Man lives in the meanings he is able to discern. He extends himself into that which he finds coherent and is at home there (Michael Polanyi).

I would like to begin this discussion of “the knowing process and the interpreting process” by questioning the conjunction “and” in the title assigned to me. It creates the impression that “knowing” and “interpreting” are two separate and exclusive processes. I want to argue, however, that knowing and interpreting are both integral to human understanding or hermeneutics. All human understanding includes interpretations and all interpretations are heuristic in nature and therefore make further contributions to knowledge or understanding. In all our acts of knowing we “see as” or “experience as” or “interpret as” whatever presents itself to us. To use the language of science, we are always “hypothesizing” or “theorizing” when we are pursuing scientific knowledge. Thus, all our knowing has an interpretative frame of reference and it is within such a frame of reference that knowing takes place. Conversely, all our interpretations have heuristic potentialities. Hypotheses and theories employed to solve one particular scientific problem generate new insights and go much beyond their original terms of reference. It is through such a process of mutual interpenetration of knowing and interpreting that human understanding is enriched.

There are various kinds of knowing and we usually distinguish these both in philosophy and in common sense. We speak of a theoretical knowledge and a practical knowledge. Again we speak of knowing a person or knowing a fact. Self-knowledge is yet another important area of knowing. It is obvious that what is sought to be known decides what kind of knowing we are talking about. It is by now common knowledge that two different terms—“explanation” and “understanding”—are employed to distinguish between knowing in the natural sciences and knowing in the humanities.

But a question might be asked at this stage, if the process of knowing itself is not something common to these various kinds of knowing. In other words, could we affirm, ontologically, that underlying various
kinds of knowing there is but one fundamental process of knowing? This paper attempts to answer that question from within a particular perspective offered by Polanyi’s “Personal Knowledge.”

Paradigmatic Nature of Theories of Knowledge

In any theory of knowing a particular way of knowing is given a paradigmatic status. For instance, the paradigm of knowledge for the Cartesian epistemology was derived from mathematics. Positivism derived its paradigm of knowledge from the natural sciences. For Existentialism the paradigm of knowledge is derived from our knowing of other persons (cf. M. Ruber’s *I and Thou*). Every theory of knowledge has, therefore, its own controlling paradigm. It is in the light of its own controlling paradigm that a theory of knowledge views all human knowing. Michael Polanyi is no exception to this rule and his epistemology is constructed on the basis of the paradigm of scientific discovery. It is not without reason that R. Gelwick calls his book on Polanyi, *The Way of Discovery*. Polanyi believes that the paradigm of making a discovery is the key to all human knowing. As we proceed further and grapple with his understanding of discovery, we will notice that his was not a tall claim.

The Paradigm of Discovery

It is important for us to distinguish between the actual context and process of science and the objective ideal of science which philosophers of positivist orientation have attributed to it. Polanyi respects the methods of science, but vehemently disagrees with the so-called objective ideal. He knows, however, that the objective ideal or objectivism is widely assumed by contemporary society and has much influence on our thinking. His first task, therefore, is to point out the weakness of this ideal and formally refute it. He writes:

I start by rejecting the ideal of scientific detachment. In the exact sciences, this false ideal is perhaps harmless, for it is in fact disregarded there by scientists. But we shall see that it exercises a destructive influence in biology, psychology and sociology, and falsifies our whole outlook far beyond the domain of science. I want to establish an alternative ideal of knowledge, quite generally.

Polanyi thinks the simplest way to test the objective ideal of knowledge is to examine the nature of scientific discovery. It is discovery which represents the break-through or the creative act in science and it is because of discovery that we value, admire and pay tributes to science. But is discovery based upon the objective ideal of science? Polanyi does not believe so. He argues that discovery works in a

way contrary to the objective ideal and that, therefore, we must find the method which actually achieves the results in terms of a discovery. He does not think that there is any sure way of making discoveries and, therefore, wants us to look at the conditions under which discoveries are made and established.

The first requirement for a scientific discovery is certainly a trained scientist, who is equipped with the tools for doing research. This very first condition for a discovery then is non-objective; for a trained scientist is a human person and therefore cannot be reduced to an object. This person undergoes intensive training and has a devotion to his subject and as such shows personal commitment and belief. While making a discovery he has to employ his personal acts of judgement and this is a far cry from the highly influential view of objectivism and detachment. A scientific discovery therefore has the personal as its essential dimension.

The second requirement of a discovery is the choice of a right kind of problem. Only significant problems lead to significant discoveries. But there is no sure way of telling in advance whether the scientist has chosen a significant problem or not. This means that there is an ambiguity at the heart of scientific discovery which again goes contrary to the ideals of objectivism. As a matter of fact, philosophy of science neglects the question of scientific discovery. The philosopher of science has found it difficult to answer the questions regarding the origin or the starting-point of scientific discoveries. Karl Popper for instance, regards the origin of creative scientific ideas as irrelevant. It must be said to Polanyi's credit that he faces this issue squarely and boldly. Being himself a scientist of no mean achievement, he knew at first hand that primary to a scientific discovery was the role of the creative imagination and that the rigorous scientific procedure was only secondary. Actual scientific work, he knew, was not a matter of following some set rules. He, therefore, argues that at every step in his work a scientist uses his personal judgement which goes beyond the rules. Such personal judgements demand insight and imagination. A discovery in science needs the creative imagination.

But then, what is the nature of the creative imagination that gives birth to discoveries? In order to explain the nature of creative imagination Polanyi takes his clue from Gestalt psychology. It was Gestalt psychology's claim that our knowledge was the integration of certain bits in our perception to form a whole. Perception itself for Gestalt psychology was "an internal equilibration of external stimuli." The recognition of pattern in Gestalt resembles the problem of scientific

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4 M. Polanyi's professional career started as a physical chemist and his work in this branch was recognized by such an eminent authority in science as Einstein. One of his students is a Nobel-Laureate. Polanyi himself had four different professional careers in physical chemistry, medicine, social science and philosophy.
discovery where the scientist tries to find the coherence of various pieces of information. Polanyi, however, goes much beyond the findings of Gestalt. Whereas Gestalt views the integration of bits mechanistically as "internal equilibration of external stimuli," Polanyi maintains that the seeing of pattern and coherence is the result of an intentional effort on the part of the human person to find order in reality. This means that a discovery depends upon our personal powers of thought. This further means that any epistemology which disregards the contribution of the human person to knowledge and strives for an impersonal and detached objective ideal of knowledge is to be rejected. Finally, for Polanyi this also means that all our knowing is an integration and interpretation of certain clues—bodily clues—which we *indwell* in order to understand. He cites a number of cases from the realm of science to support his understanding of discovery. 5

This understanding of the conditions under which a scientific discovery is made leads Polanyi to formulate his own epistemology as an alternative to objectivism. In his own alternative epistemology, he claims that all knowing is Gestalt-like and our ability to comprehend particulars as meaningful wholes explains how we move from ordinary perceptions to feats of sighting new horizons and features of reality. 6

He writes:

> Scientists have run away from the philosophic implications of Gestalt. I want to countenance them uncompromisingly. I regard knowing as an active comprehension of the things known, an action that requires skill. Skilful knowing and doing is performed by subordinating a set of particulars, as clues or tools, to the shaping of a skilful achievement, whether practical or theoretical. 7

Having emphasized the role of the scientist as a human person and also of the creative imagination and having also claimed Gestalt-like character for all human knowing, Polanyi analyses the paradigm of discovery in further detail. He has already spoken of "clues" and "particulars" leading to a discovery. But these "clues" and "particulars" do not have any inherent capacity in themselves to give birth to a discovery. They are "used as such and not observed in themselves." Our primary aim is to achieve a discovery. Clues and particulars are subsidiary to our main focal intent of making a discovery. Polanyi at this stage introduces two new terms that we must take note of. These are "subsidiary awareness" and "focal awareness." In any act of knowing we are "subsidiarily aware" of the clues, particulars and tools and are "focally aware" of the problem at hand. 8

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5 M. Polanyi, *op. cit.*, pp. 9-11.


8 Ibid.
and tools are made to function as extensions of our bodily equipment and this involves a certain change of our own being.9

With all this emphasis on the personal participation and the bodily involvement of the knower, Polanyi does not think that our knowledge is "subjective." He writes:

Such is the personal participation of the knower in all acts of understanding. But this does not make an understanding subjective. Comprehension is neither an arbitrary act nor a passive experience, but a responsible act claiming universal validity. Such knowing is indeed objective in the sense of establishing contact with a hidden reality; a contact that is defined as the condition for anticipating an indeterminate range of yet unknown (and perhaps yet inconceivable) true implications. It seems reasonable to describe this fusion of the personal and the objective as Personal Knowledge.10

Needless to say, Polanyi does not mean "objectivism" when he writes, "Such knowing is indeed objective." What he is affirming is that knowing achieved by a person is genuine knowledge.

Before we move on to consider the structure of the process of knowing in Polanyi's thought, one more point needs to be made at this stage. For him all knowledge is fiduciary (faith-oriented) in character and therefore requires personal commitment on our part. He affirms:

Personal knowledge is an intellectual commitment, and as such inherently hazardous. Only affirmations that could be false can be said to convey objective knowledge of this kind. All affirmations published in this book are my own personal commitments; they claim this, and no more than this, for themselves . . . But ultimately, it is my own allegiance that upholds these convictions, and it is on such warrant alone that they can lay claim to the reader's attention.11

We may or may not agree with Polanyi's claim regarding the fiduciary character of all human knowing, but the passage cited above cannot fail to register on our minds the utter humility of this great man.

Polanyi argues for St Augustine's nisi credideritis, non intelligitis and pleads, "We must now recognize belief once more as the source of all knowledge."12

The Structure of Knowing: The Tacit Dimension

Polanyi places the responsible knowing person at the centre of all knowing and affirms that because of this personal character of knowledge it always has what he calls "the tacit dimension." Not all knowledge can be made explicit. According to Polanyi, "explicit

9 Ibid.
10 Ibid., pp. vii-viii.
11 Ibid., p. viii.
12 Ibid., p. 266.

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knowledge is but a small part of the totality of human knowledge and it depends to a very large extent on our "tacit knowledge." In the second part of his book *The Personal Knowledge* he lays bare the tacit coefficients of our knowledge. He draws upon evidence in animal psychology, linguistics, learning-theory, sociology of knowledge and demonstrates that our formalized expressions are extensions of pre-articulate components of intelligence. Intelligence, for him, is a development of faculties that are pre-linguistic in origin. The pre-articulate components of intelligence which are tacitly present in our articulate intelligence form the larger domain and foundation upon which our knowledge is built. The error of objectivism is that it identifies all knowledge with what can be made explicit.

Polanyi gives a number of illustrations to make his point regarding the tacit dimension of knowing. The identification of a physiognomy is one such illustration.\(^{13}\) If we see a criminal and are later called upon by the police to give a description of the person, more often than not we only remember his total appearance but not the details of various features like nose, eyes, ears. If the police do not have the criminal's photograph in their records, they produce an array of facial features like noses, eyes, ears. The noteworthy thing in this connection is that we have these clues in our memory but we cannot tell them to others. This is because we know only the face of the criminal "focally," but the detailed features only "subsidiarily" or "tacitly." The array of facial features produced by the police facilitate our integration of clues into a coherent pattern and finally we identify the criminal. Yet another illustration is that of our reading of a text.\(^{14}\) While reading a text our focal target is its meaning and in order to acquire it we do a lot of integration unawares without considering the grammar, syntax and vocabulary of the text. But the grammar, syntax and so on are "tacitly" present in our acts of integration attempted at acquiring the meaning of the text. Polanyi concludes that "we know more than we can tell."\(^{15}\)

We are now in a position to grasp Polanyi's understanding of the fundamental structure of all knowing. This structure is a "triad" in which three centres of knowing are involved.\(^{16}\) First, there is the focal target. All our knowing efforts are directed to this. Second, there are clues and particulars of which we are subsidiarily aware. Last, there is the knowing person who links the focal target to the subsidiary clues or particulars. This last centre, the personal centre, is the most important one in the structure of knowing. We need to analyse this structure into further details.

One of the implications of this "triad" is that all our knowing has a "from-to" structure. We rely on our subsidiary awareness and attend to our focal awareness. In our subsidiary awareness we are

\(^{14}\) M. Polanyi, *Personal Knowledge*, p. 91.
\(^{15}\) M. Polanyi, *The Tacit Dimension*, p. 4.
\(^{16}\) *Ibid.*
relying on clues and particulars in order to "attend to" our task, meaning or problem. Polanyi adds two further terms to explain his knowledge triad. That which we are attending to—our focal target—is at a distance from us. The focal target is therefore named the "distal term" by him. Conversely, the clues and particulars on which we rely and which are interiorized by us in our subsidiary awareness are close to us. Polanyi therefore calls the subsidiary awareness the "proximal term." The function of the subsidiary awareness or the "proximal term" is "to guide us to the integration of a coherent pattern." Our intuitive flashes spring from our subsidiary awareness. Yet another element of tacit knowing, according to Polanyi, is "indwelling." By this term, he wants to affirm that our body is the instrument by which we know the world. The term is inclusive and suggests that our knowing is always a form of indwelling. We interiorize our clues, indwell them and make them extensions of our body that seek to know the world.

For Polanyi this analysis of the tacit dimension of knowledge does not belong to psychology alone. Rather his claim is that in all the processes of inference we rely upon our subsidiary awareness for attending to meaning. Tacit knowing is an integral part of the logic of knowing. Again, subsidiary particulars do not simply serve as a ladder which we throw away once the focal knowledge is attained. For him, "subsidiary particulars appear in the phenomenon of the pattern they produce." This means that subsidiary particulars become a part of the knowledge itself: they appear in the knowledge itself. Polanyi calls this "the phenomenal structure" of knowing. Once an integration is accomplished or a pattern is recognized, we are beholding the phenomenon of subsidiary particulars in their joint appearance.

Next, Polanyi speaks about the "semantic aspect" of knowing. Here our integration of clues into a pattern that gives meaning shows the "semantic aspect" of knowing that depends upon the tacit dimension. Polanyi argues that in the processes of knowing we are looking for meaning in the distal terms. But the meaningfulness of these terms depends upon the proximal clues on which they rely. It is the knowing person who alone can integrate clues into coherent patterns and see them as meaningful.

And finally there is the ontological aspect of our knowing. "Tacit knowing guides us to comprehension of something real." Polanyi's claim is that our integrations are towards things that are universal. Tacit knowing leads us not only to pattern and to meaning but also to reality itself. The connection of the proximal term with the distal

17 Ibid., p. 10.
18 Ibid.
20 M. Polanyi, The Tacit Dimension, pp. 15-17.
21 Ibid., p. 18.
22 Ibid.
23 Ibid., p. 13.
term opens up new horizons and this is what Polanyi calls the "ontological aspect" of tacit knowing.Tacit knowing is not only about our feelings or thoughts but about reality, too. Tacit knowing calls upon us so to dwell and live in the clues given to us by tradition and enquiry that we can rely upon them to lead and guide us to the inexhaustible features of reality. Tacit knowing implies responsibility and this responsibility is present in the "universal intent" of our knowing. By "universal intent" Polanyi means the attempt to satisfy our own standards and needs by the finding of what can be seen and shared by others like ourselves. It is based upon our belief that there exists an independent reality that makes our efforts meaningful and that corresponds to our strivings; and it bears a sense of the hazard of ignoring what is right. Our satisfaction is not in pleasing ourselves but in our contact with aspects of reality that can be found by others and which offer the prospect of further discovery. Knowledge in the paradigm of tacit knowing is neither subjective nor objective, but a transcendence of both achieved by the person acting with "universal intent."

A Heuristic Paradigm

Throughout his various works Polanyi is concerned with such themes as finding, discovery, growing, expanding and enriching. Such themes are present in his view of science and all the arts. He also views reality in this way. This means that his paradigm of knowing has heuristic implications. Findings and discoveries grow and expand into further knowledge and human knowledge is constantly enriched. Indeed, his philosophy aims to equip and encourage humans in the unending task of pursuing meaning and truth.

To illustrate the heuristic character of discoveries, Polanyi cites the case of Copernicus' discovery of the heliocentric system. In fact, the new system was much more complicated than the Ptolemaic one and involved many ad hoc assumptions. Yet in his claim that his system was real, Copernicus believed that it would produce future manifestations of its truthfulness. Polanyi comments that these manifestations appeared later when astronomers explored his system further. Polanyi draws two conclusions regarding features of reality in a scientific discovery. He writes:

It is to believe that it refers to no chance configuration of things, but to a persistent connection of certain features, a connection which, being real, will yet manifest itself in numberless ways, inexhaustibly.

24 Ibid.
25 M. Polanyi, Personal Knowledge, pp. 300-353; The Tacit Dimension, p. 78; Knowing and Being, pp. 133-134.
27 M. Polanyi, The Tacit Dimension, p. 32.
28 M. Polanyi, Personal Knowledge, pp. 265-268.
And

It is to believe that it is there, existing independently of us, and that hence its consequences can never be fully predicted.\(^\text{29}\)

Polanyi believes that there is an interplay of imagination and intuition in a scientific discovery. A scientific enquiry begins with the choice of a good problem but such a choice is difficult and is a part of the scientific genius. There are no rules for this choice. Rather it is guided by what he calls "anticipatory intuition."\(^\text{30}\) According to him, this "anticipatory intuition" is a subsidiary awareness of hidden aspects of reality that prompts our imagination. By "intuition" he does not mean some kind of supreme immediate knowledge but "a skill for guessing with a reasonable chance of guessing right; a skill guided by an innate sensibility to coherence, improved by schooling."\(^\text{31}\) By imagination, he means "all thoughts of things that are not yet present—or perhaps never to be present."\(^\text{32}\)

In the interplay between imagination and intuition the first step is the deliberate act of the imagination questing for the hidden reality suggested by the intuition's subsidiary awareness, and the second step is in the spontaneous effort of the creative intuition groping towards integration.

But discoveries once made have an open texture. They not only solve problems but also open up potentialities that re-order and redefine our existence in ways yet to be explored.

### Knowing and Reality

Polanyi's view of reality corresponds to his understanding of knowledge. The chief principle of tacit knowing is the way a coherent knowledge of something is achieved by our relying on one level, the subsidiary awareness, for attending to another level, the focal target. This principle suggests a dynamic and purposeful way in which various levels of reality, parts and wholes, can relate in establishing diverse achievements or comprehensive entities.

There are two levels in all that is real. The upper level "relies for its operations on the laws governing the elements of the lower one in themselves, but these operations of it are not explicable by the laws of the lower level."\(^\text{33}\) Polanyi pictures the universe as "filled with strata of realities, joined together meaningfully in pairs of higher and lower strata."\(^\text{34}\) For example, a speech is subjected to the rules of grammar, but from the rules of grammar one does not learn the principles governing the speech. In order to make his distinction between levels more intelligible, he speaks in terms of "the principle of marginal

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\(^{29}\) M. Polanyi, "The Creative Imagination," p. 86.

\(^{30}\) M. Polanyi, Knowing and Being, p. 202.

\(^{31}\) M. Polanyi, "The Creative Imagination," p. 89.

\(^{32}\) Ibid.

\(^{33}\) M. Polanyi, The Tacit Dimension, p. 34.

\(^{34}\) Ibid., p. 35.
Marginal control is the influence exerted by a higher level of principles upon the particulars forming it. It organizes the boundary conditions of the lower level that have been left indeterminate by nature.

In his scheme of things, Polanyi places human life at the top of a long story of achievements, of biotic changes that involved increasing subordination of lower levels to the service of higher ones. In the scale of life, the possibility of error begins with the rise of sentence. The possibility of inferential error begins with the rise of human beings. Each higher level of life bears an increase in the potentiality for failure as its interpretative capacities enlarge. Knowing, therefore, is always a process full of hazards.

Two Poles in Knowing: "Self-centred" and "Self-Giving"

One of the noteworthy features of Polanyi's understanding of tacit knowing is the way it illuminates the distinctive heuristic roles of various fields of study. The nature of reality in science allows for a greater degree of control and of description in comparison with the reality discovered by art where we are left more to our interior sense of understanding. Polanyi notes that scientific knowledge does not "carry us away" in the same degree as art, morality and religion do. This difference is further underlined by Polanyi in his distinguishing of the two poles in knowing, namely "self-centred" and "self-giving." The "self-centred" is that form of knowing which is more confined to perception in its observational aspect. This kind of knowledge is effective without our giving specific attention to it. On the other hand, a painting, a poem or a symphony demands our attention. We must notice it, follow it and try to fathom its depth. This is the "self-giving" kind of knowing. Art, morality and religion "carry us away." The "self-centred" knowledge does not contain any value judgement or connotation, but the "self-giving" knowledge does contain value judgement and connotation. In the "self-centred" knowledge, there is no intrinsic interest in the realm of the subsidiary awareness and its clues. The intrinsic interest lies in the focal target. But in the "self-giving" knowledge we have intrinsic interest in the subsidiary clues. Polanyi says that this is because the subsidiary gathers up its elements of significance over a lifetime.

Thus, within the same paradigm of tacit knowing it is possible to make adjustments with respect to our heuristic goals in relation to various disciplines. The answer to the question raised earlier at the beginning of this paper is that, within the perspective of knowing offered by Polanyi, it is possible to affirm ontologically that there is but one fundamental process of knowing.

35 M. Polanyi, Knowing and Being, pp. 225-239.
36 M. Polanyi, The Tacit Dimension, p. 50.
37 M. Polanyi, Harry Prosch, Meaning, University of Chicago Press, Chicago, 1975, pp. 70-78.
38 Ibid., pp. 70-73.