Notes Toward Understanding The Hungarian Roots of Polanyi's Heuristic Philosophy of Religion

Richard Gelwick

ABSTRACT Key Words: Michael Polanyi, biography, William T. Scott, Martin X. Moleski, Hungary, Georg Polya, heuristics, Reinhold Niebuhr, Pauline scheme of redemption, history and hope.
William T. Scott's and Martin X. Moleski's biography, Michael Polanyi, Scientist and Philosopher *helps to show how Polanyi throughout his life developed toward his theory of knowledge that is a heuristic philosophy and leads to a heuristic philosophy of religion.*

In my response to the Scott and Moleski biography of Michael Polanyi, I want to limit my remarks to one theme. In 1977 in The *Way of Discovery, An Introduction to the Thought of Michael Polanyi*, I held and still do that heuristic philosophy is so far the best way of naming the central thread of Michael Polanyi's philosophical reform and contribution.[1] Further it is still the key to understanding why Michael Polanyi is important for intellectuals and public leaders from statespersons, politicians, scientists, economists, ministers of religions, literary and visual artists, educators, social planners to all citizens who seek to solve the problems for the survival of our global society.

As our Polanyi Society journal indicates by its title of *Tradition and Discovery*, Polanyi saw that a pivotal issue for the survival and growth of humane and civilized life is to accept the human responsibility of exploring the totality of human knowledge by learning from the traditions of the human record and continuing to renew and to build a problem solving society. By problem solving, I mean a society that is free and open to inquiry and to change by following the truth as it becomes known to us through investigation, practice, discussion and argument.

In learning more about and understanding Polanyi's life, there are three main divisions of what I want to say about the Hungarian roots of Polanyi's heuristic philosophy and understanding of religion. The first is Polanyi's biography points back to clues that led him to his heuristic philosophy. The second is how Polanyi's contribution to heuristics builds on the experience of Polanyi and the work of his Hungarian friend Georg Polya. The third is how Polanyi's heuristic philosophy of religion faces the contradictions of time and eternity met in his Hungarian years and is resolved in his heuristic philosophy of religion.

Before going further, I want to indicate that I am defining heuristic in the sense of solving a problem that goes beyond George Polya's definition.[2] Polya's valuable work shows methods for solving a problem, particularly in mathematics. Later in his work, Polanyi aptly described this human vocation as a society of explorers.[3]

The Heuristic Background of Polanyi's Life

Scott's and Moleski's biography of Michael Polanyi indicates the background of intellectual ferment and of historical change occurring at the time of Polanyi's birth and life. The Hungarian and European world of

Polanyi was a time of storm and stress. Polanyi was an intellectual explorer in a context of great persons and revolutionary states. Consider for example these cultural forces. One is the movement of the area of pre-World War I Hungary from the rule of the Hapsburg monarchy toward Hungarian political independence and democratic institutions after a thousand years of monarchical and patrimonial arrangements.

Hungary in the first 27 years of Michael Polanyi's life was still under the Austro-Hungarian monarchy. Prior to World War I, it was a period of peace nationally, but it was also a time of intellectual ferment. The intellectual, social, political and economic forces for liberal reforms were in the air even as the monarchy tried to hold on. Vestiges of privilege for the barons and families of the upper class still remained. There was the growth of industrial capitalism and a commercial middle class. There were also centuries of ethnic and territorial struggle and efforts for political change and independence. These struggles were for both Hungarian independence as well as more liberty for its citizens. As part of the revolutionary movements throughout Europe in 1848, liberal leaders in Hungary seized power from the Hapsburgs and established a short-lived independence. In the next year, 1849, the Austrians subdued the Hungarians and enthroned the Austro-Hungarian Monarchy. This rule was modified in 1867 to have a representative parliament in Budapest, but its authority was mainly for internal Hungarian affairs. The Dual Monarchy lasted until the defeat of Germany and Austria in 1918. By that time Michael Polanyi had already begun his career in physical chemistry.

From the late 18th century onward, the area of Hungary, which would have included parts of Romania, Slovakia, and Croatia, was a place in which thinkers were dissatisfied with their rulers and inspired to seek liberal changes by the examples of the French revolutionary ideals, the British Commonwealth, the Marxist socialist thinkers, and its own history of liberal leaders and poets. The impact of these struggles and changes on Polanyi is indicated in Polanyi's Thomas Jefferson Lectures at the University of Virginia and the McInerney Lectures at Berkeley in 1962 where I first met him. At that time, Polanyi spoke of the history of the world as divided into two parts. One part was before the French Revolution and the other part was after it.[4] All history until the French Revolution was guided by established practices, customs, and laws. It was at the time of the French Revolution that a new era began with humankind seeking and expecting unlimited social improvement and progress while throwing off all traditional restraints. This thesis is a reflection of the conflicting ideals and forces of Polanyi's childhood that raise the question of "history and hope," how out of a history of repressive control and conflict we can progress toward a better future. His heuristic philosophy later rises to religious grounds as it tries to solve this problem.

This impetus toward seeking solutions to difficult questions was facilitated by the cosmopolitan influences in Hungary. Under the Hapsburg Monarchy, German language, culture, and scientific research were heavily influential among intellectuals. Michael Polanyi and his siblings spoke German with their mother,Cecile, but they were also excellent Hungarian speakers. By age six, Polanyi was multi-lingual, speaking Hungarian, German and French. The Budapest intelligentsia was engaged with the movements in Europe in science, politics, education and the arts. Budapest, while not a rival, had much of the same spirit of intellectual adventure as Berlin and Vienna.

In the formative years of Polanyi's life in Hungary, the relating of beliefs and religious practice to social life and thought were also diverse and pluralistic. Since the time of King Stephen I (1001-38) in the 11th century, the area of Hungary was predominantly Roman Catholic and has remained so to this day. At the same time, there was a tradition of toleration of religious minorities. Jewish synagogues, Reformed churches, Lutherans, Greek Catholics, Eastern Orthodox, and Unitarians developed in Hungary as part of its multi-ethnic and multi-cultural

population. This ethnic pluralism included Finns, Estonians, Slovaks, Croats, Romanians, Germans, and Gypsies along with the dominant Magyars or Hungarians.

Besides the general national environment that created a thrust for solutions to problems, the family, social, and school life of Polanyi provided an array of influences encouraging a heuristic spirit. The following are some representative experiences that nurtured and fertilized Polanyi's heuristic philosophy.

One is the liberal Rabbi Andreas Wohl, father of Polanyi's mother, Cecile, who put no pressure on his daughter or her marriage and family to follow strict Jewish practice. Rabbi Wohl's progressive Judaism is seen in the title of two of his essays,"The Significance of the Talmud for Christianity" and "The Post Biblical History of the Hebrews from the Babylonian Captivity into the Time of Mahomed." Rabbi Wohl lived at the Polanyi home due to illness from Michael Polanyi's ninth to fourteenth years before he died. The Polanyis were culturally Jewish but not strictly religious. Both Karl Polanyi and Michael Polanyi held to the values of Jewish ethical ideals and were especially concerned for societal improvement.[5] They felt also free to embrace Christian expressions of their concerns.[6]

A second influence toward Polanyi's heuristic philosophy was his secondary education at The Minta, an experimental school meant to be a model for better education and training of future professors.[7] It provided a strong foundation in humanities, physics and mathematics. Both students and faculty in this school were in an *avant garde* program that in some ways anticipates John Dewey's philosophy of having students learn by doing rather than rote learning. Minta graduates of Polanyi's generation are illustrious persons such as Georg von Hevesy – Nobel Laureate in medicine, Edward Teller – co-creator of the hydrogen bomb, Eugene Wigner – Nobel Laureate in Physics, Leo Szilard (with Einstein persuaded President Roosevelt to develop the atomic bomb), and John von Neumann (one of the founders of the mathematical foundations for modern computers). All of these out of a student body of about 30 members!

A third group of influences on Polanyi toward his heuristic philosophy were intellectual societies showing Polanyi and his early associates as serious young adults meeting for the development of their thought and its relevance to science, society, and religion. This inquiring practice began in Polanyi's home where his very progressive and intellectual mother created a salon of many of the leading minds of Budapest for conversations ranging over literary, social and revolutionary ideas of the day. Cecile Polanyi expected her children to be like her with an interest in the life of the mind and the improvement of society. She was a feminist before feminism seeking with others to recognize and to find solutions for current social problems.[8]

A second intellectual society leading toward a heuristic outlook was the Galileo Circle, whose first president was Michael's brother Karl, five years older than Michael. The Galileo Circle was founded in 1908 at the University of Budapest, the year that Michael matriculated. The purpose of the society was "the defense and propagation of unbiased science."[9] The unbiased science was a science not in the service of the established order but a science seeking to overcome the gaps between rich and poor and the rulers and citizens and to continuing a liberal and creative society. It had over 250 members. Some members were radical reformers described by a contemporary as "the spirit of revolutionary Russia, rationalism driven to its mystic extreme."[10] In this association, one of the primary problems of Polanyi's life-long thought was at the center of the discussion, namely, how to relate the role of tradition that sustains us and at the same time has to change as we confront new problems. It is notable that as radical as Karl Polanyi was, he never agreed with those who thought that social change should be brought about by violent force.

In 1915, two years after Michael Polanyi's graduation from the University and during his return from the front as an army physician, he was invited to take part in Sunday afternoon discussions in the apartment of Bela Balazs, a poet and dramatist.[11] The Sunday Circle was led by Georg Lukacs, who later became one of the leading Marxist theoreticians of the twentieth century, famous for his philosophical explanation of class consciousness. The Sunday Circle also had other budding intellectual leaders such as Karl Mannheim, the founder of the sociology of knowledge, Bela Bartok, pianist, composer, and ethnomusicologist, psychologist Julia Lang, and novelist and philosopher Emma Ritook. The underlying concern of the group was the meaning of the current war, World War I, for understanding human nature and the post-war future. Topics discussed revolved around the philosophy of love.[12] Balzacs had recently converted to Roman Catholicism and had a great admiration for the "church fathers" and Jewish and Christian mystics. Atheism or belief in God was often on the agenda. Particularly engaging for the group were the writings of Kierkegaard and of Dostoyevsky. It is during this time that Polanyi read Dostoyevsky and Tolstoy. He reports years later in a letter to Karl Mannheim that he had at that time a feeling of conversion to Christianity along the lines of Tolstoy.[13]

A different kind of intellectual background and contributing factor to Polanyi's heuristic philosophy in Hungary was Central Europe's fascination with genius in science. This genius factor balances the centers of thought that focused on social forces with another that focused on the workings of the individual person in thought. Tibor Frank has pointed this out in showing how this concern was prevalent among Hungarian intellectuals at the beginning of the twentieth century.[14] At the end of the nineteenth century, central Europe was excited by a new field of study dealing with scientific discovery and problem solving. This interest was leading to studies in the "secrets of the mind and its workings, and the processes of understanding/knowing, intuition/perception, intelligence/intellect."[15] This interest in genius was also a threat to the Marxist materialist's view of the development of thought. V. I. Lenin responded to this movement in 1908 as "the old absurdity of philosophical subjective idealism."[16] Ernst Mach's idea that all knowledge is the conceptual organization of the data of sensory experience was also having significant impact in Vienna with the beginnings of positivism. Mach's views at first were seen to point to the importance of the mind. Polanyi later opposed Mach's theory as inadequate and gave a more creative role for the person's intellect through the workings of tacit knowing. Georg Polya's work on heuristics is also seen as influenced by this interest in genius.[17]

Polanyi often remarks on the importance of a culture's prizing and respecting the achievements of its geniuses or superior creative members.[18] What he points to is their heuristic power to reach toward reality that is approaching discovery but is yet to be discovered. These early studies in genius and creativity suggest precedents for Polanyi's theory of knowledge nearly fifty years later with its inclusion of intellectual passion and commitment to things unknown but approaching discovery.

So far we have noticed many elements contributing to Polanyi's heuristic philosophy: the cultural milieu, the elite experimental school, the liberal Jewish outlook, the growth of thought through convivial intellectual societies that dealt with history and hope, social change by revolution or reform, and the interest in the works of genius. One very important thing is still missing: his early experience as a scientist. Later, science would be the leverage that commanded attention for his new theory of knowledge. We have already seen that Polanyi's schooling at the Minta produced a disproportionate number of illustrious scientists and mathematicians. His medical training furthered his scientific interest and skills, too.

One of the important contributions of William Scott to Polanyi's biography is to provide for non-scientists an explanation of Polanyi's work in physical chemistry. The story of how Polanyi became a world

famous physical chemist is itself a lesson in heuristics and tacit knowing. Looking at Polanyi's beginning career, we see in his work as a medical student a number of features. One is Polanyi's strong interest in physics and chemistry during his medical training. Preoccupied with this interest, Polanyi virtually majored in physical chemistry. Part of his ability to do this was the advantage of having a medical school professor, Ferenc Tangl, who encouraged him and obtained a research fellowship for him. Also, Polanyi had acquired at the Minta an appetite for thermodynamics. Paradoxically but heuristically logical, Polanyi had applied to study medicine and not physical chemistry, partly because he had found in his Minta studies that he had difficulty in understanding Nernst's *Treatise on Physical Chemistry*. Yet working later on a problem under Tangl, Polanyi took a suggestion from Lagergren in Nernst's *Treatise* and later combined it with ideas from Max Planck's treatise on thermodynamics and Einstein's concept of quantum energy. Scott and Moleski summarize Polanyi's work this way: "His creative contribution was to see, by an act of imagination, a joint consequence that was not separately obvious in either piece of work."[19]

Before this insight could occur several other events took place. One was that Polanyi took the summer of 1912 to study physical chemistry at the Technische Hochschule in Karlsruhe, Germany. There he met a number of promising physical chemists and one of them, Georg Bredig, encouraged Polanyi to pursue his ideas on Nernst's heat theorem. This nudge was crucial in evoking Polanyi's insight that he had earlier avoided. In this story, we see Polanyi's encountering a problem to be solved, going back to Nernst's seemingly difficult work for Polanyi, and getting collegial support and able mentoring that encourage him to dare to try his theory.

Polanyi also learned in this period a difficult but important lesson about the role of personal authority in science. His early version of relations of thermodynamics and quantum theory was so good that Professor Bredig sent Polanyi's work to Einstein, who approved it, and it was published in the *Proceedings of The German Physical Society*. Later Polanyi would have to face the weight of Einstein's authority when he disapproved of Polanyi's work on the potential theory of adsorption. The grand lesson preparing Polanyi's heuristic philosophy here was the importance of following a trajectory of imagination, capable guidance, and personal dedication to a so far unaccepted and valuable insight. The trajectory was much more than a series of neat inductive steps. Still the weight of Einstein's opinion postponed until later recognition of the rightness of Polanyi's theory.

Seen in retrospect, Polanyi's life is heuristic in the way he discerned roots of these problems and formulated solutions. It is his breadth of concerns across the fields of political liberty, free market economy, the role of beliefs in science and a free society, and his high regard for the independence of thought and the pursuit of truth that make his work monumental and relevant to the problems of today. The problems he early attended to are ones that contribute to his major work in a general theory of knowledge.

Polanyi's Contribution to Heuristics

From my brief survey of heuristic influences in Polanyi's life, it is clear that there is not a single genesis of Polanyi's heuristic philosophy. The progress toward his proposal of a post-critical general theory of knowledge in the Gifford Lectures in 1951-52 and in their published form as *Personal Knowledge* is cumulative and developing. When I found and showed him in 1962 his letter on "The Value of the Inexact,"(published in 1936 in the British journal *Philosophy of Science)*, he admitted that it contained in essence many of the basic ideas that he gave that year for his Terry Lectures at Yale on tacit knowing.[20]

When we look at Polanyi's literary works, there are five major steps in his developing his theory. First is *Science, Faith and Society,*[21] his inaugural address as a philosopher. It is his first coherent book length discussion of the central themes of his epistemology. But Polanyi does not yet fully realize that he is starting a new theory of knowledge. Second is *The Logic of Liberty*[22] that in some chapters pre-dates *Science, Faith and Society*. It also argues for the fiduciary nature of scientific thought, and it adds extensive examples of how skills, conviviality, and beliefs work in academic freedom, government research, social welfare, and economics. Polanyi is still thinking against the background of World War II in Europe and the rise in Britain of a movement for planning and centralized direction of science for state goals.

With the Gifford Lectures and their six year reworking into *Personal Knowledge*, Polanyi's epistemology directly leads the way "towards a post-critical theory of knowledge." A point here for us to notice is that Polanyi is aiming for more than a new theory for philosophers. Polanyi is aiming for a general theory that will reorient our society so that we may again hold great beliefs that can guide us in the task of human striving for a better world for humankind. At last, his heuristic emphasis in knowing is in full light. Today, Polanyi's desire for recognition of the truth of his theory by philosophers seems less important than the reform itself.

The fourth major step of Polanyi's heuristic philosophy is to clarify and state the essential principles and structure of his theory of knowledge in *The Tacit Dimension.* Here we have the demonstration and the designation of the essential terms of his epistemology. At the same time, he continues to place this theory in its relevance to the issues of faith and the future of humankind. Two things stand out in this book. One is the structure of tacit knowing in all knowing and endeavor. The second is the imperative for a destructive world to regain its way toward a great adventure in knowing the unfolding reality of the universe.

Finally, his last book *Meaning*[23] completed with the late Harry Prosch's help, explicitly extends his heuristic philosophy from science into the world of meanings that sustain, deepen, and guide the human adventure. The fundamentals of discovery in science are now linked with the creative imagination and the spiritual potential of humankind. The personal element is reliably involved in all domains of knowing so that there is no need to doubt the validity of transcendent values that can guide a free society toward progress even though perfection remains unattainable.

Polanyi's heuristic philosophy is much more than mathematical problem solving as made famous by Polya. It is related to Polya's pedagogical sense of helping students learn how to solve mathematical problems. But it is much more. Compared with Polya, Polanyi has discovered the reason why our knowing is a discovery process. In tacit knowing, Polanyi has laid out a comprehensive claim about the structure of all knowing.

The relation of George Polya to Polanyi is based on two things. One is their similar origins in Budapest. The other is their attention to the nature of problem solving itself. Polya was four years older than Michael Polanyi, but they knew each other at the University, in the Galileo Circle, and corresponded throughout their lives. Polanyi uses Polya's work on problem solving in *Personal Knowledge*[24] and acknowledges his debt to him in *Meaning.*[25] Polya's book *How To Solve It* has sold over a million copies and been translated into many languages. Polya gave guidance that improved the teaching of mathematics, and his principles are far reaching.

Tibor Frank highlights some of the elements of Polya's heuristics. Notice how they fit into Polanyi's epistemology. First Polya's primary concern was to provide and maintain an independence of reasoning during problem solving.[26] Here is Polanyi's regard for the power of imagination and thought. Another element was

Polya's respect for luck and not just reason in solving problems.[27] Here is Polanyi's regard for the guess or hunch, the willingness to follow an intuition. Third, in teaching mathematics, Polya counseled to "start from something familiar or useful or challenging," "don't be afraid of using colloquial language," "do not enter too early…into the heavy details…give first a general idea," and "realize that the natural way to learn is by stages."[28] Here is Polanyi's grasp of how the outline or pattern comes before the details. All of these fit into the ways Polanyi discusses personal knowledge and tacit knowing.

When Polanyi uses Polya's work, he picks out five points.[29] One is Polya's view that heuristics attempts to lay down maxims for crossing a logical gap. Polanyi points out however that maxims have to be learned in the practice to which they apply because they are essentially vague. A second of Polya's points is how passionate search for solutions to problems is essential, yet the solutions often come only after deliberate searching followed by rest. Here Polanyi uses Polya as a support for Polanyi's tacit components of discovery. A third point is Polya's advice "to look at the unknown," which Polanyi interprets to mean to look at the known data not in themselves but as clues to, pointers to, parts of an anticipated solution. A fourth point is Polya's analogy of solving a problem is like the building of an arch in which each stone is put in piece by piece but the whole project is held together by the anticipation of the end result. Polanyi agrees that it is more important to look toward the goal rather than the inductive steps themselves. Finally, Polanyi notes the relation of first grasping the whole or seeing the answer and then doing the proof and analysis of how you got there. What is missing in Polya and added by Polanyi is the enormous generalization from heuristics in specific cases to their bearing on the grand social and philosophical problems of our world. Without Polanyi, the grand importance of heuristics is missed.

Polanyi's Heuristic Philosophy of Religion

The role of religion in Polanyi's thought is intrinsic. While he lived in a time when the intellectual challenges to religion from science and philosophy were strong, he was not preoccupied with the debate about atheism or theism. His allegiance to the general ethical ideals of Jewish and Christian faith remain throughout his life. In his years in England and in America, he began writing about his beliefs more in Christian terms, particularly the Augustinian view that faith precedes understanding and the Pauline scheme of redemption in how we face the impossible task of perfection. In both of these ideas, he was making an analogy and then an epistemological claim. His beliefs were not about theological doctrines. They were neither about the creeds of churches nor the differences among religious groups. Moreover his religious identity was more in the broad tradition of Judaism and Christianity, though the Christian aspect is emphasized in his mature years. Part of this emphasis grew through his participation in the Moot whose Christian leader J. H. Oldham and members discussed how to face the problems of England and the continent after the Second World War.[30]

New inquirers into the thought of Michael Polanyi sometimes miss Polanyi's religious character because they look for his record of church attendance and activities as if that were the only way of being religious. Religion as spiritual and intellectual concern for the human condition and its aspirations are at the heart of Polanyi's work. The basic framework of Jewish and Christian thought that takes the course of history as revealing both human greatness and frailty and also the need for human dedication to good over evil and love over hate is present in all his work. As he says of our need for transcendence, "man needs a purpose bearing on eternity."[31]

Polanyi's philosophy is rich with implications for religion and religions. These implications can go deeply into specific theological issues as represented by T. F. Torrances's works[32] on the incarnation, space,

time, and reality and Charles McCoy's work on covenant and world pluralism.[33] They can also go into the philosophies of other religions such as James Stines' comparison of Polanyi and Taoism.[34] Polanyi meant to renew the grounds for religion, but he left the tasks of theology to the theologians whose work he did value.

Polanyi's religious and spiritual journey has a heuristic within it. We notice that his family was not ritually religious, but that their activities and concerns were involved with the great questions of liberty, social amelioration, and cultural achievement. There was an expectation of the Polanyi children to do something significant with their lives in this arena. Like his brother Karl, Polanyi was attached to the problems of liberal economic and social-political reform. In this connection, we should note that the name of our corresponding society in Hungary is "The Michael Polanyi Liberal Philosophical Association." Liberal in Hungary meant, and still means, favoring freedom of thought and action, openness to new knowledge, and willingness to reform tradition and change. It is in this very context of how and what change should occur that Polanyi met the problems that led to seeing the relevance of the Pauline scheme of redemption.

Polanyi as a medical student and physical chemist never retreated from thinking about the great questions surrounding him as Hungary fell into a brief democracy, then a briefer period of Communist rule before settling into authoritarian rule under Admiral Horthy. He deliberated and wrote about these problems as the National Socialist Party of Hitler began taking over Germany including its scientific laboratories, as the Soviet Union tried to make science fit the ideology of Leninist Marxism, and as intellectuals in Great Britain yearned for a planned economy and planned science. Faced with these problems and with his experience in problem solving in his scientific work, he made the creative connection between problem solving in science, society and religious ideals. For Polanyi, the importance of religion seems to be its social and cultural impact. It is the way religion provides guidance toward a purpose bearing on eternity.

Moving on, I want to stay with the main theme of heuristics and make two points. One is on the place of faith in life and in religions. The second is on the Pauline scheme of redemption.

First, the place of faith in life and in religions is one of Polanyi's strongest contributions to philosophy of religion. For Polanyi, faith functioned primarily as *fides qua creditur*, the faith by which one believes as contrasted with *fides quae creditor*, the faith that is believed. When one looks at Polanyi's view of the rise of human life, you can see a rudimentary form of faith as trust is a biological component of human life. Polanyi's analysis of the tacit components in the story of life show an increasing gradient of living forms searching for right or fit relation to their environment. This groping and searching is a primitive form of heuristic. All biological active centers live and die by their searching and selection. This activity embodies the tacit knowing principles of relying on and attending to which are analogous to faith as trusting. It is this general architecture of life that makes possible not only survival but also innovations that increase access to the levels of reality in the world. This primitive form of relying on seen in the earliest centered forms of life is a precursory of a fiduciary type of activity that enlarges in animals and human beings who can only function too by the fiduciary network of knowing. The recognition of this inherent role for a faith-like process within the nature of living things themselves is a key to the restoring the role of faith in dealing with human life and responsibility.

One of the problems of Judaism, Christianity and Islam is for them to understand that they are not the only religions of faith. Further, faith is first trust before it is integrated belief. Polanyi's theory of tacit knowing extends his sense of relying on in order to attend to makes the relational nature of life more intelligible. It also shows that faith as trust comes from a general condition of life rather than any particular religion.

In the sense that all knowing is a "relying on and attending to" Polanyi has made the primal faiths by which we live an unavoidable issue for all of us. Once the role of faith as trusting in order to attend to is perceived, the basic questions of what is believed at the presuppositional level becomes open for reflection. The role of the fiduciary foundations of all human knowing leads to the critical questions about the objects of trust presumed or the things upon which we rely in order to evaluate, to prioritize and to guide our behavior. Most of the great choices for personal life, social intercourse, and national relationships depend on our understanding what we are relying on in the sense of valuing and constructing our story. The implications of examining the faiths by which we know, the web of trusts in the matrix of living leads to the importance of philosophers, poets, theologians, natural scientists, social scientists or all the disciplines that enable us to reflect on what we are doing. It also leads to the examination of the faiths operative in education and leadership of societies.

At the same time, we meet with the fact that our analysis of faith cannot be exhaustive. What we rely on in order to attend to cannot be made completely explicit. At the cognitive analytical level, we can only discover morphological features of faith that help us understand the background assumptions of belief.

When all religions are seen as all involving faith as a form of relying on and attending to in tacit knowing, we provide common ground for meeting differences. Instead of looking first at what teachings are believed, the structure of tacit knowing suggests that we look at how we each came to those beliefs on which we rely.

The encounter of all persons or organized groups is ultimately on a faith-to-faith basis even among those who profess no faith. Religions may differ in what they rely on and attend to but they can share the awareness that their beliefs and all others are derived from their history and experienceand seek a right way to relate to their sense of reality. In the spectrum of choices on the relation of Christian faith communities to other Christian views or to different religions, there is no logical reason for excluding communication and understanding between them.

A second contribution to philosophy of religion in Polanyi's heuristic philosophy is his application of the Pauline scheme of redemption to the overwhelming difficulty of historical progress and human frailty. What Polanyi learned in his early years in Hungary was the need to reconcile the desire for universal human improvement with the limits of human nature. Polanyi does not use the language of Reinhold Niebuhr, whom he claims to have met and heard lecture, but he seems to take a similar view of history and hope, time and eternity. Polanyi was concerned for the improvement of society since the days of discussions in his home, the Galileo Circle, the Sunday Afternoon Circle, and the Moot. From the beginning until the end, he opposed radical revolution because of its tendency to serve its own interests in the name of its own view of the good. Thus, he pointed out the problem of moral inversions after the French Revolution, the Russian Revolution, and the Nazis takeover. He wanted to effect change person to person by a change in outlook, especially among the intellectual leaders. Indeed that is the aim of his providing a new epistemology.

The message that Polanyi saw for a world impatient for change and hungering for revolution was to accept that the growth of knowledge and of society is based on trust in the processes of a free society and not on acceptance of a totalitarian or authoritarian one. A society progresses by the convincing and persuasion of its members who share a common goal of the pursuit of truth. For him, the pursuit of truth in any area is progressive but always incomplete due to the unfolding nature of reality itself. There a sense here of Reinhold Niebuhr's discussion of the dictum "that we are always equidistant from eternity."[35]

In this situation that is relevant to all of humanity's struggles for progress, the Pauline scheme of

redemption came to him as the way to hold together the human drive for improvement with the impossibility of completely achieving its goal. On the one hand, Polanyi sees in the Pauline scheme with its promise of grace from beyond our control that aids us in the search for finding and doing truth and right. He describes this as the tacit way reality visits our searching. He even says it is a "clue to God." It is seen in the gift of discovery to the disciplined researcher in science who labors and suffers and is given surprising insight. It is seen in the inquirer who has a hunch but has to take the risk of investing herself in trying it. It is seen in the persistence of pursuing problems that seem insoluble yet someone has a belief that there is a solution though still hidden from view. Finding of solutions is more like a gift than it is of purchasing or seizing control. Progress in science takes a prepared mind, but it also takes a mind willing to trust that there is an intelligible reality that grants to such a mind insights that are a part of the truth of an unfolding reality.

When Polanyi refers to the Pauline scheme of redemption, he realizes that this pattern is a "clue." His reference to the Pauline scheme of redemption is not pointing to Paul's explicit faith in Jesus as the Christ. Rather it is in seeing that a person seeking to fulfill a difficult or impossible task may be aided by discovery of reality greater than herself.[36] If there is no answer, then this is as it should be. The Pauline scheme is transmuted into a general principle for humans striving to overcome the barriers to knowledge. Service to the pursuit of truth sometimes grants us insight and discovery..

Polanyi does suggest that we continue in solving the puzzles of how we live morally through the comprehensive frameworks of metaphor, ritual, myth and religion. These frameworks are found in the "transnatural" and "self-giving" forms of knowing. They too participate in the progressive enterprise of knowing. The same applies to our history and our hope. The great difference between time and eternity, the finite and the infinite is one that we cannot overcome, but we live with it like an explorer who makes maps but always finds more territory to cover. This approach is truly a heuristic philosophy of religion.

Conclusion

The Scott and Moleski biography has raised Polanyi studies to a new level. We now have a history of Polanyi's personal, professional, and intellectual quest. It is clear from a reading of this biography that Polanyi's life was rooted in the process of discovery, not just for himself or for scientific advancement but as the way we learn to follow our ideals while we struggle with their contradictions.

Endnotes

[1] Pp. xv-xvii, Ch. IV, *et passim*, Wipf & Stock Publishers, Eugene, Oregon, 1977 (previously published by Oxford University Press, 1977).

[2] *G.* Polya, *How to Solve It, A New Aspect of Mathematical Method*, Doubleday, Garden City, New York, 1957, 2nd edition, pp. v-vii.

[3] *The Tacit Dimension*, Doubleday, Garden City, New York, 1966.

[4] "History and Hope: An Analysis of Our Age," Lectures Delivered at The Thomas Jefferson Center for Studies in Political Economy, University of Virginia 1961, mimeographed for private circulation, p. 1 and "The Destruction of Reality," McInerney Lecture I, Pacifica Tape Library, Los Angeles, California, 1962. Polanyi gave me the mimeographed copy edited by Marjorie Grene for work on my dissertation [Ed. note: published in *Society, Economics and Philosophy, Selected Papers of Michael Polanyi*, 79-94].

[5] See "Paul Knepper, "Polanyi, 'Jewish Problems' and Zionism," *Tradition & Discovery*, XXXII, No. 1, 2005-

2006, pp. 6 -19 on how Polanyi transforms Jewish longing for a homeland into a preference for a more open international community.

[6] See Lee Congdon on Karl Polanyi's 1913 application of Christian ideals in *Exile and Social Thought, Hungarian Intellectuals in Germany and Austria, 1913-1933*, Princeton University Press, Princeton, 1991 p. 223. For an example of Polanyi's early thinking about Christian faith see Scott and Moleski, *op. cit.*, p. 194.

[7] See Scott and Moleski, *op. cit.*, pp. 15-17.

[8] *Ibid.*, pp. 6-8.

[9] *Ibid.*, p. 21.

[10] Paul Ignotus, "The Hungary of Michael Polanyi," *The Logic of Personal Knowledge, Essays Presented To Michael Polanyi On His Seventieth Birthday*, The Free Press, Glenco, Illinois, 1961, p. 11. The entire article is a contribution to seeing the intellectual and social world shaping the young Michael Polanyi.

[11] Congdon, *op. cit.*, pp. 9-11; Scott and Moleski, *op. cit,*, pp. 41-42.

[12] Congdon, *Ibid.*, p. 10

[13]Scott and Moleski, p. 194. For an excellent discussion of the relation of Polanyi and Mannheim see Phil Mullins and Struan Jacobs, "Michael Polanyi and Karl Mannheim," *Tradition & Discovery*, XXXII, No. 1, 2005-06, pp. 20-43.

[14] "George Polya and the Heuristic Tradition, Fascination with Genius in Central Europe," *Polanyiana*, 6, No. 2, 1997, pp. 22-37.

[15] *Ibid.*, p. 22.

[16] *Ibid.*, p. 23.

[17]Tibor Frank, *op. cit.*

[18] See *Personal Knowledge*, Chicago, University of Chicago Press, 1958, p. 124.

[19] *Op. cit.*, p. 27.

[20] The letter was published in *Philosophy of Science*, 3, April, 1936, pp. 233-34.

[21] Chicago: University of Chicago Press, 1964, with a new introduction not in the 1946 edition.

[22] Chicago: University of Chicago Press, 1951.

[23] Michael Polanyi and Harry Prosch, Chicago: University of Chicago Press, 1975.

[24] Pp. 125, 127, 128, 131.

[25] P. 56.

[26] *Op. cit.*, p. 30.

[27] *Ibid.*, p. 31.

[28] *Ibid.*, p. 33.

[29] *Personal Knowledge*, pp. 125, 127, 128, 131.

[30] Phil Mullins and Struan Jacobs, "Michael Polanyi and Karl Mannheim," *Tradition & Discovery*, XXXII, 1, pp. 20-42.

[31] *The Tacit Dimension*, p. 92.

[32] Torrance's references to Polanyi are numerous. Some examples are found in: Thomas F. Torrance (ed.), *Belief in Science and in Christian Life, The Relevance of Michael Polanyi's Thought For Christian Faith and Life*, Edinburgh: The Handsel Press, 1980; *Space, Time & Incarnation*, New York: Oxford University Press, 1969; and *Transformation & Convergence in the Frame of Knowledge, Explorations in the Interrelations of Scientific and Theological Enterprise*, Grand Rapids, Michigan: Wm. B. Eerdmans Publishing Company, 1984.

[33] *When gods Change, Hope For Theology*, Nashville: Abingdon Press, 1980.

[34] "I Am the Way: Michael Polanyi's Taoism," *Zygon: Journal of Religion and Science*, XX, March, 1985, pp. 59-77.

[35] *The Nature and Destiny of Man*, New York, Charles Scribner's Sons, 1955, Vol. II, p. 301 *et passim.*

[36] *Personal Knowledge*, p. 324; *Meaning, p. 157.*