Chapter 14
Persons Knowing Life: Theological Possibilities in Michael Polanyi's Philosophy

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Abstract Michael Polanyi was a scientist and philosopher. His post-modern philosophy attempted to restore to modern society faculties of knowing and understanding which centuries of scientism have stripped away. I argue that Polanyi's philosophy embodies concepts of personhood, knowledge and life which provide rich possibilities for theological reflection, and for the science-theology dialogue. First, as opposed to the "objectivism" deriving from the rise of science, Polanyi insists that the fact of personhood must be the starting point for a proper understanding of reality, and this suggests an understanding of reality in which mind precedes matter. Second, knowledge is a process by which the multi-levelled character of reality invites human inquiry, drawing us forward into more abstract and intangible depths: "deepest reality is possessed by higher things that are least tangible." Third, life is not definable in terms of physics and chemistry: higher ordering principles come into play both in life's beginnings and in its development. Evolution has to take into account the "finalistic principles" to which the fact of personhood attests. Cumulatively, Polanyi's philosophy suggests that reality is far more personal and meaningful than moderns usually recognize, and that our relation to it should be far more I-Thou than I-It.

Keywords Polanyi • Personhood • Knowledge • Life • Biology • Reality • Emergence • Science • Scientism • Centre • Theology

Michael Polanyi (1891–1976) was a scientist turned philosopher. He was horrified by the perversion of scientific knowledge in Soviet Russia and Nazi Germany, and feared that materialist thinking was becoming prevalent throughout industrialized societies (Polanyi 1946: 7–9, 78). Having spent the first part of his life, therefore, studying and teaching chemistry, he turned increasingly in its second half to philosophy. He inveighed against the view that life is reducible to the definitions of physics and chemistry, and believed that the prevailing notion of science alone

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D. Evers et al. (eds.), *Issues in Science and Theology: What is Life?*,
Issues in Science and Religion: Publications of the European Society
for the Study of Science and Theology, DOI 10.1007/978-3-319-17407-5_14

as the source of genuine knowledge lay at the root of much of the malaise in the Western world (see, for example, Polanyi 1958: 139–142, 1965: 12–13).

The entire enterprise of what Polanyi regarded as his most important work is dedicated to showing how the structure of science, and of human knowing in general, coheres naturally with philosophy and theology. He argues persuasively that, just as there is "a continuous ascent from our less personal knowing of inanimate matter to our convivial knowing of living beings", so also there is a continuum "from our knowing the laws of nature to our knowing the person of God" (Polanyi 1961: 244). Polanyi was not attempting to prove the existence of God; indeed, he regarded "divinity and the possibility of knowing God" as "outside" of his argument (ibid.: 246). But he did regard human knowing, and the natural sciences of which he was so enamoured, as having a transcendent, and indeed a "metaphysical" reach (Polanyi 1964a).

This "metaphysical reach" becomes clear in Polanyi's view of "*persons knowing life*." Each of these terms is crucial within Polanyi's philosophy. His view not only refutes the materialist views of life deriving from scientism, it also suggests a view, consistent with philosophical idealism, which places mind before matter. Idealism was not Polanyi's starting point, which rather had to do with critical realism (e.g. Polanyi 1946: 21–41; Mitchell 2006: 82–85). Nevertheless, his ultimate vision, based on his epistemology, has everything to do with idealism in the sense of a view of reality as "founded [. . .] on some form of purposive consciousness" (Ward 2010: 183). One of his interpreters speaks of Polanyi's sense of "a pre-existing reality" (Scott 1985: 192). In Polanyi's terms, life can be seen as ultimately a product of mind, in that "living mechanisms" depend for their nature and purpose on "operational principles" that are extraneous, and prior, to the laws of physics and chemistry. The latter detail the *conditions* of a machine's or of life's operations, but they are "blind both to [their] success and [their] failure," which can be evaluated only in terms of ordering principles of which physics and chemistry know nothing (Polanyi 1958: 330).

This paper will primarily describe Michael Polanyi's philosophy of "persons knowing life," and will more briefly suggest some of the possibilities which theology might see there. In his vision, life cannot be known without deep consideration of *persons* and the character of their *knowing*. There is no scientific description of life which is not at the same time a personal knowing of life. Living things, says Polanyi, do not conform to any "single highly generalized assumption," and so the standards a biologist uses to appraise them are necessarily approximations to a norm that has been established by biologists themselves (Polanyi 1958: 348–354, here 349). This means that "biology is life reflecting on itself" (ibid.: 347), and if we examine the evolution and structure of such knowing, we discover the multi-leveled character of reality and life. At every point in Polanyi's philosophy of *personhood, knowledge* and *life,* there are hints, as I hope to show, of the transcendent and the possibility of knowing God.

Science and Personhood

In the opening of his final chapter in *Personal Knowledge*, Polanyi provides an important statement of what his work aims to accomplish. He begins by saying that he is not providing "any definite theory concerning the nature of things": metaphysics is not his primary concern. His purpose, he says, is "to re-equip [people] with the faculties which centuries of critical thought [scientism] have taught them to distrust" (Polanyi 1958: 381). The "faculties" he has in mind comprise personal elements of knowing which, since the seventeenth century and the rise of science, numerous thinkers, both implicitly and explicitly, pushed aside as though they were obstacles to real knowledge. The Enlightenment imagined that what Polanyi calls "objectivism" was the path to reliable knowledge, and eschewed the foundational roles of faith, commitment, intellectual passion and tradition (Polanyi 1946: 42–62, 1958: 132–202). Such objectivism, Polanyi shows, skews our understanding both of what science really is, and – even more ominously – of personhood. In the presence of pure objectivism, which separates faith from reason and disavows reverence for human greatness, "law is no more than what the courts will decide, art but an emollient of nerves, morality but a convention, tradition but an inertia, God but a psychological necessity. Then man dominates a world in which he himself does not exist. For with his obligations he has lost his voice and his hope, and been left behind meaningless to himself" (Polanyi 1958: 380).

"The modern mind," observes Polanyi, "distrusts intangible things and looks behind them for tangible matters on which it relies for understanding the world." In this materialist understanding, humanity is "but a chance collocation of atoms, without purpose or meaning", definable simply in terms of physics and chemistry (Polanyi 1965: 12). A vivid example of this is the denial or trivializing of mind and free will, which Polanyi encountered in the mid-twentieth century, and which is still with us today (e.g. Dennett 1991; Harris 2010: 102–106).[1] The modern mind views humans as machines, and things like kidney machines, not to mention mind-altering drugs, demonstrate the point. Polanyi takes that description, and agrees that indeed the human person is a mechanism, but he then shows how, precisely *as* a mechanism, a person (or any living thing) is a hierarchy, comprising numerous levels of reality. A simple mechanism, like a watch, illustrates the point. It functions by operational principles that have nothing to do with physics and chemistry. These principles were imposed on the parts of the watch by a watchmaker, and so hard science "cannot

[1]There are also, of course, protests from scientists (with no religious interests) against such denials: e.g. Donald 2001: 1–45, and Tallis 2011. From a more philosophical (including theological) angle, see e.g. Haught 2006, and Ward 2010. Polanyi's own rejection of "the programme of behaviorism" (e.g. 1965: 15–16) was scathing.

reveal the practical principles embodied in a machine, any more than the physical chemical testing of a printed page can tell the content of its text"(Polanyi 1965: 14).[2]

Physics and chemistry provide the *conditions* for the watch's functioning, but if you pulverize the watch with a hammer, it is only the higher operational principles which are disturbed, not the physics or chemistry of the parts. That is why physics and chemistry may account for a watch's failure, but they can never account for its success. And what is true of watches is all the more true of "the machine-like functions of living beings." The analogy of the watch's two levels of operation illustrates "a hierarchy in which the distinction between things essentially higher and essentially lower" becomes clear (Polanyi 1965: 14). The distance between the *physico-chemical composition* of a page on which is written the 23 psalm and the *meaning of the words* on that page is precisely the distance between seeing a person as so much physics and chemistry (*merely* a machine) and seeing that person *as a person*, who lives by realities far beyond those described by the hard sciences.

Scientific reductionism, as a method, is good and necessary, but when the method becomes an ontology that reduces life to *nothing but* physics and chemistry, then it becomes destructive in its denial of further levels of reality. Throughout his writings, Polanyi insisted on a multi-levelled, hierarchic, view of reality, in which the principles operative at the higher level govern the boundary conditions left indeterminate at the lower level. The process by which the higher level comes into existence is an "emergence" – a well-known concept in physics[3] – and what it attests to is that there is a dynamism in reality that is most evident in, but is not confined to, living things (Polanyi 1966: 29–52, here 45).

The discovery of emergence, and thus of the hierarchic, multi-levelled character of nature and persons, precludes the hard reductionism which wants to describe living things simply in terms of physics and chemistry. It also opens up space for asking questions that are of prime concern for philosophy and theology. One such question might be framed as follows: If the physico-chemical properties of human beings are clues to the nature of the universe – as indeed they are – then what about the higher level properties that have emerged with the rise of intelligence, consciousness and moral responsibility? Are they not also clues to the nature of reality? What of the "intellectual passions" (Polanyi 1958: 132–202), such as

[2]At the ESSSAT Tartu 2012 conference, some respondents to my presentation were concerned that the watch analogy sounded reminiscent of William Paley's attempt (*Natural Theology*, 1802) to prove the existence of God by likening the obviously designed intricacies of a watch to the amazing design of living things. Polanyi's point is utterly different, and has nothing in common with Paley. Polanyi only wishes to show that machines (both mechanical and organic) are not reducible to the laws of physics and chemistry but operate by principles that control the boundary conditions left open by inanimate physical matter (more on this below). His point is established simply by observation and logic; it neither depends on nor aims at a theological perspective.

[3]A fascinating study of emergence is provided by Morowitz (2002). Emergence accounts for "novelties [in nature] that follow from the system rules but cannot be predicted from properties of the components that make up the system" (13). His book describes 28 examples of emergence, from the big bang to *homo sapiens*.

appreciation for elegance and beauty and the desire for ultimate truth? What do they tell us about the universe from which they have emerged? For Polanyi, they are intimations of mind, and even "a clue to God" (Polanyi 1958: 324). These properties, of course, defy definition, and may forever do so, and yet – like other clues that draw discovery forward – they are essential to all human inquiry. This brings us to the key concept, for Polanyi, of the *Tacit Dimension* (Polanyi 1966) and tacit knowing.

Personal Knowledge

To understand Polanyi's emphasis on knowledge as *personal*, we need to recall what he finds disastrous in modernity: that is, scientific materialism's view that reality can be reduced to particles in motion. This mechanical view of the universe that began with Galileo and Newton (Polanyi 1965: 12) led in the nineteenth century to the famous assertion of Pierre Laplace (1749–1827) that if a great mind could know both the laws and the motions of particles of matter, then it could calculate all events of both the past and the future.[4] The main problem others have seen in Laplace's assertion is that, if true, it would call into question the reality of free will. Polanyi, however, points out that such a worry overlooks "the more massive fact that a Laplacean atomic topography would tell us virtually nothing that is of interest to us," not even, for instance, "the definite temperature" of some region of the universe. Only "the action of our sentient self, responding to the atoms impinging upon our senses, can supply" any truly meaningful information (Polanyi 1965: 13). Laplace makes no provision for the knowing mind, which for Polanyi is the key to everything. An epistemology that ignores how the "sentient self" reaches out to discover deeper levels of reality misses the most important discoveries of all.

Reality, for Polanyi, is that which continuously reveals itself in new and surprising ways (Polanyi 1966: 32, 1969: 133). Reality comprises numerous levels from the inanimate to the animate, from the first glimmers of amoebic interpretation[5] and striving to animal consciousness and human responsibility. "We have thus," he says, "a sequence of rising levels, each higher one controlling the boundaries of the one below it and embodying thereby the joint meaning of the particulars situated on the lower level" (Polanyi 1965: 15). These numerous levels of reality find an echo in the multileveled character of human discovery and knowledge. His concept of tacit knowing enables us to see this. Tacit knowing refers to the fact – gleaned from Gestalt psychology – that "we can know more than we can tell" (Polanyi 1966: 4). His parade illustration of this is the way we recognize a face. If asked to describe how we do so, we cannot say. But we can see how it happens in the case of the

[4]Polanyi mentions and laments this claim numerous times in his writings: e.g. 1958: 139–142, and 1965: 13–15.

[5]I mention "amoebic *interpretation*" here with reference to Southgate 2012 (Tartu conference paper), which argues that "interpretation, precisely understood, is a fundamental property of life."

police sketch artist who places before the observer various possible noses, chins, eyebrows and so on, and thereby enables us to reconstruct a face we have seen but cannot describe. What this shows is that when we look at something, we attend *from* its particulars (e.g. the details of a face) *to* the thing itself. Depending on what we are looking at, we may not be consciously aware of the particulars, but we are nevertheless guided by them to know the thing in its wholeness.

Recognizing a face or distinguishing, say, a hotel from a government building, or a teenager from an old person, is something we do in an instant; but the same process is taking place when we are faced with far greater mysteries and challenges of knowing, like a doctor diagnosing illness or a philosopher contemplating knowledge (Polanyi 1966: 4–12; Mitchell 2006: 70–79). As we attend from the particulars of what we seek to know, "it is their *meaning* to which our attention is directed" (Polanyi 1966: 12). Knowing is about integration, bringing the parts together to make the whole.[6] Tacit knowing, in other words, attests to the mind's never-ending urge to reach out beyond the immediate material substance of reality to its more intangible, abstract levels. For him it was axiomatic that "deepest reality is possessed by higher things that are least tangible" (Polanyi 1965: 15).

Polanyi liked to refer to the *Meno* in which Plato puzzled over a paradox: "To search for the solution of a problem is an absurdity; for either you know what you are looking for, and then there is no problem; or you do not know what you are looking for, and then you cannot expect to find anything" (Polanyi 1966: 22). Polanyi's solution to the paradox was the process of tacit knowing, by which "the particulars" of the world invite our inquiry. People have an instinct, an "intimation of something hidden, which [they] may yet discover," and so "gradually penetrate to things that are increasingly real" (Polanyi 1966: 22–23, 1969: 168). At every stage in their evolution, humans have faced "something hidden," and have broken through to further levels of reality, and further understandings of themselves and their universe. From a theological perspective, this is the capacity that enables the contemplation of mystery and response to the invitations of God.

This uniquely human capacity to "penetrate to things that are increasingly real" indicates a further important insight of Polanyi's philosophy, and one that is not without significance for theology. Tacit knowing relies on an integration of particulars, but ultimately it is not the particulars – whether of a face or of a scientific problem – which are the aim of our endeavor. Rather, our ultimate aim is the meaning of the whole, and the more profound the problem, the deeper we are drawn into the depths of reality. Polanyi was fond of pointing out "the greater depth of a person and a problem, as compared with the lesser profundity of a cobblestone" (Polanyi 1964b: 4, see also 1966: 32–33). To quote him at more length:

> Persons and problems are felt to be more profound, because we expect them to reveal themselves more richly and unexpectedly in the future. Since I have attributed the capacity

[6]For a neurological description of this phenomenon, known as "binding," see Donald 2001: 178–184. Polanyi, of course, is including the perception and contemplation of the "tacit dimension," in other words, a transcendent dimension which is not in Donald's purview.

> of things to reveal themselves inexhaustibly in the future to the fact that they are an aspect of reality, I shall say that minds and persons possess a deeper reality than a cobblestone, even though cobblestones are more tangible. And since the significance of a thing is more important than its tangibility, I shall say that minds and problems are more real than cobblestones. (Polanyi 1964b: 4–5)

Understanding in this rich sense of attaining meaning, so that "we can both know and experience the higher intangible levels of existence" (Polanyi 1965: 18), is itself a higher comprehensive entity. But it is precisely this "cognitive faculty [that is] cast aside by a positivistic theory of knowledge, which refuses to acknowledge the existence of comprehensive entities as distinct from their particulars" (Polanyi 1961: 239). In such a reductionist conception of reality, particles in motion are real enough, but humans as comprehensive and comprehending realities are absent (Polanyi 1958: 142, 380).

Polanyi's epistemology not only rescues humans from the deadening effects of scientism, it also simultaneously opens up before us the world of transcendence. As Drusilla Scott notes, what Polanyi accomplishes is ultimately a matter of "common sense." To repeat, Polanyi's philosophy restores to the western world "capacities which centuries of critical thought have taught them to distrust" (Polanyi 1958: 381). In doing so, it restores depth to reality, since one level of reality leads on naturally to inquiry about another. "Voice production," for example, "leaves largely open the combination of sounds into words [. . .] a vocabulary leaves largely open the combination of words to form sentences, which is controlled by grammar; and so the sequence goes on" (Polanyi 1965: 15). Higher and more complex levels lead to purpose and meaning, taking the mind into contemplation of higher reality where it is possible to consider the dynamic purposes hidden in creation and in the Creator. This brings us to Polanyi's critique of the modern understanding of evolution.

Persons Knowing Life

Polanyi was very impatient with the notion that "Neo-Darwinism" can explain the rise of human consciousness. Neo-Darwinism "regards evolution as the sum total of successive accidental hereditary changes which have offered reproductive advantage to their bearers." In this theory, "the 'force of natural selection' is supposed to have brought forth the successive forms of life that have eventually produced [human beings]" (Polanyi 1958: 382–383). He was impatient with this theory, of course, because it reduces life to the vagaries of physics and chemistry and therefore precludes "any clear conception of living beings" (ibid.: 383). Physics and chemistry cannot account for any level of being above the inanimate; they are utterly blind to the higher operational principles that control the boundary conditions they leave open. Valuable though these disciplines are – Polanyi spent the first half of his life studying and teaching chemistry – they cannot account for higher levels of being. Polanyi insisted on a description of life and evolution which begins at the other end, so to speak – from the fact of persons with a capacity to seek knowledge.

Living things are the most complex entities we know, and "knowing life"[7] is necessarily "contemplative, rather than analytical." This is because "[f]acts about living things are more highly personal than the facts of the inanimate world" (Polanyi 1958: 353, 347). The more complex the animal we seek to know, the greater the distance between "our comprehension and the specification of our comprehension" (ibid.: 347). This is true both with respect to the living things which biology seeks to understand, and – more importantly – with respect to the biologist who is seeking the understanding. Further, the higher we ascend the evolutionary ladder, the more we encounter animals (like biologists) having "active centres," "centres of decision" (ibid.: 402–404) that strive and sometimes fail. In other words, we can make discoveries and know ourselves both as evolved, biological beings and, at the same time, as passionate, committed knowers of complex abstractions; but the higher we ascend this scale of knowing, the less we are able to account for our ability to know, and the more we have to account for the striving, purposive center that is human consciousness.

Once biology rises, as it must, to the level of "a biology of [humanity] immersed in thought", then it must also acknowledge the human "capacity for continually discovering [. . .] a deeper understanding of reality" (ibid.: 374). Polanyi has in mind here what he calls elsewhere "a society of explorers," in which, by virtue of tradition, purposeful inquiry and passionate commitment to truth, human culture attains to a point where it knows itself to be called to, and responsible for, "a firmament of truth and goodness" (ibid.: 380).[8] This is the pinnacle of life's achievement.[9]

The closest Polanyi comes to providing a definition of life is the following:

> I shall regard living beings as instances of morphological types and of operational principles subordinated to a centre of individuality and shall affirm at the same time that no types, no operational principles and no individualities can ever be defined in terms of physics and chemistry. (ibid.: 383)

The highest development of living beings is found in "human personhood," in which the phenomenon of "a centre of individuality" reaches its highest complexity. Such personhood can only be accounted for by "the assumption of finalistic principles of evolution" (ibid.: 402). Polanyi takes it as common sense that life and mind emerging from inanimate matter represent progress, a progress that has taken place by virtue of the higher ordering principles which enabled life to emerge from inanimate matter to higher and higher states of being. But where do these "higher ordering principles" come from? Do they emerge with random genetic mutations? This is impossible, he says, since

[7]This is the title of Chap. 12 of *Personal Knowledge*.

[8]For Polanyi's full discussion of "A Society of Explorers," see 1966: 55–92.

[9]Wilson (1998) argues that all disciplines are ultimately reducible to laws definable by biology, and thus he subsumes even religion and ethics under biology. The contrast with Polanyi, who sees the insights of biology as inevitably leading to the transcendent level of philosophy and theology, could not be more dramatic.

> the ordering principle which originated life is the potentiality of a stable open system; while the inanimate matter on which life feeds is merely a condition which sustains life, and the accidental configuration of matter from which life had started had merely released the operations of life. (Polanyi 1958: 383–384)

Neither life, then, nor *ipso facto* evolution, can be attributed to the random machinations of physics and chemistry. Given the fact of personhood and "the decisive fact that biotic achievements are those of an active centre" (ibid.: 402), Polanyi insists that "this active component" must have been present "down to the lowest levels" of life and of the inanimate substrate from which life emerged. Emergence, to repeat, has a dynamism to it. Life has to do with a "centre" which enables the "opportunities and strivings" of "biological fields". It emerges, in fact, from the mysteries of "a cosmic field", which over billions of years has been evoking "a myriad centres that have taken the risks of living and believing" (ibid.: 404–405). For their part, humans are the striving centres, whose powers of tacit knowing both reflect, and strive to understand, the very processes which gave them existence.

Conclusion: Thoughts for Theology

Polanyi's purpose is to illustrate that personhood is essential for knowledge in its fullness. In both its negative and positive aspects, his philosophy has profound implications for every area of human knowing, and especially for the relationship between theology and science. His theory of knowing is anything but an ivory tower abstraction; it is founded on a profound understanding of science. He is able, therefore, to show how flawed is the modern understanding of biological evolution. At the same time, he is able to show how emergence, of which human evolution is the most dramatic example, brings us to contemplation of our transcendent purpose, perhaps even to "knowing the person of God." In other words, he does not merely *relate* science to philosophy and theology, he shows that they are essentially the same enterprise. They are all gathered in the one endeavour of human knowing.

Theology, therefore, must not consider science an intrusive, threatening methodology. Different though they are in method, theology and science derive from the same source and have the same ultimate purpose. Indeed, from a theological perspective, science derives as much from God as does theology. I am aware of how such an idea might seem to fly in the face of the traditional view that revelation supplies what human reason alone cannot attain. And, to be sure, with respect to doctrines like trinity, incarnation and redemption, we can look only to the privileged revelations of Christian experience – the same being true, *mutatis mutandis*, for any other religion. Nevertheless, what Polanyi's epistemology demonstrates is that humans are endemically capable of transcendence. Their natural inquiries proceed *naturally* to the supernatural. Far from being a diminishing of the supernatural, this suggests that divine presence suffuses every moment and aspect of human searching – it does not diminish, but only reinforces the view of *Immanuel*, "God with us".

I have already mentioned the suggestion, arising from Polanyi's philosophy, that quintessential human qualities (what Polanyi calls the "intellectual passions") must be, no less than our physical make-up, clues to the nature of the reality from which we have emerged. This is a theme for the contemplation of both science and theology. To this we can add Polanyi's insight that reality is not just objective facts: much less is reality reducible to materiality, to "cobblestones." Reality, rather, is that which continually invites our inquiry and manifests itself constantly in new and surprising ways. As emergence and evolution show, there is an inner dynamism to reality which suffuses all things and brings them into relationship. Polanyi was fond of Teilhard's concepts of noogenesis, the emergence of mind, and of noosphere, by which together humans achieve personhood (Polanyi 1958: 388–389). All of this can speak to theology of ongoing divine creation, and could even further inform a theology of revelation.[10]

Also worthy of emphasis is Polanyi's "common sense" insight that ordering principles guide and give structure to the more basic levels of human existence. Physics and chemistry can account for failure in physical beings, but they can never account for their success. It goes along with this that life is an emergent, *metaphysical* entity that cannot be defined in terms of physics and chemistry. Polanyi achieves a massive liberation here not only for theology, but also for biologists who are dissatisfied with, or even just suspicious of, the notion that living things, including humans, are no more than "gene machines". "Darwinism has diverted attention for a century", says Polanyi, "from the descent of [humanity] by investigating the *conditions* of evolution and overlooking its *action*" (Polanyi 1958: 390). For theology, Polanyi provides new possible ways of speaking of the "action" of God in creation.

Finally, Polanyi's science-based philosophy is fully consistent with the idealist notion that mind precedes matter, and indeed that matter is best understood in terms of the loving spirit and creative mind of God – as Mariano Artigas would say, "The Mind of the Universe" (Artigas 2000). This is why reality, though ultimately mysterious, seems constantly to invite human inquiry, and even appears to have a natural correspondence with human minds as they reach out to discern the ground of their being. As St. Augustine says, "You, O God, have made us for yourself, and restless is our heart until it rests in you". In this regard, Polanyi's philosophy not only suggests the reality of God, but also leads to intimations of God's character as creating through emergence, as being dynamically present in life and evolution, and as increasingly evoking intelligence, responsibility, thanksgiving and worship.

[10]Dulles (1992), of course, has already made some use of Polanyi's insights in his understanding of revelation. There is a great deal more, however, that might be said.

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