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MICHAEL POLANYI AND THE PHILOSOPHY OF MEDICINE

One of the great contributions of the profession of medicine to the twentieth century is Michael Polanyi's philosophy of knowing, yet the medical contribution of Polanyi is barely noticed. Most authors, including myself, commenting on Polanyi's polymath character, note that Polanyi began his scientific career in medicine but early turned to physical chemistry. Except for the interesting historical anecdote about Polanyi's getting diphtheria as a medical doctor while serving in the Austro-Hungarian army in World War I, then writing his doctoral dissertation on the potential theory of adsorption during his convalescence from the diphtheria, little is made of Polanyi's background in medicine or of his use of medicine in his work as a major thinker of this century. In the study of Polanyi, medicine is only a preface to Polanyi's major careers in physical chemistry and in philosophical and social thought. Polanyi's readers are aware of his knowledge of medicine through his use of examples of medical practice and his grounding in biological science. Even so, these obvious clues have not led to the exploration of the importance of medicine in Polanyi's thought.

Polanyi himself did not encourage the pursuit of this line of understanding his work. His focus generally was not upon what he had done but upon the problem of objectivism in our culture that needed to be solved by a reform of our theory of knowledge. His examples and investigations in the theory of knowledge were wide ranging, so that he impressed all with his amazing grasp and insight into many disciplines. Reading him, one felt that he needed to be an expert in many fields to challenge or to follow him. Besides distracting attention from his training in medicine by his use of a host of fields in his argument, Polanyi himself minimized the place of medicine in his achievements. I asked him once why he had gone into medicine instead of into philosophy. He told me that he really wanted to go into philosophy, but he was not confident that he could have made a living in philosophy. It also seems by inference that he must also have thought that he could not directly enter physical chemistry as a profession or he would have perhaps done that instead of medicine. He had shown an interest in medical research connected with chemistry as early as 1910. ^{1/} We have, therefore, from Polanyi himself little direction toward medicine in an explicit way. For these reasons, we have until now neglected its possibilities.

William T. Scott, in his current biographical research on Polanyi, has told me that Polanyi served on the Serbian front at an epidemic hospital. He went there voluntarily in place of doing his internship. Going into medical service in war, Polanyi followed the ancient adage that "war trains many surgeons."

1/ Polanyi's earliest published scientific paper is "Chemistry of the Hydrocephalic Liquid," Magyar ord. Archiv., N.F. 11, p. 116 (1910). It was followed by two other papers: "Investigation of the Physical and Chemical Changes of the Blood Serum During Starvation," Biochem Z., 34, p. 192 (1911) and "Contribution to the Chemistry of the Hydrocephalic Liquid," Biochem Z., 34, p. 205 (1911).

In weighing the role of medicine in Polanyi's thought, it may be observed that Polanyi said more about religion than he did about medicine. We now have controversies about the role of religion in Polanyi's final work, but we do not question the role of medicine. Since he had a degree in medicine, it seems indisputable. Still we need to explore this part of Polanyi's development of his philosophy of personal knowledge or tacit knowledge.

Also, in looking at Polanyi's work, we can see that he spent thirty-three years from his Ph.D. dissertation on the potential theory of adsorption, to his exchanging of his chair in physical chemistry for one in social thought. This period, with its productivity, established him as a world renown physical chemist. Still Polanyi's social and philosophical writing did not have a major focus on physical chemistry as a source of his arguments against the objectivist fallacy. In Polanyi's discussion of science as a cultural force, there are only two articles dealing explicitly with physical chemistry, the one on the potential theory of adsorption and "My Time With X-Rays and Crystals," a contribution to the E.P. Ewald Festschrift. Therefore years spent in a discipline may not be the clue to look for in considering the way he used a discipline in his thought.

The reason for this rather hidden character of specific disciplines in Polanyi's discussion is given by Polanyi himself. It is the principle of tacit knowing. The disciplines of his prior careers become a part of his subsidiary awareness, and he relies upon them in a subsidiary way for attending to the new problems that he is pursuing. This means that those disciplines are not absent, but have become integrated into the semantic and phenomenal aspects, the meaning and the appearance, of what he is now targeting, the objectivist problem of our culture.

As soon as one turns to the medical aspects of Polanyi's philosophy, it becomes clearer that medicine has been underestimated in its importance for what Polanyi has to teach us and also for what Polanyi has to offer to medicine. In beginning this research on Polanyi, we can discern these things: 1) Polanyi's total approach to the crisis of our culture is as a "physician of culture," 2) Polanyi's theory of knowledge has essential roots, not accidental ones, in medicine, 3) Polanyi's language, his examples, and his metaphors are steeped in medicine, 4) Polanyi's reform of our theory of knowledge in science leads us back to the humanistic art of medicine, and 5) a Polanyian foundation for a more humanistic philosophy of medicine. Let us take up each of these separately.

Physician of Culture

It is difficult to tell the conventional intellectual who Polanyi is because Polanyi does not fall into the usual categories these conformists use for classifications. Polanyi cannot be adequately described as a philosopher even though he proposed a monumental philosophical theory, if philosopher means doing philosophy the way most European and American academic philosophers have defined philosophy in this century. As soon as you speak of Polanyi as a philosopher, as I have, you find yourself having to explain that his philosophy is distinctly different from most contemporary philosophy. Since official academic philo-

sophy has virtually ignored or obscured Polanyi, it may be futile to talk to philosophers about Polanyi as a philosopher. People open to the much more perennial and grander tradition of philosophy throughout human experience, not just in Europe and in America, can better grasp Polanyi as philosopher. Polanyi cannot be typed by a school such as existential, phenomenological, or Gestalt even though he has affinities with important elements of all of these. Neither can Polanyi be adequately described as a social thinker or economist. He was a social thinker but the term is too vague, leaving Polanyi open to being a sociologist or anthropologist or political theorist. There is truth again in all of these descriptions. Certainly Polanyi cannot be described as a theologian, even though he spoke positively about the importance of faith and of religion in culture, enjoyed the attention of theologians, encouraged the use of his work by theologians, and expressed the ability to believe in religion as one of the major aims of his thought.

If one takes another route and turns to his scientific work, one is again driven into true and relevant titles such as physical chemist and scientist that are incomplete. These roles are so important in Polanyi's insights and discoveries that they must be noted, but they are only a part of the dominant character of the man. The errors in understanding science are a major part of Polanyi's discussion, but Polanyi's work proceeds from correcting the mistaken understanding of science into the widest range of human endeavor suggested by Polanyi's own terms such as "man in thought" and "a society of explorers." Ultimately, Polanyi focused upon the quality of human life in our culture as affected by the objectivist scientific outlook.

If you take the description "physician of culture," you find one of the most appropriate terms for saying who Polanyi is. We have begun with the fact that Polanyi did study and briefly practice medicine. The model of the physician is in his training. Considering his time of training in Hungary it is also likely that Polanyi was trained as a generalist, not a specialist, a doctor prepared to take care of his patients as a whole. This approach is primary care, a relationship that demands a comprehensive approach, since the doctor has to be responsible for the total person, not just the health or disease of a specific organ of the body. Indeed, primary care is what Polanyi attempted. It is partly what turns some philosophers and social thinkers away from him. Polanyi dares to take on the whole patient, the person and their history. In Polanyi's case, the patient is a culture now composed of individuals who have lost the capacity to affirm their participation in all their knowing and to take responsibility for it.

One of Polanyi's articles, "The Scientific Outlook: Its Sickness and Its Cure"²¹ shows this physician's approach to our world's problems. Polanyi here and throughout his social and philosophical thought begins with the symptoms of the patient, goes on to a differential diagnosis, and then prescribes a cure. The boldness of Polanyi in diagnosing the illness of our period of history as rooted chiefly in our philosophy of knowledge is a part of his offen-

²¹ *Science*, 125 (March, 1957), 480-504.

siveness to many. It seems too simple to specialized critics of our culture to think that we could find a primary cause of our disease. Polanyi, on the other hand, is convinced that there is an underlying problem that once recognized and treated can significantly change our world.

For followers of Polanyi, this mode of physician of culture poses a challenge. It asks them to take on more than a usual intellectual task of problem solving. It asks them to be a part of treating a whole culture. Such a challenge has similarities to the philosophical schools of Greece and of Rome at the beginnings of our civilization, when philosophy was about the meaning of life and how to cope with the uncertainties of human existence. The acceptance of such a task places one in the company of persons who seem like missionaries, a role unacceptable to persons who pride themselves on having gone through the enlightenment of scientific objectivism.

Polanyi as physician of culture also poses a challenge to our ways of diagnosing the problems of our time. Polanyi's belief is that ideas have consequences. He thinks that our basic beliefs as a culture affect our human behavior. He dares to go so far as to isolate a primary cause of our disease, our scientific objectivism. Here he is truly a physician doing a differential diagnosis, that is, he has moved from symptoms to a primary cause. In his approach, he has told the patient that to get well there is a cause and a remedy. For many, it is difficult to accept not only Polanyi's remedy but also his belief in the etiology of the disease.

By using the model of physician of culture one can be true to Polanyi's self-presentation. Like a physician who draws from many areas of knowledge to do her or his work, Polanyi combined the resources of physics, chemistry, biology, literature, art, religion, social science and philosophy to do his work. He did not describe himself as a physician, but his example suggests the influence of the medical model.

Medical Skill and Tacit Knowing

The medical component in Polanyi's thought is found in his fundamental contribution, the principles of tacit knowing. Polanyi almost always began his presentation of tacit knowing by calling our attention to the nature of skills. He asserted that knowledge is a skillful performance. He pointed out how all knowledge and especially its sophisticated and complex forms require much more than what can be detailed in any kind of explicit statement or formula.

The selection of skills as a primary example is especially consistent with medical training. Medicine requires grounding in much basic science - physics, chemistry, biology, anatomy, and the systems of the body such as respiratory, cardiovascular, reproductive, hematology and neurosensory. Much of this is first presented in didactic lectures. The greater balance of medical education, however, is spent in various forms of apprenticeship where the ideas and concepts of the basic sciences are integrated and applied to understanding the human person. Through apprenticeship the medical student moves from observation to practice.

The necessity of apprenticing, or learning by connoisseurship and by conviviality, leads to Polanyi's claim that knowing is a skill.

In his 1960 address to the World Student Christian Federation assembly in Strasbourg, France, Polanyi began his presentation of his theory of knowing by giving the example of a distinguished psychiatrist who showed his students a rare type of fit.^{3/} Later the students discussed the case and tried to decide whether the fit was an epileptic or hystero-epileptic seizure. The question was resolved and an important lesson taught, when the psychiatrist told his students that this case was a true epileptic seizure but he could not tell them how to recognize it. They would have to learn by continued experience.

Here, in Polanyi's illustration, we have the principle of the medical curriculum. More important, we have in his theory of knowledge a justification for the way the medical profession has to insist upon a lengthy education in practice before the doctor is licensed to practice.

It could not be argued that Polanyi learned only from medicine about skills as a clue to unlocking the modern misconceptions of explicit and detached knowing. He obviously also draws from the long apprenticeship necessary for laboratory research. Nevertheless, medicine is strikingly insistent upon this factor in its historic self-description of its fields as an art.

One reason why the art of medicine is important in considering Polanyi's thought is that medicine arose and progressed into the modern world parallel to the revolutions in astronomy, physics, and chemistry. Medicine had a guild and tradition that preserved and passed on its heritage with less concession to the mechanism, reductionism and objectivism of modern scientism. The art of medicine clearly prepares Polanyi for his profound aphorism that "we know more than we can tell."^{4/}

Polanyi's Medical Language

We have already noticed that Polanyi takes the approach of a diagnostician and uses that terminology. There are other ways in which medical language is basic to his thinking. One of these is the world "attending." As we know, this term refers to the object of our knowing, the point upon which we focus our cognitive powers. In the medical context, "the attending" is the term used for the physician receiving and following through with a patient in the hospital. In the decision-making process about treatment, the attending is the locus of responsibility. The force of the term is to emphasize the involvement of the physician. It is a

^{3/} *"Knowing and Being," Knowing and Being, Marjorie Grene (ed.), University of Chicago Press, 1969, p. 123.*

^{4/} *Ibid., p. 133.*

dynamic word, one of action, true to Polanyi's basic understanding that all knowing is the action of a person. "Attending to" carries the medical connotation of someone well prepared by training now straining and focusing on a patient who has presented a problem that needs a remedy.

Other medical terms in Polanyi's theory of knowledge are the words "proximal" and "distal". Without medicine these words carry the obvious meaning of nearer and farther in location. When one learns that these are essential terms in human anatomy, they take on a richer and more consistently Polanyian meaning.^{5/}

In learning human anatomy in medical school, a student has to be able to locate the parts of the body accurately regardless of whether she or he is standing above or left or right. The references, as the surgeon asks for a clamp, have to be clear and precise at the operating table or in a case history. For this reason there is a universal usage of such words as "lateral," "vertical," and "proximal" and "distal."

Also the proximal and distal locations in anatomy are not separated by empty space as they might be in casual lay usage. For example, proximal might refer to my eyes looking across empty space at a distal object such as a chair. But in anatomy, proximal and distal lie at different ends of a single body, limb, or organ. When one knows this bodily connected function of these terms, it strengthens the meaning of what Polanyi is describing in tacit knowing. The strong bodily connotations of proximal and distal enhance Polanyi's contention that our knowing is bodily knowing. The distal object is not across an empty space but in a continuum of bodily clues in which we dwell and shape into a coherence.

The Humanistic Side of Medicine

While medicine developed to its present state out of its own independent tradition that paralleled the rise of modern science, it is also living in the pandemic of scientific objectivism. The pressures of mechanism and of reductionism are seen in many ways in medicine. Foremost in recent medicine is the brilliance of biochemistry and its genetic discoveries. Biochemistry was not pioneered by physicians or even by biologists. The revolutionary work of Francis Crick and James Watson is the work of persons prepared first in a mechanistic understanding of physics and chemistry. Their success has revived the Newtonian dream of Laplace of attaining a molecular knowledge of all living things by knowing their properties in the terms of physics and chemistry. Francis Crick described the human brain as the last frontier of scientific research waiting to be conquered by the analysis of biochemists. Very much alive in the excitement of neurological research is the goal of reducing human thought to electrical and chemical actions.

^{5/} See Richard Gelwick, *Tradition and Discovery*, VI No. 1 (Winter, 1988-89), pp. 37-38.

The application of strict scientific standards has greatly advanced medicine beyond the twentieth century's great reduction of disease through public health and sanitation. We are made aware on a daily basis of advances in pharmacology for controlling pain and ending disease. The marvel of organ transplants and increased longevity also upholds the mechanical approach made possible by the use of the principles of physics and chemistry in medicine. In many ways, the objectivist tendencies of modern science are reinforced in the medical world.

Against this trend is a concern for the human dimension in medicine. The dilemmas of medicine, partly augmented by the technology and science of medicine, have shown again that not all medical judgments can be resolved on an objective scientific basis. Decisions about death and dying have to go beyond a physical calculus.

To deal with this increasingly difficult area, medical schools, hospitals, foundations, and the government are investing in programs that contribute human dimensions to medicine. Polanyi's theory of knowledge and its many implications for our culture is central to this mission of humanizing medicine. One of the major contributions that a Polanyian philosophy can make is to remind medicine that it has in its own history of the art of medicine an antidote for the current insurgence of mechanism and impersonalism.

Because modern medicine is especially concerned to wear the mantle of science, it is important that it know that science is based on personal knowledge. Michael Polanyi, medical doctor, has much to offer to the future of medicine. Medicine knows from its own story that it is more than science, it is an art. This art, without the kind of reconstruction given by Polanyi's theory of knowledge and criticism of scientific objectivism, has little foundation on which to stand. Once Polanyi's contribution is accepted there is a place for both the science and the art. As Polanyi has shown so well, there is a common ground of knowing, from the sciences to the humanities. All knowing is skill because it is founded in tacit knowing. Instead of trying to make an either/or choice in medicine, there is a need to recognize how the science and art of medicine are essentially joined in the work of the human person.

Polanyian Foundations For A More Humanistic Medicine

To elaborate the contribution of Michael Polanyi to the philosophy of medicine today, I want now to move from suggesting that Polanyi's philosophy was substantively influenced by his training in medicine, to specific concepts that are relevant to current medical practice.

1. First, every field engaged in science today has to become aware of the extent to which the image of scientific objectivism dominates and colors its concepts, methods, goals, outlook, and practice. Edmund Biernacki (1866-1911), Wladyslaw Bieganski (1851-1917), and Zygmunt Kramsztyk (1848-1920), all physicians and members of the Polish School of Philosophy of Medicine, pointed out that with the scientific revolution in medicine in the last half of the nineteenth century, physicians strove to rid themselves of the image of a

healer and sought the image of a scientist. 6/ This tendency has continued to grow and to spread today until it is virtually taken for granted. What this grand image of scientific knowledge has done is to obscure or to reduce the role of the physician as healer and the patient as person.

Today there is an image of the superior physician being a specialist, steeped in scientific information and technology, applying this learning to a disease. Missing in this image is the critical role of the physician who affects a patient not simply by his or her scientific knowledge but by the total relationship that includes ethical and psychosocial dimensions as well. Further, the patient is regarded as a disease, and if a disease cannot be diagnosed, "there is nothing wrong with them."

Medical schools have to work to train their graduates that the affective, the intrapersonal and interpersonal components of medicine are as important as the material structures of illness. Polanyi's critique of the vast influence of scientific objectivism is critical to overcoming the impersonalization of medicine. This general outlook still dominates and has to be faced directly at its roots in our epistemological outlook.

2. A harder and more basic point lies in Polanyi's demonstration that scientific knowing is itself a personal achievement. The theory of tacit knowing shows that into every moment of knowing there goes the gathering and integrating powers of the specific person. Polanyi does not solve the problem of the impersonalization of modern medicine by making the humane element an additional component alongside the scientific one. That way of construing the problem is both mistaken and also a continuation of the dichotomy between medical science and therapy, between basic sciences and the humanities and arts. In medicine, as in other fields such as physics and chemistry, the attempt to reconcile the nature of science and the nature of the humanities *is* defeated by creating separate dimensions or separate realms where they operate. Granted that they have distinct functions in what they attend to in their knowing, the sciences and the humanities are not completely compartmentalized. The act of discovery and the act of creation are rooted in the common principles of tacit knowing, knowing by relying on and attending to, by subsidiary and by focal awareness, by indwelling, by reaching for clues and intimations of new aspects and new levels of experience and of understanding, by appeal to a sense of the universal in the minds of prepared colleagues, and by belief in a bearing on reality that is open to all inquirers.

Polanyi's theory of knowledge calls for an end to the divorce between theory and practice, between laboratory and examing room, between medical science and the practitioner. Every treatment is an application of the personal achievements of scientists. Every treatment is also an experiment testing and enlarging the laboratory conceptions of science. The practitioner deals with more than just isolated biological phenomena, he or she deals with

^{6/} Ilona Lowy, *The Polish School of Philosophy of Medicine*, Boston: Kluwer Academic Publishers, 1990, p. 7.

the wider dimensions of human illness and contributes their own discoveries. One is in the feedback of specific scientific procedures such as drugs. The other is in the combination of these procedures with the ethical and psychosocial factors of human life. Until medicine restores the continuum between the science and the art of medicine, it will falter under the weight of scientific objectivism.

3. The transformation of medicine away from the distortions by the objectivist ideal of science can be started in three areas already recognized but which need Polanyi's comprehensive theory of knowing.

1) The rejection of reductionism as a total goal of science and the use of reductionism within reasonable areas. The attempt to describe completely aspects of life in biochemical terms has attained important results. The mapping of the human genome will advance our ability to treat disease. These results can do much to improve human life. Medicine is and will remain more than the application of biochemistry and more than the application of pathology. When a physician treats a patient, there are not just simple or complex biological facts. The patient belongs to a field of forces that include environment, life style, and society as well as human biology. Polanyi's relating his theory of tacit knowing to the hierarchical structure of human evolution is crucial in seeing that we have in medicine not only life reflecting on life but also the open choice of our destiny, which includes values not limited to the biochemical level. We have to move from the limits of reductionism to seeing that we have to choose the values that shape our future. These values are integral to the healing art.

2) Recognition of medical therapy as a genuine art based on basic science. The physician treats patients, not idealized laboratory specimens. Edmund Pellegrino, a distinguished American physician and medical humanist, has tried to express this view in saying that medicine cannot be reduced to medical science.^{7/} Polanyi helps to increase this understanding by his central teaching that knowing is a skill. A good doctor is one who knows not only the available scientific information but also one who can apply it to the uniqueness of every patient. Each patient has their own disease and not one identical to a classification. The focus of medicine is the person. Furthermore, a statistical picture remains a generalized view. Here the movement is from theoretical knowledge to the combination of practical experience of the physician, his or her compassion for the patient, and his or her ability to make a new judgment based on their reliance on the totality of their personal knowledge. Because therapy cannot be codified completely, the recognition of the nature of skilled learning through apprenticeship and practice is a major Polanyian contribution. On Polanyi's terms, this clinical application is as true as the laboratory findings of the basic scientist.

^{7/} *"Philosophy of Medicine: Problematic and Potential," The Journal of Medicine and Philosophy, 1 (1976), pp. 5-31.*

3) A philosophy of medical progress. Medicine, like other fields affected by the scientific revolution, has tended toward historical nihilism. When the practices of the past were found to be based on inaccurate and misleading conceptions such as the theory of humors, the effect has been to discard all concern for past medical history. In the desire to be scientific, only the latest and most immediate data and ideas are considered worthy. In addition, the changes in medical knowledge have produced a type of relativism represented by the "constructivist" epistemology of Ludwik Fleck (1896-1961), the best known of the Polish school of philosophy of medicine. Reek held "the non-existence of 'objective' observations, the dependency of the latter on the previous training and preconceived ideas of the observer, the dependency of scientific community that generates it, and the incommensurability of truths generated by thought collectives..." His work sought to right the balance between scientific research and therapy. Instead of righting the balance, Reek's way of emphasizing the personal and social contribution of the knower led to greater distrust of the past and a desire for more exact scientific results impervious to change. The realization that medicine is also a victim of the truth that every theory in its own time looks rational needs Polanyi's sense of history. Instead of being skeptical about the past or our present knowledge, Polanyi's understanding of tradition and of universal intent provided a way to rely upon it for perspective and for use until it was succeeded by more satisfying results. The difference is that Polanyi did not abandon truth as guiding us by stages. He accepted the limitations of our historical setting, but he also saw those as bearing on an unending search that would move us to deeper knowledge of ourselves and of the universe. The discovery of the bacteriological causes of diseases and of epidemics overthrew much of previous medical knowledge. This change, however, is a case for tradition, not against it. It teaches, as did the case of Copernicus, that we are embodied and find our measure of truth by reliance upon belief in our powers to make contact with reality. This sense of reality ever inviting, correcting, and advancing our understanding leads to a sense of human responsibility and of a positive relation to our heritage. Polanyi's theory shows that we can progress from our past yet recognize our continuing connections with it. We may even in some cases rediscover value in earlier ideas. Paracelsus recommended using plague bubos for preventing other infectious diseases that were similar to plague. This theory was repudiated as absurd, yet it is partially validated in the theory of immunity. More pertinent for our time is to reconsider the ability and the insight of the physicians of the past who focused more on primary care of the whole patient than on a singular disease.

In 1910, Michael Polanyi's first scientific paper, "The Chemistry of the Hydrocephalic Liquid", was published here in Budapest. It was a medical paper foreshadowing his later immense scientific achievements. It spoke from a medical context, and it employed chemistry. On this anniversary occasion, let it be noticed that he took from medicine the wisdom of practice, the idea of knowing as a skill, and from it he became a physician of culture and philosopher to help medicine today.

8/Lowy,p.220.

9/Lowy,p. 169.