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## THE BASIS OF MODERN THOUGHT

Although nothing in history, especially in the history of thought, ever really begins at a specific point in time, it is fairly commonly agreed that the modern era began after 1500 A.D. The discovery of the New World, the reformation, the rise of science, and the free thinking introduced by the philosophers of the sixteenth and seventeenth centuries all coincided to form what we know as the modern sensibility. The intellectual dimension of the way the West has come to understand itself roughly began with the innovative insights of Rene Descartes, who is often referred to as the “Father of Modern Philosophy.” Thus, it is appropriate to begin our consideration of what Polanyi calls “critical philosophy” with a brief account of his critique of Descartes’s system of thought. Afterward, we shall complete our analysis of modernism in philosophy with a distinctively Polanyian treatment of the epistemologies of David Hume and Immanuel Kant.

### DESCARTES’S RATIONALISM

Descartes was a brilliant mathematician, and thus it is no surprise to find that he, like Plato before him, sought to build his approach to knowledge on the same grounds as does mathematics, especially geometry. Drawing on the work of Euclid and Newton, Descartes argued that the only sure foundation for totally reliable knowledge, knowledge that provides certainty, would be self-evident axioms, that can be taken as intuitively true. As is well known, he sought to find such axioms by systematically doubting every form of

knowledge that conceivably can be doubted. If there is some claim that cannot be doubted at the cost of self-contradiction, then it can be taken as a self-evident starting point in the search for other reliable true claims.

Thus Descartes' epistemological approach was founded on *intuition* in the mathematical sense of the term. He likened his methodology to that of Archimedes, who argued that if he could be given but one stable, immovable point in space, he would be able to move the earth using this point as his fulcrum. Descartes argued that if he could find one thing that is indubitably certain, he would be able to base all the rest of knowledge of it. Whatever forces itself on the mind "clearly" and "distinctly" in the *logical* sense of these terms will serve as a reliable source of knowledge. In Descartes's mind, such an indubitable foundation was absolutely necessary for knowledge, since for him knowledge had to be equated with rational *certainty* in the same way that it is in geometry.

After doubting any and all knowledge claims based on sense perception, since the senses often deceive us, Descartes even went so far as to doubt the principles of logic on the possibility that an evil demon exists who takes delight in deceiving us about what follows from what, rationally speaking. What he found he could *not* doubt, however, is the claim that he himself exists since even if an evil demon is deceiving him about everything else, he himself must exist in order to be deceived. Since doubting is a form of thinking, thinking necessarily *entails* existence. *Cogito ergo sum*. In this claim, then, Descartes concluded that he had found the ultimate intuitive foundation of all knowledge.

Once an absolutely certain point of departure had been located, Descartes was ready to embark on the search for other possible true knowledge claims. Here, again, he was committed to the methodology of geometry, which advances from its initial axioms to further theorems and postulates by means of pure *deduction*. Thus, only those propositions that can be logically deduced from the claim I think, therefore I am, could be certified as legitimate knowledge. Whatever was to be accepted as reliable knowledge, in the strictly logical sense, must be characterized by the same qualities of clarity and distinctness as is the original axiom. Here again we see Descartes's commitment to a definition of knowledge that equates it with absolute certainty. His reasoning up to this point is presented in the first two chapters of his *Meditations on First Philosophy*.

Shifting over to Descartes's companion volume, *Discourse on Method*, we find him spelling out exactly how this deductive procedure is to be applied in the search for reliable knowledge by providing four rules for governing how sound reasoning must proceed. Of course, the first rule is to be absolutely *certain* of one's beginning point; set aside all previous and/or merely probably claims to knowledge. The second rule is that of *division*; carefully

analyze every idea and proposition into its smallest components so as to be able to discern clearly and distinctly what is claimed and what follows from what. Third is the rule of *order*; move carefully from one proposition to the next in logical order. The fourth rule is to *number* and continually *review* each step of the argument.

It is precisely this sort of "critical" posture that both defines modern philosophy and gives rise to various efforts to overcome it, such as those of the deconstructionists and that of Michael Polanyi. There are a number of unstated presuppositions at work in this methodology that both invest it with power *and* lead to irresolvable dilemmas. One such presupposition pertains to the nature of mathematical knowledge. Although in Descartes's day Euclid's axioms were thought to be the *only* axioms possible and to apply to the spatial world as it actually is. Over the last one hundred years, however, as a result of the invention of numerous non-Euclidian geometries and the work of Einstein, it had become apparent that deductive systems are strictly speaking a function of their original definitions and that any number of such systems can be devised, each true in the sense of being consistent with its initial definitions.

The epistemological result of these discoveries is that mathematical knowledge is essentially empty of factual truth about the world. Thus, the price to be paid for the sort of certainty that such systems provide is that they cannot be used to establish the truth or falsity of any proposition, except in relation to its consistency with the system's given definitions. Empirical, scientific knowledge about the world must begin with experiential data, and only then can reasoning move ahead by means of deductive inferences as to what follows from this data. So Descartes's efforts to base knowledge of the world on self-evident axioms of intuition was doomed from the outset.

Another way to put this difficulty is in terms of the impossibility of ever being able to establish the consistency of any given definitional system from within that system itself, something that Descartes clearly sought to do. As a result of the work of Kurt Godel, in what is termed "Godel's theorem," it is now clear that it is possible in any self-contained system to generate questions which cannot be answered within that system. Clearly, questions about how well the system as a whole matches up with the world outside of it are of this type. A system would have to be expanded to encompass such a question, but even though this can be done, the question can now be asked anew about the modified system. Trapped, as it were, inside of his own system, Descartes was unable to establish its applicability to reality.

Yet another presupposition of Descartes's approach to the knowledge question that continuously arises to haunt him pertains to the very possibility of systematic doubt. Is it actually possible, whether psychologically or philosophically, for a person to divest him- or herself of all previous beliefs and assumptions in order to begin the search for reliable knowledge? Clearly, this

is highly doubtful. The whole idea of an absolutely fresh beginning point for cognitive activity is naive at best. Moreover, this presupposition flies directly in the face of the very meaning of the notion of doubt itself for doubt is something that arises when there is a *reason* for it. Cognitive activity cannot *begin* with doubt since first there has to be something to doubt. The concept of doubt is parasitic on knowledge.

In any case, once he had established the logical base for his project, Descartes moved ahead to see if it was possible to know anything more than his own existence. He reasoned that as long as there remained the possibility of an evil demon, who might still be able to deceive him about everything other than his own existence, he would not be able to advance his knowledge. So the next task was to prove the existence of a good, all-powerful God. This he did to his own satisfaction by means of various causal arguments (Meditation Three) together with "ontological argument" (Meditation Five). In essence, this latter "proof" argues that the very *idea* of perfection, which is the heart of the notion of God, logically entails existence since anything that did not exist would clearly not be perfect.

Many philosophers have pointed out that not only does it seem clear that this argument begs the very question that it is trying to prove, but Descartes's entire effort at this stage of his project is circular since he is *using* the very reasoning process he is seeking to legitimize by proving the existence of God in the first place. Space will not permit further discussion of the viability of Descartes's method. Suffice it to say that the difficulties in which he seems to become ensnared here serve to illustrate the types of deadends and convolutions that, according to the critics of modern philosophy, necessarily arise when one sets out to force human reason to conform to pre-established definitions and narrow, deductive techniques. The cognitive edifice constructed by modern, rationalistic thought is too confining.

Once he had established the goodness and power of God to his own satisfaction, Descartes turned his attention to the question of what else could be known in addition to his own existence and that of God. He moved rather quickly to accept whatever pressed itself upon him "clearly and distinctly" since an all-powerful, good God would not allow him to be deceived about such basic things. So he concluded that material bodies, including his own, can be known to be real. Thus, the existence of pretty much everything that he at first had to doubt could now be cognitively ratified. In short, what it took the God of the first chapter of Genesis six days to accomplish, Descartes managed to perform in a five-day sequence of meditations, after having devoted the first of his six meditations to questioning whether the world could be known at all.

One of the most interesting and important aspects of Descartes's expression of modern philosophy is his treatment of the relation between mind

and body. In Meditation Two, where he discovered his pivotal proof of his own existence, he had concluded that since this proof was based on the thinking process, all that he could initially know about himself was that he is a *thinking* thing, a mind. The proof of his own physical existence was not possible until much later, after he had established the existence of God, and so on. Thus, it was necessary to conclude that mind and body are essentially quite different types of reality. While minds and ideas do not take up space and cannot be subdivided, all physical objects do occupy space and can be further divided.

This move, which seems to be necessitated by his line of reasoning, leaves Descartes in an extremely awkward position. On the one hand, he deserves credit for insisting on the reality of both mind and body, even though material reality is given a sort of second-class citizenship. On the other hand, however, he is now in the difficult position of not being able to explain how mind and body are connected since they have been defined as essentially different types of reality. How do thoughts affect bodies if the former have no physical reality? In short, once one has separated mind and body as thoroughly as Descartes has there is no way to explain their interaction, even though it is perfectly clear from everyday experience that they do in fact affect each other.

To be fair to Descartes, it must be admitted that there is no way, simple or even complex, to account fully for the relation between mind and body. Brain physiologists can trace impulses to certain areas of the brain, they can stimulate different parts of it and get certain results, and they can study the diverse functions of the two hemispheres, but none of this explains the point of connection between two seemingly distinct kinds of reality, namely mind and body. To be perfectly honest, no one can fully explain how it is that we can wiggle our index finger when we decide to and can refrain from doing so even though we are thinking about wiggling it. Philosophers have done little better in their efforts to resolve this dilemma.

Other modern philosophers have, to be sure, devised ways of treating this issue that are quite distinct from that of Descartes. The materialist tradition, which began in ancient times, begins by defining mind as simply a function of matter, an epiphenomenon that has no reality in and of itself apart from the body, especially the brain. The idealist tradition, which also stems from ancient times, takes the opposite tack and defines matter as simply a reflection of ideas. Thus, body turns out to be a function of mind. Pantheists, such as Spinoza, maintain that mind and body, like the rest of the cosmos, are simply dual aspects of a single, all-encompassing reality. The difficulty is that none of these "solutions" to the mind-body problem have proven to be especially convincing to very many thinkers. This dilemma represents yet one more indication of the inept character of modern thought in general.

While this is not the place to attempt to provide a final answer to the dualism and reductionisms that plague modern philosophy with respect to the mind-body relationship, perhaps a hint or two as to where to begin may be in order. It might prove fruitful to *begin* by affirming the ontological priority of relationality over both matter and mind. Once we have divided reality up into different kinds of entities and given them preferential existence, it becomes difficult, if not impossible, to connect them. Rather than thinking of relationships among entities as accidental and/or optional, it is more helpful to think of relationality as essentially real and entities as a function thereof.

Two thinkers who have developed approaches that are in accord with the above suggestion, albeit from quite different initial postures, are Peter Strawson and Alfred North Whitehead. Strawson, in his book *Individuals*, argues that it high time we simply acknowledge human beings to be at bottom creatures that are characterized by two integrated, nonreducible qualities, namely the physical and the mental. We must begin by affirming the bipolar, symbiotic nature of reality, as mysterious as this may be, and stop insisting that every aspect of it must be reduced to one main aspect. Stawson argues that the concept of persons is "logically primitive" rather than being derivative from mind or body.

Whitehead, for his part, accused modern philosophers of committing the "fallacy of misplaced concreteness" when they seek to define reality in terms of either mind or body alone. Like Spinoza, Whitehead saw these two basic aspects as dynamic, symbiotic outworkings of the relational, interactive *process* within which they arise, rather than as qualities of a single unified being. Thus, for Whitehead all reality is bipolar in structure, and the mind-body "problem" ceases to be a problem. As we shall see, while Polanyi did not approach this difficulty in the same way as Strawson or Whitehead, he did seek to begin by acknowledging the bipolar character of human existence, knowing, and reality. Moreover, he also negated the tendency of modern philosophy to ignore the role of the body in cognition.

### THE HUME'S EMPIRICISM

The other major dimension of modern philosophy is that of empiricism. The first clear-cut practitioner of this mode of thought was John Locke, but the most consistent and influential representative was David Hume. Empiricism, like rationalism, embodies a foundationalist approach to questions of epistemology in that it seeks to begin with a rock-bottom analysis of human cognitive experience upon which to construct the structure of knowledge. The basis of all human knowing, according to the empiricist, is *sensory experience*, the data of empirical input into the mind. The key idea here is that of

the mind being empty, like a blank slate, of any and all informational content when it first arrives in the world.

The empiricist beginning point, then, is to provide an analysis of the process by means of which sensory experience conveys information about the world to the mind. In addition, the empiricist employs sensory experience as the test of whether or not a given idea or knowledge claim is reliable. If they cannot be traced back to some basis in sensory input, such ideas and claims are merely the creation of the imagination. It becomes extremely important, then, for the empiricist understanding of knowledge to be able to identify the initial building blocks of sensation and to follow their development throughout the intricacies of complex knowledge. A brief summary of empiricist psychology will be helpful here.

In section 2 of his *Enquiry concerning Human Knowledge*, Hume discusses the "Origin of Ideas." Borrowing the basic structure of his analysis, while altering the terminology, from Locke's earlier efforts, Hume divided the "perceptions" of the mind into two classes, ideas and impressions. The latter are said to come directly into the mind through the senses, while the former are formed in the mind by these impressions and remain as their representatives. The data of thought, then, are supplied by the senses in the form of "impressions," and the memory they leave in the mind are what Hume calls "ideas." He says that impressions are much more "vivid and lively" than their corresponding ideas and that either of these can be and generally are combined in complex and diverse patterns.

In addition, impressions, which form the basis of all knowledge, are of two distinct kinds or come from two quite different sources. There are those that come *directly* through the senses, called "sensations," and there are those that are *derived* from reflecting on the processes of the mind as it organizes these sensations, called "reflections." These organizational principles and activities of the mind Hume calls the "Association of Ideas," and he designates three: "Resemblance, Contiguity in time and space, and Cause and Effect. By means of these principles of association, the mind processes and organizes the sensory and reflective data provided by experience, depositing them in the memory. From this memory bank, the imagination can create fresh combinations, but the results are not to be confused with knowledge.

Up to this point, Hume can be said to have followed the empiricist philosophy in orthodox fashion. He accepted the grounding of all knowledge in sensory experience and the use of such experience as the test of every knowledge claim. He was adamantly opposed to the possibility of there being any sort of "innate ideas" already present in the mind at the outset of experience. The empiricists all rejected any rationalist claims, such as those of Descartes, Spinoza, and Leibniz, to certain a priori concepts and/or axioms contributing to the formation of experience and knowledge. The exact standing

of the principles of association in relation to the possibility of such a priori factors has never been entirely clear in empiricist thought, but this is not the time or place to go into a detailed discussion of the issue.

After having established this seemingly solid basis for empiricist epistemology, Hume began to have second thoughts. In particular, he began to raise deep questions about the associative principle of cause and effect. It seemed clear to him that this principle serves as the lynch-pin of the entire knowing process since being able to anticipate future experience on the basis of prior experience, the very definition of knowledge, absolutely depends on being able to establish causal connections between events. Without such connections, we would simply bounce from one thing to another, unable to determine what might be coming up next. However, Hume was not so sure that the notion of causation can be found to have any rational foundation.

Early on, Hume had introduced a distinction between two kinds of kinds of knowledge claims, namely those that pertain to matters of fact and those that pertain to the relations between ideas or concepts. Roughly, this is the difference between empirical or scientific claims and those of logic. When it came to searching for the foundation of the notion of causation, then, it was only natural that he would seek to ground cause and effect in one or both of these types of knowing. The empirical or experiential knowledge claims are generally said to yield "a posteriori" knowledge and the ones involving conceptual definitions, or logical relations are said to yield "a priori" knowledge.

So, when he turned to the task of finding a rational basis for causal judgments, Hume asked if such judgments are grounded in or arise from perceptual experience, from empirical sensation. Try as he might, he could not establish such a basis for the simple reason that we do not, in fact, ever *actually* see, hear, or touch causes. What happens, according to Hume, is that when we are repeatedly confronted with the "constant conjunction" between event A and event B, we fill in the gap, as it were, between them by positing or inferring their connection. Clearly, causes have no color, no weight, no solidity in and of themselves, so they are not experienced per se by sensation. The fact of the matter is, according to Hume, we are *conditioned*, much like Pavlov's dog, by our repeated exposure to this conjunction of events to expect a B every time we are confronted with an A. However, expectation is not a matter of empirical experience.

Next, Hume asked if causality could possibly be a matter of *logical* necessity entailed by the very definitions of events A and B. Perhaps there is a "necessary connection" between the ideas involved in the two events such that the latter is required by the former. However, a closer look at this possibility makes it clear that this is not the case. There is no *necessary* connection between throwing a rock at a window and the window breaking, for example. It is not logically contradictory that the window might do something



entirely different when struck by the rock. Although such an occurrence would be extraordinary, to say the least, there is nothing in the very *idea* of rocks hitting glass that requires them to break. As Hume said, this expectation is established through what we today would call "operant conditioning," but this connection is neither empirical nor logical in nature.

Finally, Hume noted that it is tempting to attempt to provide a rational ground for causality by means of the pragmatic appeal that making such judgments about the future on the basis of previous experience has always worked in the past, so it makes sense to trust this process in the future. However, he made it abundantly clear that this move will not work because it actually begs the question at issue. For it once again relies on past experience for predicting the future. There simply is, according to Hume's analysis, no perceptual or logical reason for *assuming* that the world will continue to behave as it has in the past. Assumptions about the "uniformity of nature" have no rational foundation.

A great many criticisms can and have been raised by other modern philosophers about Hume's analysis of the foundations of knowledge. To begin with, there is something suspicious about the effort of empiricist thinkers to break experience up into its so-called smallest basic elements. The fact of the matter is that neither perceptual nor reflective experience comes to us in simple, independent units which can be said to constitute the building blocks of thought. The atomistic character of Hume's assumptions about the nature of sensory perception and analytic thinking have been controverted by both the findings of Gestalt or "holistic" psychologists and the explorations of phenomenological philosophers. Human cognition cannot be understood by means of an approach that begins by dividing experience up into isolated items or data since such an analysis betrays the structure of experience itself.

That this is so becomes painfully clear when we consider Hume's efforts to locate the datum of causation in sense perception. He speaks of events, like A and B, as if they exist and show up on some sort of mental screen as isolated entities. In addition to separating the sensory qualities of any object of experience, such as color and shape, from one another in analytic fashion, as if they could actually be known in this manner, Hume expected to be able to identify and isolate a perceptual item which could be labeled "cause." Whatever it might turn out to be, it should be clear from the outset that the notion of causation does not derive from sensation.

A similar line of criticism can be followed with respect to Hume's attempt to see if causal judgments can be grounded in logical necessity. After having completely separated logic from factual experience, rendering it empty of any connection with the way the world is, it is hardly surprising that Hume was unable to find any necessary relation between the events comprising our experience of the world. If the order of things as we encounter and interact

with them is assumed to be completely arbitrary and disconnected at the outset, and each and every relationship must be justified independently of the others as one goes along, it is clear that all is lost before we begin. One is reminded of Kierkegaard's insight that teaching someone to understand by first teaching them to doubt makes about as much sense as trying to teach someone to stand up straight by first getting him or her to lie down in a heap.

Another way to put all this is to point out that every attempt to explain one thing on the basis of another is doomed to failure from the beginning since either one becomes engaged in an infinite regress and can never really begin at all, or one is forced to bring the process to an end at some seemingly arbitrary point. Reductionism in any form is doomed from the outset. As Wittgenstein reminded us, explanations must come to an end, otherwise they would not be explanations. Following another of Wittgenstein's words to the wise, what is needed at this point is the willingness to begin at the beginning and stop trying to go further back. Polanyi's concept of tacit knowing will prove to be of great help in showing how this way of beginning can be achieved.

Similar difficulties arise when one examines Hume's criticism of the assumption that the future will be like the past. His way of setting the issue up forces him to take one of two options: either one despairs entirely of ever finding a rational basis for knowledge, which results in skepticism, or one falls back on simple pragmatic justification alone, which provides no rational foundation whatsoever. Either way, Hume's approach places itself in a no-win situation. The chief problem with this way of coming at the whole matter is that it *begins* by requiring that every belief, including presuppositions, must be justified in terms of another. Hume defined rational warrant in such a way that he systematically eliminates the possibility of fulfilling it. No wonder he ended up confused and disillusioned.

The lesson to be learned from these considerations is that whenever one's angle of approach leads to a choice between two dead-end alternatives, it is time to reconsider the original point of departure. In his own day, Thomas Reid, whom Hume ridiculed, tried to point out this line of thought to Hume, but to no avail. Reid, in essence, argued that the principle of inductive inference, which serves as the fulcrum for all knowing, neither can be nor needs to be justified. It simply is one of the principles by means of which human life is governed. Contemporary thinkers, such as Wittgenstein, wonder what one means by the term *grounds* when asking how the past can serve as grounds for beliefs about the future. If the past does not constitute 'grounds' in such cases, what would? Hume boxed himself in by defining rationality too narrowly.

Here again we see the commitment to foundationalism that characterizes what is called "modern philosophy." It is assumed at the outset that every aspect of and step in the rational process must and can be articulated in terms of another until one reaches a point of bedrock. If we cannot find such a point, then the whole chain of reasoning comes to naught. Both rationalists

and empiricists were confident that they found this bedrock, in intuition and deduction and sensory perception, respectively. This confidence leads, in the view of postmodern thinkers, to unfounded arrogance. Hume, to be sure, undermined this confidence with his skeptical analysis, thereby setting the stage for both Kant and the postmodern movement.

Before moving on to a consideration of both Kant and various postmodern thinkers, including Polanyi, it will prove worthwhile to tabulate the sorts of dilemmas that Hume was led into by virtue of his empiricist and skeptical posture. In addition to being unable to find a rational basis for the idea of causation in either sensation or logic, he was unable to find any grounding for the ideas of the self, other persons, and God. The entities represented by these concepts can be neither sensed nor defined as existing. Thus, he concluded that they are bogus notions that have no bearing on cognitive experience. Such skepticism may well be the logical outcome of a rigorous application of the empiricist approach to epistemology. Hume was thus able to "save" religious belief from rational criticism by placing it outside of the cognitive realm altogether.

In some ways, these negative conclusions to which Hume came as a result of his investigations epitomize the serious limitations of modern thought as seen from a postmodernist point of view. In addition to the ironic, if not downright contradictory character of a full-scale demolition of the possibility of rational processes being offered in terms of an extremely articulate, rational argument in Hume's work, there is the highly embarrassing fact that this work was written so that other thinkers might be convinced by the arguments therein, even though one of the conclusions was that there is no rational basis for the idea of other persons in the first place. These paradoxes are not just "cute" sidelights to the history of philosophy. They belie its claims.

By far the most excruciating paradox of all is that produced by Hume's serious but futile effort to locate any logical or experiential grounding for the idea of the self, including his own. In essence, he says, "I look and I look, but I fail to find a self, only a continuous flow of data." What is actually pathetic here is his complete failure to notice his own *necessary* employment of the very notion that he claims has no basis in experience. One is reminded of Descartes's starting right out with the idea of his own selfhood, even *before* having proven its rationality, when he reasoned "I think, therefore I am." It is, of course, quite rational and necessary to function this way; the difficulty lies in being able to explain the nature of this cognitive necessity. We shall return to this issue in chapter 2.

### KANT'S TRANSCENDENTALISM

It is generally understood that Immanuel Kant developed his approach to modern philosophy in an attempt to provide a *synthesis* of both rationalism,

in which he had been trained, and the empiricist skepticism of Hume, who awoke him from his "dogmatic slumber." Kant began by acknowledging that Hume was absolutely correct in claiming that all knowledge *arises* from experience; but he went on to insist that this does not entail that all knowledge is *derived* from experience. On the contrary, Kant maintained that while the content of knowledge is supplied by sensation, the structure of knowledge is provided by the formal character of the bond.

In this way, rationalism can be seen as correct in stressing the role played by the mind as the source and test of knowledge but as incorrect in assuming that the mind contains ideas or principles that constitute the material make-up of knowing. Likewise, empiricism is on the right track in emphasizing the part played by sensation, but errs in claiming that it is sufficient to account for knowledge in and of itself. It is clear, according to Kant, that sensory perception and the structure of the mind must work together in forming human cognition. As he said, "Concepts without percepts are empty and percepts without concepts are blind." By thus shifting the focus of knowing from passive perceptual input alone to the activity of the mind, Kant claimed to have established a "Copernican revolution" in epistemological thought.

Kant argued, in his famous *Critique of Pure Reason*, that by separating out the content of experience, the data of sensation, we can, by the process of elimination, discover the formal structure or "categories" of the mind that shape cognitive activity. He called this process a "transcendental dialectic" since it provides us with an understanding of the workings of the mind without claiming to stand outside of the mind itself. In "backing into" the formal structure of the mind by first subtracting out the content thereof, we allow the categories that constitute the very conditions of knowledge to reveal themselves. This approach was thought by Kant to be far more humble than that of traditional rationalism and far more positive than skeptical empiricism.

In general, Kant claimed that the formal character of the mind is focused in concepts such as space, time, and, of course, causation. When we analyze our experience, he reasoned, it is clear that we never have sensory data of these concepts. We cannot see or touch them, as Hume noted, yet they are a crucial aspect of all our cognitive activity. Thus, it is only reasonable to conclude that such notions are grounded in the very structure of the mind itself. Even though we do not know what the content of experience will be in the future, we do know that it will be structured according to the categories of space, time, causation, and so on. In this way, we can deduce the nature and basis of human understanding from the inside, as it were, "transcendentally" rather than claiming to do so from the outside, "transcendently."

Kant's way of putting all this centered in the usual distinctions between *a priori* and *a posteriori* knowledge, on the one hand, and between *analytic* or logical propositions and *synthetic* or empirical propositions, on the other

hand. Hume had claimed that while a priori knowledge provides certainty, it does so at the cost of being empty of information about the world because it must be expressed in analytic propositions; likewise, he maintained that a posteriori knowledge, which does offer factual information, always must be expressed in synthetic propositions. Thus, we can only be certain about the claims of logic, which are essentially a matter of definitions and consistency, while we can only obtain knowledge about the world through science, which only gives us various degrees of probability.

Moreover, Kant claimed that the knowledge derived from the categories of the understanding, while being a priori in character, since it is actually known before, or independently of experience, is also synthetic or factual because it does provide knowledge about the world. In this way, he claimed to have established the possibility and actuality of "a priori synthetic" knowledge that in effect guarantees predictability about future experience for claims that are based in the categories of the understanding. Kant offered the propositions of mathematics as examples of this type of knowledge. Arithmetic, being based on sequential understanding, is grounded in time, while geometry is clearly based on spatiality. Thus, these propositions are both known to be true independently of experience and to tell us things about the world.

The possibility of knowledge in the realm of natural science was, of course, Kant's main concern because this is what Hume had denied. In Kant's view, the concept of 'causation' is grounded in the categorical structure of the mind, and thus it is not surprising that Hume was not able to uncover it by means of empirical analysis. This special grounding renders the concept capable of serving as the basis of scientific knowledge since it establishes its a priori character at the same time that it offers factual information about future experience. Although we never know the content of our future experience, as Hume so deftly pointed out, we do know that it will take place within the causal nexus provided by the structure of the mind. This is all that is necessary for science to function as a legitimate cognitive enterprise, and thus Hume's objections to the inductive process have, in Kant's view, been overcome.

Whereas Hume had maintained that attempting to ground causal judgment in the inability of the mind to function without it was not rationally justifiable, Kant argued that the inevitability of causality as a precondition of all knowing necessarily renders it rationally justifiable. What could it mean for an activity to be rational other than that it is what makes cognition possible? Hume insisted that all rationality must be based in sense perception and then was surprised not to find the notion of causation there. However, Kant posited causality as an inextricable quality and condition of the very act of reasoning itself.

While disagreeing with Hume about the rationality of science, Kant agreed with him on the application of the reasoning process to matters having

to do with any supposed reality beyond the natural realm. In short, they both rejected the possibility of providing any sort of rational basis for metaphysical, aesthetic, and moral endeavors. It is built right into the very concept of a priori synthetic knowledge that it can only be said to apply to experienced reality in the natural realm, since it is a function of the categories of the understanding. These categories provide both the basis for scientific knowledge and its limitations. Thus, for Kant it would make no sense to attempt to apply these categories to the task of acquiring knowledge about something that by definition lies outside of their range and purpose. Kant labeled the realm that can be known by means of the structure of the mind the "phenomenal world" and that which cannot be so known the "noumenal world."

In his second major work, *Critique of Practical Reason*, Kant sought to uncover the basis of ethical judgments and reasoning. While such activities cannot be found to have any cognitive value in the way that science can, they do have a rationale of their own, according to Kant, in the realm of action. Moreover, moral behavior can be said to require certain assumptions or "postulates" in Kant's view since the concept of duty which governs it trades on the idea that we live in a moral universe. Such a universe requires us to postulate, but not prove, the existence of a moral ruler (God), an after-life (justice), and an ability to make moral choices (freewill).

It is highly likely that no other thinker has had as much influence on the formation of the modern mind as has Kant. Not only does he represent the high-water mark of the line of thought developed by Descartes, and others, he has also had inestimable impact on the shape of twentieth-century thinkers in nearly every field of endeavor. The stress on the active role of the mind in the formation of knowledge, often termed "Neo-Kantianism," has become commonplace in our time as a result of Kant's work. Nevertheless, there are a number of criticisms of his approach which are worth mentioning.

While Kant's effort to attain a transcendental understanding of the structure of human knowledge by means of his dialectical analysis is a highly creative proposal, and even a fruitful one epistemologically speaking, it is possible to question whether or not such a technique can in fact enable us to transcend our human pattern of thought. In other words, just what is the difference between Kant's claims to have uncovered the structural categories of the mind and metaphysical claims? Although he vehemently denied the charge, there are those who have accused Kant of being an idealist metaphysician. However, others have argued that he is really a positivist since he clearly wanted to reduce all cognition to empirical concerns and to eliminate metaphysics and ethics from the domain of philosophy. Kant saw his job as that of setting the limits of what can and cannot be and studied by both scientists and lay folk alike.

By far the most ingenious of Kant's insights was that of the possibility of an a priori/synthetic foundation for cognitive activity. His claim that there

is a grounding for knowledge that provides a kind of certainty, while at the same time yielding information about the world, is at the least extremely interesting and at best downright brilliant. Unlike Descartes, Kant did not maintain that this bedrock is provided by abstract reason alone, and unlike Hume he did not expect to find it amidst the data of sensory experience. Rather, Kant placed the pivotal ground of knowing in the structure of the mind itself, in the way that it serves as the condition of the possibility of knowledge per se. There is something extremely right-headed about this move on Kant's part, as our presentation of Polanyi's views in the next two chapters will make quite clear.

Nevertheless, there are difficulties here as well. One pertains to the highly intellectualist character of Kant's treatment of the categories of the understanding. Although he acknowledges that the notions of space, time, and causation are absorbed by means of our *interaction* with the objects we encounter within these categories, Kant never returns to this important feature of cognitive activity. For all practical purposes, Kant's epistemology, like those of modernist thinkers before him, is completely devoid of any need for the *body* as a vital factor in the knowing process. The concepts and perceptions of which Kant speaks all exist in a disembodied mind as essentially passive constructs.

This complete lack of any appreciation for the cruciality of the body in acquiring and grounding knowledge is perhaps the major flaw in Kant's modernist philosophy. We shall return to this issue in some detail in the next two chapters. Another chief difficulty with Kant's case for the viability of a priori/synthetic knowledge derives from his use of mathematics as the chief example. The development of mathematical theory since Kant's time has rendered this view of the nature of arithmetic and geometry quite obsolete. The invention of non-Euclidean geometries in the late 1800s by Labochevsky and Reimann, as well as the proof that all mathematics is but a special case of logic by Russell and Whitehead in the early years of this century, make Kant's use of mathematics quaint at best and extremely misleading at worst.

Finally, the absolute dichotomy that Kant constructed between the experiential, phenomenal world and the transcendent, noumenal world may well be vastly overdrawn. Like the early Ludwig Wittgenstein, in his *Tractatus Logico-Philosophicus*, Kant sought to set the limits of meaningful thought and speech by insisting on separating pure from practical reason, the former yielding knowledge, and the latter failing to do so. Unfortunately, this dichotomy is entirely out of harmony with the way human experience actually comes in everyday life. Moreover, one can even argue that theoretic activity itself does not and cannot be made to conform to this total separation of cognitivism from values and emotions. Kant's dichotomy even undercuts itself because it exemplifies a value judgment in its formulation.

Before proceeding to a consideration of Polanyi's view of the difficulties and quandaries inherent within what is known as modernism, together

with his resolution of these, it seems advisable to compile a summary of the main features of the modernist perspective that give rise to its limitations. While these limitations are also stressed by deconstructivist postmodernists, the negative character of their critique of modernism is not shared by Polanyi. Rather than seeking to “deconstruct” modernism, Polanyi sought to “reconstruct” it in such a way as to preserve its positive advancement over the authoritarianism of previous periods. This reconstruction was aimed at moving beyond modernism by uncovering the authentic axis of human cognition and value. But first, a summary of the shortcomings of modernism as instituted by the likes of Descartes, Hume, and Kant.

There is a distinctly *atomistic* flavor to the modernist approach to epistemology. The assumption seems to be that both reality and knowing not only can be divided up into ultimately simple units, but must be if they are to be understood. Not only does this assumption fly right into the face of actual human experience, but it leads inevitably to a commitment to reductionist analysis at each and every stage of thought, a commitment that in principle can never be fulfilled. Moreover, atomism and reductionism give rise to a desire, even a demand, to be able to control and manipulate both reality and the reasoning process, thus denigrating the role played by imagination and feeling in cognitive activity. Surely, this kind of narrow “positivism” sells knowledge short.

It is perhaps this *reductionistic* quality of modernism that leads to the undue confidence that twentieth-century thought has developed concerning the powers of scientific method and analytic processes. It has been tacitly assumed that the human ability to understand the world around us is essentially unlimited, that objective knowledge of reality is within our grasp. At the same time, however, there has been a strong tendency in the twentieth century to insist on the total relativity of all knowledge claims, a tendency that essentially undercuts the dream of the possibility of the “God’s eye view” inherent within the goal of objectivity. Nevertheless, it is largely this sort of ethnocentric arrogance on the part of modern thinkers that gives rise to the postmodernist protest. As will become clear in the next two chapters, it was Polanyi’s contention that it is not necessary to embrace relativistic subjectivism in order to avoid the difficulties of modern, critical thought.

Another disconcerting thing about modern philosophy is its tendency to lead to a *dualistic* treatment of reality. From Descartes’ separation of the mind and the body to Kant’s dichotomy between the knowable and the unknowable, we see the seeds of the dualism that has come to characterize nearly every aspect of our contemporary life and thought, from the separation of religion and politics to the reductionistic approach to medicine, and from the separation between social values and economic progress to the gulf between science and ethics. Any philosophy that divides the world into such distinct parts surely leaves a great deal to be desired.



In every version of modern philosophy there has been a commitment to establishing an unmovable foundation for all genuinely cognitive activity. This *foundationalism* has been shown time and time again to be essentially wrong-headed since about any given ultimate grounding of knowledge it is possible to raise questions as to the viability of its ultimacy. Intuitional self-evidence, sensory observations, and a priori/synthetic truths are all susceptible to serious criticism from a variety of angles and sources. The chief epistemological dilemma of modernism is that it forces us to choose between an indubitable grounding and open-ended relativism, between objectivity and subjectivity. Unfortunately, the former is impossible, and the latter yields no knowledge. What is needed is an epistemological approach that is able to locate a viable pivot point between these two extremes. Polanyi's philosophy of the tacit mode aims at doing just this, and in my judgment it accomplishes the task.

Finally, as was mentioned earlier, it has always been characteristic of modern thought to be excessively *intellectualist*. Both rationalists and empiricists, the latter's protest to the contrary notwithstanding, as well as Kantians carry on their analysis of cognition as if knowledge were an exclusively mental activity. What matters for all of them in regard to knowledge are the "ideas" that end up in the mind and the logical implications entailed thereby. The role of the body as it interacts with the surrounding environment is conceived of as incidental at best, and the mind is treated as not inextricably interwoven with somatic activity. There is surely something wrong with this picture of knowledge.

The reaction of those thinkers dubbed "postmodern" to the sorts of difficulties outlined above as endemic to the "modern perspective" is as important as it is forceful. However, the central thrust of this reaction has been primarily negative or "deconstructive" in nature. In their efforts to dismantle the presuppositions and arrogance of modernism, many postmodern thinkers have been guilty of throwing away the banana and eating the peel. Not only are there certain valuable insights inherent within modern philosophy, but the attempt to overthrow it by asserting that there are no viable criteria whatsoever by which to ascertain the meaning and/or truth of any statement is essentially self-negating and thus meaningless itself. The fact is, we do come to understand one another despite our biases and ethnocentric limitations; indeed, the very notions of misunderstanding and mistake are parasitic on their opposites for their meaningfulness.

It is at this juncture that the philosophy of Michael Polanyi becomes so relevant. In seeking to reconstruct modern, or what he calls "critical," philosophy, Polanyi sets about the task of locating an entirely different point of departure, or cognitive axis, for epistemological inquiry. He sets aside the "cult of objectivity" without setting aside the possibility of and need for

criteria of meaning and evaluation in our search for knowledge. Polanyi introduces an understanding of knowing as grounded in the body, the society of knowing agents, and the affirmation of our cognitive powers of judgment. This posture enables us to act with both confidence and humility in the quest for knowledge.