in *Personal Knowledge* all the indexed references to teleology or to purpose are what we now more accurately call teleonomic, teleologic, or telic. They are not teleological in the sense of a final cause. They are descriptions of machines, of living organisms, and of human judgments showing purpose comprehended only by tacit knowing. Having said that, it is also clear that Polanyi uses these descriptions to move toward a purposefulness overall in nature.

These comments, however, omit another term used by Polanyi, *finalistic*. Contrary to what was just said, which seems to save Polanyi from metaphysical and theological teleology, Polanyi blurs the situation by saying near the end of *Personal Knowledge* regarding the emergence of intelligent learning in animals and humans, "I believe that this argument would show that all attempts at explaining the evolution of complex organs by chance variations in certain chemical bonds of the germ plasm must fail. But I must admit that I would not feel so certain of this, had I not before me the rise of human personhood, which manifestly demands the assumption of finalistic principles of evolution" (1958, 402).

One of the questions to be resolved is how far Polanyi meant to go in this statement contrasted with his mostly teleonomic or telic statements.

POLANYI'S AUDACITY AND THE TELEOLOGICAL QUESTION

Taking up this question of Polanyi's relation to teleology, there are many texts in Polanyi's writings that are suggestive, such as the closing sentences in the section on "Acceptance of Calling" in *Personal Knowledge*: "We undertake the task of attaining the universal in spite of our admitted infirmity, which should render the task hopeless, because we hope to be visited by powers for which we cannot account in terms of our specifiable abilities. This hope is a clue to God, which I shall trace further in my last chapter, by reflecting on the course of evolution" (1958, 324). Polanyi states in *Personal Knowledge* his affinity for Paul Tillich, and his statement here falls within the theological framework of Tillich's *Systematic Theology* (1951). There Tillich sees the cosmological and teleological arguments raising an important question for faith, but it cannot be answered by reasoning from the finite to the infinite. These questions have to be answered, according to Tillich, by revelation, not human reason (1951, 208–10). When Polanyi concludes the last chapter with his reflection on the course of evolution, as he said he would, he is still in the same position as Tillich: "We may envision . . . a cosmic field which called forth all these centers . . . making progress toward an unthinkable consummation. And this . . . is how a Christian is placed when worshipping God" (1958, 405). Thought of "an unthinkable consummation" or the riddle of existence makes sense like the person in awe before the infinite in a state of Christian worship.

There also is this aphoristic statement in *The Tacit Dimension*:

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 our manifest moral shortcomings and with a society 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. (Polanyi 1966, 92)

Here Polanyi is less theological and leaves open the possibility that religious perspectives *may* be needed to satisfy the needs of humans to live with their imperfections. But there is no necessary theism or Paleyan teleology; truth or our ideals should be sufficient, were humans not so weak.

Returning to *Personal Knowledge*, we find another passage that connects with our interest in Polanyi's relation to teleology:

We speak of the thoughts Shakespeare had while writing his plays and not of the thoughts of hydrochloric acid dissolving zinc, because men think and acids don't. It is obvious, therefore, that the rise of man can be accounted for only by other principles than those known today to physics and chemistry. If this be vitalism, then vitalism is mere common sense, which can be ignored only by a truculently bigoted mechanistic outlook. (1958, 389–90)

This statement is a choice example of Polanyi's daring rhetoric in order to make his point about the irreducibility of living things, particularly human consciousness, to physics and chemistry. It does not, however, say that Polanyi is a vitalist, only that if his argument for emergence is accepted he does not care if someone brands him a vitalist. He is not attaching himself to vitalism as the meaning of his argument.

The use of these passages in isolation could support interpretations that Polanyi would not endorse. For proper interpretation of them we need a broader grasp of Polanyi's philosophy. Already suggested is Polanyi's bold and defiant spirit that sees humans in need of grounds for hope in their future, a hope then denied by a reductionist view of science and derived from the reign of objectivist epistemology guiding the mind of science and the first world.

TELEOLOGY IN A COMPREHENSIVE POLANYIAN PERSPECTIVE

When we look at the overall picture of Polanyi's work we see a person of daring. Polanyi knows that he is going against the grain of his own scientific world and that many will see him as having strayed from scientific principles. Yet he is passionately concerned about the future of humankind in a worldview that deprives us of transcendent obligations and hope. Even if alone, he is compelled to examine the problem and to try to solve it. When his thesis of personal knowing and of the structure of tacit knowing develops he is led to put his case in terms that are audacious and mutinous.

Taking the whole of Polanyi's writing as a guide to understanding his position concerning teleology, I suggest three themes that begin an answer. The preliminary answer is that Polanyi's sense of teleology is: (1) freedom- and truth-oriented, (2) purposive but not predetermined, and (3) transcendent yet intelligible. These are themes that make Polanyi an ally of theologians but not a theologian, as I have always held.⁵ They allow theology to go on from where Polanyi stopped, but each theology has to take steps beyond Polanyi. I want to set out these main themes in summary form first and then elaborate them.

THEMES BEARING ON TELEOLOGY

First, underlying Polanyi's entire philosophical project is the freedom of human beings engaged in thought. This issue first came to Polanyi through the freedom necessary for science to make discoveries and the relation of freedom of thought to the Nazis and in the Soviet Communist system. The danger of traditional teleology to Polanyi's philosophy is to contradict it with a closed or final view of the future. To pursue the truth, for Polanyi, we must be free of external restraints, especially those that limit the continuous discovering of the truth itself.

Second, Polanyi's view of reality now, ultimately or eschatologically, is also open, without finality. His notion of reality as unfolding and surprising negates design and determinism except as retrospective interpretations. The *telos* of Polanyi's view of reality is essentially creative.

Third, Polanyi's understanding of responsible personhood rising out of ontological levels of cosmological and biological developments leads to a condition of humanity before eternity or God that is fraught with uncertainty. The indeterminate nature of our future shows Polanyi's view of our *telos* as both perilous and promising.

1. Freedom of Thought Open and Truth-Oriented. Taking the role of freedom first in Polanyi's thought, I would say that any philosophical view that denies freedom of inquiry and of expression to the individual or to the destiny of a society or culture is contrary to Polanyi's basic standards. The freedom of a person to seek the truth and state his or her findings is essential to Polanyi's project. In this connection, one of the problems of metaphysical and theological teleological views is that they tend to define the end in such a way that they become uncreative, controlling, and oppressive. In this way both Roman Catholic and Protestant traditions as well as Fascist and Stalinist ideologies have periods of absolutizing their teleology so that they become opposed to freedom of thought and conscience. The rejection of final causes in modern science was partly in revolt against this tendency in prevailing Christian thought. These religions and ideologies with their certainty about final goals of life and of history were unable to attend to unsettling clues and particulars in their presence that called for growth and change in views of nature, of human life, and of God.

In his early engagement with Soviet economics and the planned-science movement, Polanyi saw not just the breakdown of fruitful problem solving but also a quenching of the essential spirit of human consciousness. His focus, however, was not upon individual liberty but upon a free society that nurtured and sustained intellectual exploration and social progress through its institutions and social lore.

Note the nuance between "planned science" and a planned or designed universe. One of the problems of planned science is its being top-down directed. Implicit in Polanyi's thought is a sense that theories that define

inquiry in terms of an already determined goal are at least stifling and at worst dangerous. The problems of planned science were most notorious in the Soviet world, which held a materialistic teleology.

Note also that Polanyi's reason for seeing the freedom of science as better in a society that believes in the traditional values of "truth, justice and charity" (Polanyi [1946] 1964, 83) is that they are transcendent obligations beyond final definition and completion. We know them by serving them. These ideals are real but cannot be finally defined or proved. They are also revised as knowledge advances. They are known and pursued in a community of inquirers who obey a tradition of general authority, not in a specific and closed one. General authority in a community of inquiry replaces the specific authority of any established view. Furthermore, this community has undergone and will likely undergo major changes or revolutions in its outlook as discoveries are made. One of Polanyi's basic motivations is to establish the plausibility of this way of discovery, where what we believe to be true may also be doubted.

Polanyi's objection here to teleology as explanation for the design of the universe would seem to be ethical as well as epistemological. The search for truth calls for an unknown to be found by free inquirers. Even for Polanyi, it seems, the search for truth or God would have an indeterminacy that allows for a free conscience with the ability to see things differently.

In an address that appeared in several publications as a part of his promotion of the freedom of science, Polanyi indicated his commitment to openness to our understanding of the future in words that seem to bar teleology as a definitive final cause:

For we are adrift; subject to the hazards of this universe whose future is unknown to us. The recent rise of man from the ranks of animals, his brief effort at civilized life, his luminous creative achievements through which he has come to see himself in the perspective of space, time and history—these are events which leave undeclared their ultimate origin and future course. The conceptions by the light of which men will judge our own ideas in a thousand years—or perhaps even in fifty years—are beyond our guess. If a library of the year 3000 came into our hands today [sic], we could not understand its contents. How should we consciously determine a future which is, by its very nature, beyond our comprehension? Such presumption reveals only the narrowness of an outlook uninformed by humility. (Polanyi 1951, 198–99)

2. Purposive but Open to Truth. Polanyi was quite clear that his vision for humankind is a "society of explorers" (1966, 55–92). One of the premises of this vision is that reality has a persistent revelatory character so that at every horizon human thought has the opportunity of going further. As we know, Polanyi defined reality as having "the independence and power for manifesting itself in yet unthought of ways in the future" (1966, 32).

Understanding Polanyi's idea of reality is challenging, as was superbly demonstrated in the Polanyi Society annual meeting program in Boston in 1999. Summarizing this discussion for *Tradition & Discovery*, Andy Sand-

ers says there are two areas of agreement despite differences on the scope of Polanyi's realism. One area is that "Polanyi advocated a scientific realism hanging on the theses that reality is independent of human conceptualizations and that it is partially and fallibly knowable." The second area of agreement is that Polanyi's realism "is comprehensive, pertaining not only to our common sense and science but to intrinsic and ultimate values, and perhaps the divine realities as well" (Sanders et al. 1999, 6).

Strikingly, in this discussion of the meaning of Polanyi's realism there is no direct challenge to his view of the unfolding nature of reality.⁶ It may be that this sense of novelty in nature is really an epistemological feature. Reality is not becoming, but human understanding is. Reality seems to increase its disclosure because human understanding is itself learning more about it. This way, Polanyi's reference to the potential of reality to show itself in new ways amounts to talking about the depth of nature and the limits of human understanding. This view could be analogous to the human person before the infinite or God. Polanyi often speaks of reality as hidden, so this view seems plausible.

On the other hand, Polanyi could be indicating that not only does human understanding of reality go through stages of discovery; reality is also becoming. The relation of the knower to the known reality is always in a state of learning because reality itself is evolving. Polanyi does speak of the unfolding nature of reality as having an indeterminate character. For example, in his 1964 lecture on "The Logic of Tacit Inference" Polanyi says, typically, "My definition of reality, as that which may inexhaustibly manifest itself, implies the presence of an *indeterminate range of anticipations in any knowledge bearing on reality*" (Polanyi 1969, 141). This view would fit with neo-Darwinian notions of adaptation and change or emergence and without a final end.

These two possibilities reflect a basis for relating Polanyi's thought to process philosophy and to the pragmatism of William James. In the first possibility of an ultimate reality through and about which many discoveries are made, there is an immanent unity in reality. The independence of this reality is discovered and known progressively. In the second possibility there is a pluralism within the unity of reality, making it more difficult to finalize norms for reality itself. Here the interdependence and unity of ultimate reality participates in the diversity producing novelty. These are serious questions and worthy of pursuit for Polanyi studies and for our grasp of the meaning of the current state of knowledge. They also extend beyond Polanyi's own discussion, except to note that Polanyi's thought introduces this tension.

The point of this tension, as far as our discussion of Polanyi's relation to teleology is concerned, is to see that Polanyi's view of reality emphasizes openness and creativity, not finality or predetermined design. To try to put Polanyi into a traditional teleological framework seems procrustean.

Following Polanyi's notion of the surprising and of the future indeterminate manifestations of reality, we are confronted with the pursuit of truth. Contact with reality is a peak experience for the knower signaled by the promise of unknown future manifestations. Truth is the achievement of contact with reality that has the promise of future manifestations (Polanyi 1958, 147). Truth attracts us as the rightness of our actions and of our thoughts in our contacts with reality (1958, 300–301). The search for truth is an intellectual passion within us reaching out with universal intent. Along with the intellectual passions of elegance and beauty, truth is an ongoing goal in science and the rest of human knowing. Truth and reality, in Polanyi, lead us to the responsible person facing indeterminate choices, not to a final end. Both truth and reality are known only through the structure of commitment in tacit knowing.

Yet these commitments that form our explorations are diverse. A society of explorers is not just a society of theists. It is a society of seekers of truth. People of all faiths, faith in chance, faith in fate, faith in nature, faith in evolution, and even faith in predestination, are our helpful companions as we seek the truth and state our findings. Reality as Polanyi saw it needs the contributions of all as we approach the reality that always exceeds our final grasp.⁷

3. Transcendent yet Intelligible. Polanyi's philosophy has an air of excitement and of awesomeness that encourages his readers like a guide taking adventurers through a panorama of the universe. When one gets to the end of his work, one feels poised on the threshold of a grand opportunity. Able to look back and see how from inanimate matter we ourselves have evolved to the state of our choices of life and of death, we are now at the stage where "transnatural integrations" of meaning have to serve to guide us (Polanyi 1975, 125). The choice of the right word or the wrong word is a matter of life and death. As we reach the recognition of this journey that is now in our hands, we are left with an existential choice, a leap of faith, a condition similar to Tillich's "courage to be." As Polanyi says, all our accumulated knowledge and wisdom that form the subsidiary background and framework for our choices may be mistaken. There is no final certainty. We may live in a cultural heritage of profound systematic errors that have led us down the wrong path. Yet in this situation we can, with acknowledgment of our limited powers of knowing, dare to believe in the truth and to take the chance of confirming our beliefs by living by them.

If we follow Polanyi's panoramic view of human knowing, we see a logic that seems to parallel the structure of nature and reality. The way we know as seen in the structure of tacit knowing is analogous to the structure of an evolving nature. Subsidiary components in living things are integrated into wholes that bring about new levels of being and of understanding. Neo-Darwinian theory sees these integrations as matters of chance, with-

out purpose except that surviving integrations can reproduce and stabilize their existence. Polanyi, seeing the integrations as evidence of new levels of being, asserts that these are not sheer chance events but the response to a "heuristic field" (1958, 403) that calls them forth. Their emergence could not occur until causal conditions were present. When these conditions occurred, they left open a boundary condition that was stabilized by operational principles that form a new level of being.⁸ At the highest peak of these rising levels of biotic achievement is the person in thought faced with the task of responsible judgment. What is the boundary condition of human choice? Freedom to pursue the truth. Truth can be known only by believing in it and serving it. Here our transcendent obligations discovered in our journey become our operational principles that stabilize our existence in a journey with potentiality and great hazard.

Before the collapse of the Soviet Union and the period of nuclear deterrence, Jonathan Schell (1982) articulated the concept of the "second death." The point of his concept is that humanity today is equipped to destroy the ordinary meaning of death. Our nuclear weapons can kill not only millions but all life on this planet so that there is no one to mourn death, to take note of death, to remember the dead. The second death is the end of the history of life on this planet as humans know it. Thinking of this second death clarifies the importance of Polanyi's view of the rise of human consciousness and its potentiality.

In Polanyian terms, we always live on the brink of a humanity that can survive and flourish only by seeing our existence as being called forth by a potential for greatness that renews and perpetuates in every generation the opportunity to explore the truth and to follow it. This view is a teleology of calling to responsible personhood. It does not provide any guarantee of humanity's future or the future of life.

When theologian Gordon Kaufman (1983), then president of the American Academy of Religion, and others looked at the prospect of nuclear annihilation in the 1980s, they concluded that their understanding of the Christian tradition would include the possibility that humanity could destroy itself. That possibility makes fully meaningful our personhood as responsible beings. This view also rules out any theological teleology that believes that continuing human life will be saved by some final cause that has designed life for an eternal home.

This telos of freedom for humanity to decide its own fate brings us to Polanyi's references to Pierre Teilhard de Chardin. Three years before *Personal Knowledge* was published, Teilhard's *Le Phenomene Humain* (1955) was published containing Teilhard's schema of the evolutionary rise of human spirituality from inanimate matter to the noosphere. Both Teilhard and Polanyi saw, though for different reasons, emergence of levels of organization up through the appearance of human consciousness. Polanyi credited Teilhard as one of those who had refused to accept the mechanistic

explanation of life and of human thought (Polanyi 1966, 46). Both follow a similar picture of increasing evolutionary complexity from matter to vegetative life to active centers of sentience to human thought and awareness. Both also share a sense of a creative force operative in the course of evolution, except that Polanyi describes this influence as the attraction of a “heuristic field” (1958, 403) instead of Teilhard’s christological “omega point” (Teilhard 1961, 267–72). Phil Mullins (1997) has pointed out that J. H. Oldham cautioned Polanyi on the use of Teilhard and that Polanyi’s review of *The Phenomenon of Man* is circumspect. Polanyi sees Teilhard’s popularity as a sign that the tide of reductionist evolutionary biology is changing, but Polanyi regards him as more a poet than a builder of an alternative to the dominant neo-Darwinian view.

Instead of aligning Polanyi with a teleology that is more deterministic, it would seem truer to Polanyi’s sense of cosmic purpose as seen in the rise of human life to take more strongly two statements in the last chapter of *Personal Knowledge*. First, Polanyi says,

I have arrived at the opening of this last chapter without having suggested any definite theory concerning the nature of things; and I shall finish this chapter without having presented any such theory. Its aim is to re-equip men with faculties which centuries of critical thought have taught them to distrust. The reader has been invited to use these faculties and contemplate thus a picture of things restored to their fairly obvious nature. This is all the book was meant to do. (1958, 381)

The second statement is this:

For the emergent noosphere is wholly determined as that which we believe to be true and right; it is the external pole of our commitments, the service of which is our freedom. It defines a free society as a fellowship fostering truth and respecting the right. It comprises everything in which we may be totally mistaken. (p. 404)

Whereas Polanyi’s views certainly offer us a meaningful and purposeful universe, they open up an inviting but undecided future. Reality poses problems to be solved, and there is hope that, as in the past, we can through coordinated human effort discover solutions that we can follow.

CONCLUSION

As a theological thinker, I do not find in Polanyi a cosmological or teleological argument for the existence of God. Polanyi argues primarily within the realm of observable phenomena. He argues by analogy from the structure of tacit knowing to a universe of increasing levels of organization. There is not a vitalist force in his ordering principle of the potentiality of a stable open system but the continuing integration of part and of whole into increasing levels of meaning. The gradient of these potentialities is toward an open future (Polanyi and Prosch 1975, 162–63).

NOTES

A version of this essay was presented at The Polanyi Society annual meeting during the American Academy of Religion national meeting in Atlanta, Georgia, November 2003.

1. Biochemist and theologian Peacocke has continued to include a teleological but not finalistic dimension in his thought (Peacocke 1978; 1993).
2. Tacit knowing is Polanyi's fundamental concept for explaining how human beings achieve knowledge (Polanyi 1966; Gelwick [1977] 2004, 55–82).
3. Former director of the center William Dembski was invited to the meeting at which the present paper was given and offered the opportunity of presenting a paper with respondents. Dembski at first accepted then later declined. I wish that Dembski had not given up this opportunity for discussion of the relation of his views to Polanyi's thought.
4. For a very useful annotated bibliography on this topic see Rolnick 2002.
5. Both Terrence Kennedy and Harry Prosch have misunderstood me on Polanyi's relation to theology. I do not claim that Polanyi was a theologian but that he opened up theological inquiry again. Nor did I ever say that Polanyi thought of his interest in theology as being confined to T. F. Torrance's theology, as Prosch presents it. Prosch thinks that theologians have to hold to supernaturalism and the effectiveness of intercessory prayer (see Prosch 1986, 239, 255; Kennedy 1979, 138–40).
6. Phil Mullins presents a very helpful historical survey of Polanyi's uses of reality in Sanders et al. 1999, 42–45.
7. On the topic of Christian faith and pluralism, I have argued (Gelwick 2001) that the work of Charles McCoy, such as *When Gods Change: Hope for Theology* (1980), points in a Polanyian way to being open to the believed-in realities known by nontheist and nonreligious faiths or views as well as religious ones.
8. Arthur Peacocke uses a similar way of describing evolution: "The processes that have occurred can be characterized as one of *emergence*, for new forms of matter, and a hierarchy of organization of these forms themselves, appear in the course of time. To these new organizations of matter it is, very often, possible to ascribe new levels of what can only be called 'reality': In other words new kinds of reality may be said to 'emerge' in time. Notably, on the surface of the Earth, new forms of *living* matter (that is, living organisms) have come into existence by this continuous process—that is what we mean by evolution" (Peacocke 2001, 472–73).

REFERENCES

- Clayton, Philip, et al. 2002. "Regarding Philip Clayton." *Tradition & Discovery* 29 (3): 5–55.
- Davies, Paul. 2001. *The Fifth Miracle*. Middlesex, England: Penguin.
- Dembski, William. 1999. *Intelligent Design*. Downers Grove, Ill.: Intervarsity.
- Gelwick, Richard. [1977] 2004. *The Way of Discovery: An Introduction to the Thought of Michael Polanyi*. Eugene, Ore.: Wipf Stock.
- . 2001. "Heuristic Passion and Universal Intent." *Tradition & Discovery* 28 (1): 20–21.
- Hull, David. 1974. *Philosophy of Biological Science*. Englewood Cliffs, N.J.: Prentice Hall.
- Kaufman, Gordon D. 1983. "Nuclear Eschatology and the Study of Religion." *Journal of the American Academy of Religion* LI (March).
- Kennedy, Terrence. 1979. *The Morality of Knowledge*. Rome: Collegio Saint' Alfonso.
- McCoy, Charles. 1980. *When Gods Change: Hope for Theology*. Nashville: Abingdon.
- Mullins, Phil. 1997. "Michael Polanyi on Teilhard de Chardin." *Appraisal* 1 (October): 179–89.
- . 2001. "The Sacred Depths of Nature and Ursula Goodenough's Religious Naturalism." *Tradition & Discovery* 28 (3): 29–41.
- Peacocke, Arthur. 1978. *Creation and the World of Science*. Oxford: Oxford Univ. Press.
- . 1993. *Theology for a Scientific Age: Being and Becoming—Natural, Divine, and Human*. Minneapolis: Fortress.
- . 2001. "Welcoming the Disguised Friend—Darwinism and Divinity." In *Intelligent Design and Its Critics*, 472–73. Cambridge: MIT Press.
- Polanyi, Michael. [1946] 1964. *Science, Faith and Society*. Chicago: Univ. of Chicago Press.
- . 1950. *Zeitschrift Fur Die Gesamte Staatswissenschaft*, Band 106, Heft 3.

- . 1951. *The Logic of Liberty*. Chicago: Univ. of Chicago Press.
- . 1958. *Personal Knowledge*. Chicago: Univ. of Chicago Press.
- . 1966. *The Tacit Dimension*. Garden City, N.Y.: Doubleday.
- . 1969. "The Logic of Tacit Inference." In *Knowing and Being*, ed. Marjorie Grene, 138–58. Chicago: Univ. of Chicago Press.
- Polanyi, Michael, and Harry Prosch. 1975. *Meaning*. Chicago: Univ. of Chicago Press.
- Prosch, Harry. 1986. *Michael Polanyi: A Critical Exposition*. Albany: State Univ. of New York Press.
- Rolnick, Philip A. 2002. "Part I: Philosophy and Theology." *Purpose in Biology: Published Research on Teleonomic Aspects of the Living World Useful for the Study of Divine Purpose*. Chicago: John Templeton Foundation.
- Sanders, Andy F., S. R. Jha, Walter B. Gulick, Phil Mullins, Dale Cannon, John C. Puddefoot, and Esther Meek. 1999. "Polanyians on Realism." *Tradition & Discovery* 26 (3): 6–93.
- Schell, Jonathan. 1982. *Fate of the Earth*. New York: Alfred P. Knopf.
- Teilhard de Chardin, Pierre. 1955. *Le Phenomene Humain*. Paris: Editions du Seuil.
- . 1961. *The Phenomenon of Man*. New York: Harper Torch Book.
- Tillich Paul. 1951. *Systematic Theology*. Chicago: Univ. of Chicago Press.