

ON THE TRANSDISCIPLINARY NATURE OF THE EPISTEMOLOGY OF DISCOVERY

by Morris L. Shames

Abstract. Despite the *by now historical* tendency to demarcate scientific epistemology sharply from virtually all others, *especially theological "epistemology,"* it has recently been recognized that both enterprises share a great deal in common, at least as far as the *epistemology of discovery* is implicated. Such a claim is founded upon a psychological analysis of figuration, where, it is argued, metaphor plays a crucial role in the mediation of discovery, in the domains of science and religion alike. Thus, although the conventionally conceived *scientific method* is crucial to the enterprise, primacy must nonetheless be accorded to *discovery*, which drives virtually *all* disciplines.

Keywords: cognition; discovery; epistemology; figuration; metaphor; scientific method.

It has been common, until quite recently, to demarcate *sharply* the epistemology of science from that of virtually all other disciplines. For instance, C. P. Snow (1963) is perhaps best remembered for the sharp schism he etched in his depiction of "scientific culture" and the culture of the humanities. In his view, their *Weltanschauungen*¹ are so dissimilar as to yield cultures that are mutually incomprehensible in terms of both language and attitude. For example, his bicultural analysis placed "literary intellectuals at one pole—at the other scientists, and as the most representative, the physical scientists. Between the two a gulf of mutual incomprehension—sometimes (particularly among the young) hostility and dislike, but most of all lack of understanding. They have a curious distorted image of each other. Their attitudes are so different that, even on the level of emotion, they can't find much common ground" (Snow 1963, 4).

This fundamental cleavage was made even clearer in Habgood's

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(1963) characterization of religion as the virtual antithesis of science. This has, in some part, turned on the now-impugned conception of subjectivist epistemology contrasted with the objectivist approach science takes with respect to its epistemological enterprise (Popper 1965 and 1973). Gadamer, however, has argued for blurring this distinction in light of the hermeneutic substrate that permeates all epistemology. In this regard, he has argued that

the claim to universality on the part of hermeneutics consists of integrating all the sciences, of perceiving the opportunities for knowledge on the part of every scientific method wherever they may be applicable to given objects, and of deploying them in all their possibilities. . . . It has to bring everything knowable by the sciences into the context of mutual agreement in which we ourselves exist. . . . It not only accounts for the procedures applied by science but also gives an account of the questions that are prior to the application of every science, just as did the rhetoric intended by Plato. These are the questions that are determinative for all human knowing and doing, the greatest of questions, that are decisive for human beings as human and their choice of the good (Gadamer 1981, 137).

However, a clear distinction between discovery and justification was made a half century ago in light of which science was clearly demarcated from other epistemologies owing to its clear *justificationist* character, and this distinction lingers, if only in hot debate, to this day (Reichenbach 1938). Reichenbach apparently reserved the patently logical justificatory process for epistemology, relegating discovery, owing to its extralogical nature, to the domain of psychology. This led to the conclusion that if one is to arrive at some well-grounded understanding of the scientific process, it must perforce be mediated by an epistemological analysis. This is not, however, a unanimously held view. It has been suggested that it is precisely this distinction and the consequences that flow therefrom that have impeded serious progress in scientific achievement. Royce, for instance, has argued that for philosophers of science “to ignore the discovery aspect of science, as they have for the past fifty years, is to *ignore* most of the scientific enterprise—that is, not only the most interesting parts of science, but that having to do with scientific progress” (1988, 63). This view is buttressed even more by the “laws of qualitative structure” in science which have little to do with justification—that is, the “scientific method” formally conceived—yet “some of our greatest scientific discoveries are to be found among them” (Newell and Simon 1981, 40).

The sharply demarcated view of scientific epistemology, it can plausibly be argued, stemmed in part from ego involvement which in consequence has led to precious little self-reflection. This enabled

the scientific intelligentsia to valorize itself by means of its distinctness from the rest of the intellectual community. However, this view has been challenged as myopic and largely inauthentic by scientific practitioners and epistemologists alike. The shortcomings of "inductivism" have been well documented and, owing to the nonlogical scripting of the process of discovery, a strong case has been made for *intuitionism* (see, e.g., Medawar 1969; Meynell 1976), albeit *some* have cautioned against philosophical intuitionism, which, it is argued, ineluctably leads to antirationalism owing to its lack of critical reasoning (Bunge 1962). In a triumph of inversion of logic, however, it has been argued that a concern for scientific formalism—"scientific thinking,"² as some have referred to it—has itself undermined rationalism. For instance, in psychological science, "unfortunately, the psychological zeitgeist for the past 25 or 30 years, due primarily to the previously mentioned concern for being identified as 'scientific,' has been essentially anti-rational" (Royce 1971, 225). In fact, this case is further supported by the wrongheaded—virtually "ideological"—application of a null-hypothesis form of hypotheticalism³ despite analysis upon analysis which has consistently shown this methodology to be fundamentally illogical, that is to say, fallaciously grounded (see, e.g., Bakan 1960, Meehl 1967, Shames 1987).

Others have taken an even more extreme antirationalist view of science. In one case it has been suggested that science is not a straightforward cumulative and progressive enterprise in virtue of its self-corrective methodology but is rather more ego involving and propagandistic and, therefore, is more relativistic than is usually claimed (Feyerabend 1975). Even the influential, *paradigmatic* view of science, with its insistence upon revolutionary change, has an antirationalist dimension. Speaking to that issue, Lakatos has argued that "for Kuhn scientific change—from one 'paradigm' to another—is a mystical conversion which is not and cannot be governed by rules of reason and which falls totally within the realm of the (*social*) *psychology of discovery*. Scientific change is a kind of religious change" (Worrall and Currie 1978, 9). However, much of the current epistemological thinking holds to the idea that "to obtain a clear view of agreement and disagreement in science, we must step outside the framework of traditional epistemology and acknowledge that scientific investigation neither abides nor needs a general philosophical theory of rationality" (Lugg 1986, 424).

DISCOVERY AND THE CREATIVE IMAGINATION

This shift away from justification to discovery has pivoted to a large extent on an appreciation of the *henosophical*⁴ role played by discovery in the pluralistic domain of scientific epistemology. Moreover, this extrarational shift toward a cognitive account has served to blur the heretofore sharp distinction between scientific and “nonscientific” epistemologies. This has occurred because the act of discovery—the “eureka” moment, as psychologists are wont to call it—is proveniently a *creative*—not methodological—act and, in light of that insight, *is common to all epistemological enterprises*. After all, more than a half century ago it was suggested that “all the psychic processes, including instinct and inspiration (which has been described as a sort of unconscious imagination), are means of establishing useful relationships with men and things, and it is by no means surprising that the scientific discoverer, who grapples with difficult problems of adjustment, should bring the finest powers of the mind into play. The history of science assures us that the creative imagination is not the monopoly of the painter, sculptor, poet, philosopher or theologian” (Libby 1922, 270). The creative imagination, therefore, seems to be mediated by what has been called variously *intuition* and *insight*, and in the case of science it has been argued that “empirical science . . . is science by virtue of its insights, empirical by virtue of the verification of these insights in experience” (Meynell 1976, 27). It is in virtue of the former, most important consideration—not the latter—that science and other *seeming* rival epistemologies are alike.

LANGUAGE AND THE CREATIVE IMAGINATION

The question that must be raised at this point deals with the *mediation* of these insights which are fundamental to scientific practice, literary criticism, and theological exegesis alike—to name the most obvious affinities. The answer lies in language. That thought is intimately related to language is such a well-founded proposition that its mere mention has come to be perceived as banal. After all, the history of this relationship dates back to the signal work on *Weltanschauungen* (Herder 1959; Humboldt 1941), the oft-cited linguistic relativity hypothesis (Sapir 1931; Whorf 1956), the more contemporary treatment of language and thought (Vygotsky 1962), and the suggestion that the philosophy of mind is related to an understanding of human language (Chomsky 1972). Despite the seeming pedestrianism of these arguments, owing primarily to their repeated insistence, the assertion that *epistemology* is language-dependent—and *scientific epis-*

temology is no exception—is perceived as considerably less obvious. However, this becomes considerably clearer when it is recognized that the epistemology in question is centered on intuition and insight—the epistemology, that is, which underwrites discovery—in science and nonscientific enterprises alike. It is not the “scientific method” usually delineated in the propaedeutic literature; rather, it is the epistemology that characterizes all disciplines. In addition, it has been argued that this epistemology turns or relies fundamentally on an understanding of language and semiotics and on metaphor as its supernal expression (see, e.g., MacCormac 1976 and 1983; Shames 1985, 1987, and 1988). Furthermore, the psycholiterary model of discovery, herein proposed, recapitulates the *evolution* of this epistemology insofar as it reflects the evolution of Western literature and, more particularly, the evolution of signs, symbols, and metaphor. Thus, it reflects the linguistically grounded ability to mutate human experience into a variety of symbolic forms which underwrite the psychological processes of creativity and discovery.

LANGUAGE, METAPHOR, AND MIND

Language, it is argued, plays a decisive role in the cognitive life of a society. Whorf, for instance, has argued that “the background linguistic system (in other words, the grammar) of each language . . . is itself the shaper of ideas, the program and guide for the individual’s mental activity, for his analysis of impressions” (1956, 212). Most exegeses take this to mean that language forces an *a priori* categorization of reality upon people and thus predetermines their perception and experience. At the very least, it suggests that language influences thought, but most commonly it is treated as an “indisputable fact of great importance: Thought development is determined by language, i.e. by the linguistic tools of thought and by the sociocultural experience of the child” (Vygotsky 1962, 51). Even those who take a more skeptical view of the determinative role played by language in the evolution of mind concede that “the study of human language can clarify and in part substantiate certain conclusions about human knowledge that relate directly to classical issues in the philosophy of mind” (Chomsky 1972, 194).

Language is at the very center of our universe. Its evolutionary provenance cannot be found in primitive, infrahuman communication systems, but, as “Humboldt rightly emphasized . . . language was human from its very beginning. . . . [L]anguage is not just one of man’s possessions in the world, but on it depends the fact that man has a world at all” (Gadamer 1975, 401). Language, then, is the

prismatic medium whose refractiveness yields both consciousness and culture. What lies at the heart of this, as Cassirer has made clear in the case of mythmaking and culture, is the postulation that "language is, by its very nature and essence, metaphorical" (1970, 120). As to the former, Jaynes (1976 and 1986) has made the case for the evolution of consciousness most persuasively, predicating his argument on the power of language to make analogies and metaphors. It is upon this power which the "great transilience" from the "bicameral mind" of early humankind to consciousness rests. The primary point of his argument rests not merely upon language but upon "the most fascinating property of language . . . to make metaphors. But what an understatement! For metaphor is not a mere extra trick of language . . . it is the very constitutive ground of language" (1976, 48). With this woven through the fabric of his argument, Jaynes concludes that the "subjective conscious mind is an analog of what is called the real world. It is built up with a vocabulary or lexical field whose terms are all metaphors and analogs of behavior in the physical world" (1986, 55).

Language is not related merely to thought but to a very specific cognitive process, insight and creativity, and it is metaphor that mediates this provenient, creative moment in the scientific enterprise and other epistemological undertakings as well. Bruner, for instance, in outlining the conditions of creativity, points particularly to what he calls metaphorical effectiveness to account for those acts which produce "effective surprise," the hallmark of the creative enterprise. For him the metaphor is a ubiquitous heuristic which does not yield the *product* commonly referred to as science, but nonetheless the scientific *process* "seems rather shot through with metaphor at critical moments in the history of science" (1962, 11).

Based on his tension theory of metaphor, MacCormac has delineated two aspects of metaphor, the suggestive and the expressive, which give rise to two different uses of metaphor: metaphors of "conveyance" and "root-metaphors." In virtue of this analysis he has argued for the similarity between the scientific and religious enterprises based, not upon the similarity of content of metaphors in both of these disciplines, nor upon the intentions behind these metaphors, but in terms of "the linguistic methods by which both enterprises achieve legitimate meaning" (1976, xi). His argument, however oblique, thus speaks to the issue of cognition and epistemology in the realms of both science and religion—heretofore considered almost diametrically disparate—in that "both employ metaphors to suggest new hypotheses, both seem to confirm their hypotheses in human experience, and both often create myths by

forgetting the hypothetical character of their metaphors” (1976, xviii). In short, in respect of the scientific enterprise, “the use of scientific metaphors represents the scientist’s cognitive effort to produce imaginative hypotheses through the juxtaposition of concepts not normally associated” (MacCormac 1983, 66).

Intuitionism and insight appear to be pivotal in science (Lonergan 1978; Medawar 1969; Meynell 1976) and, implicitly, MacCormac’s approach represents its seminal epistemological outlines. It is congruent with the “paradigmatic” and “programmatic” views of science both, in that (as previously described) scientific change is cognitively similar to religious change (Worrall and Currie 1978). Further, science in particular seems to be predicated on the use of theory-constitutive metaphors (Boyd 1979), and in general these “imputed isomorphisms can be rendered explicit and are then proper subjects for the determination of appropriateness, faithfulness, partiality, superficiality and the like. Metaphors that survive such critical examination can properly be held to convey, in indispensable fashion, insight into the systems to which they refer. In this way, they can, and sometimes do, generate insight about ‘how things are’ in reality” (Black 1979, 41).

It seems, then, that “all philosophy is condemned, to the extent that it is dependent upon figuration, to be literary and, as the depository of this very problem, all literature is to some extent philosophical” (de Man 1978, 30). Thus the historical demarcation between science and nonscience has become considerably blurred, and we are no longer prone to think of metaphor as purely epideictic while science, in light of its methodological armamentary, is considered virtually apodeictic.

A PSYCHOLITERARY MODEL OF THE EPISTEMOLOGY OF DISCOVERY

Although the preponderance of evidence that relates metaphor to scientific epistemology—at least as far as discovery is concerned—is compelling indeed, it often seems to lack probative persuasiveness. For instance, it has been argued that “there is, in fact, evidence to suggest that scientific enquiry rests directly on the conceptual innovations arising from the use of metaphor in scientific settings” (Rothbart 1986, 163). Anecdotal examples are then proffered as “evidence” from which it is concluded that “a theory-expanding metaphor represents one element of a paradigmatic picture of reality. In this respect scientific knowledge is continually constructed and reconstructed by these fertile representations of the world” (1986,

165). As compelling as this “analysis” appears to be, it is, in fact, imperiled by its own form of argumentation, the *circulus ad demonstrandum*⁵ which is woven through it. The case for metaphor is better served if its epistemological credentials can be established by means of a *systematic* treatment of metaphor where the evolution of figuration—the cognitive undergirding of insight and discovery—is delineated.

Psychology, for all of its historical and contemporary insistence on the behaviorist view, has paradoxically, in virtue of its research and extant theory, laid the groundwork for a hermeneutic view of man. For instance, in culling the psychological literature, Royce et al. (1978) were led to the conclusion that there is “an epistemic drive present in man [which] provides the basis for the development of symbolizing activity” (340), and this drive appears to be as fundamental as the other *primary* drives in psychological discourse. This seminal hermeneutic view is supported *a fortiori* by Olson’s (1986) postulation that it was literacy which created hermeneutics, and “hermeneutics, the interpretation of texts, provided the conceptual categories needed for scientific epistemology” (113). It would seem from the foregoing that an assay of the cultural contents of Western civilization, that is to say, the historical record of its literature, might reveal the evolution of this symbolically grounded, metonymous capacity which furnishes the substrate for a scientific epistemology based on discovery.

Northrop Frye’s sweeping analysis of Western literature (1957) never intended, as its express goal, to expatiate upon epistemological issues, but it nonetheless touches on such issues by proffering one of the more systematic extant “theories” of symbols and metaphor. It is also significant to note that although his intention seems to have been more taxonomic than explanatory, the resultant was hierarchically organized—not unlike many of the computational models of cognition and evolutionary theories themselves (Grene 1987)—and, thus, leans in the direction of explanation. It is as though he followed an *immanent* principle—the subtlety of cognition being what it is—incarnated in the notion that “nature loves hierarchies” (Simon 1973, 5). It is from this Olympian, taxonomic work that the rough outlines of a theory are generated, and metaphor, on this view, is the medium for the creative process whose compass comprises not only literature and religion—the very provenance of exegesis—but science as well. This in itself is insufficient for explanation; however, sufficiency derives from its confluence with the constructs of *analytical psychology*, in particular, that repository of psychologically significant archetypes, the collective unconscious.

Frye’s hierarchically organized taxonomy of symbols, it seems,

shares many of the characteristics of hierarchies (Pattee 1973) and seems to mirror the organization of the central nervous system itself (Gordon 1961). The *literal* and *descriptive* phases of symbolism are situated at the perigeon point of the hierarchy, where the symbol is understood as inextricably *sign* and *motif* both, thus serving a primarily denotative function. The sign in this schema functions as "a verbal representative of a natural object or concept" (Frye 1957, 367), while a motif is apprehended as "a verbal unit in a work of literary art" (Frye 366). The *formal* phase of symbolism reflects a higher level of cognitive activity where the symbol is understood in terms of the *imagery* it evokes, the image being regarded "as a formal unit of art with natural content" (Frye 366). There is yet greater cognitive sophistication represented in the *mythical* phase of symbolism, where the symbol is assumed to be *archetypal*, that is, it is "an image which recurs often enough in literature to be recognizable as an element of one's literary experience as a whole" (Frye 365). Intuition and insight are associated with the *anagogic* phase of symbolism, at the apogean point of this hierarchy. The symbol, at this point, assumes a virtual apocalyptic, *monadic* nature, where it is at the very heart of one's total literary experience yielding the *dianoia*, or meaning of literature which Frye's *logos* intended, "the shaping word which is both reason and, as Goethe's Faust speculated, *praxis* or creative act" (Frye 120).

These are but *units of analysis* in Frye's taxonomy. Their interrelationship betokens his approach to metaphor, which, like the symbols themselves, is hierarchically organized but whose focus is decidedly upon *meaning* and, by extrapolation, upon the creative imagination. The *literal* level of meaning, for instance, where metaphor assumes no other form than straightforward *juxtaposition*, is foundational in this schema. There appears to be some departure at the *descriptive* level, where there is "the double perspective of the verbal structure and the phenomena to which it is related" (Frye 1957, 123). This yet undeveloped form of metaphor is predicated on the property of *likeness* or *similarity*. Greater hermeneutic scope is afforded at the *formal* level, "where symbols are images or natural phenomena conceived as matter or content" (Frye 124) and where metaphor is conceived as an *analogy* of natural proportion which requires four terms of which two share a common factor. This form of metaphor is underpinned by the cognitive substrate reflected in syllogistic reasoning. The exegetical character of *archetypal* metaphor grows out of the formal level of meaning, and owing to its *associative* nature, where it "unites two individual images, each of which is a specific representative of a class or genus" (Frye 124), it approaches

the concrete universal level of meaning. The least contrived form of metaphor, its radical form, is embodied by the *anagogic* dimension of meaning—at the apex of this metaphorical hierarchy. The cognitive coloration here is one of hypothetical *identity*, where “identity is the opposite of similarity or likeness, and total identity is not uniformity, still less monotony, but a unity of various things” (Frye 125). Although this is the slag smelted in the furnace of Western literature and is one of its most eximious manifestations, its provenance as to its cognitive conformation must be sought elsewhere.

Jungian *analytical psychology*—in particular, the collective unconscious and its ancestral, inherited symbolism—speaks most directly to an understanding of *anagogic* metaphor, owing, at the very least, to its uncontrived, unconscious character. It is this conflation of Jung and Frye which elevates metaphor—especially anagogic metaphor—to the status of epistemology. That it is not a mere literary device is evidenced in the Jungian postulation that “inasmuch as every scientific theory contains a hypothesis, and therefore, an anticipatory designation of a fact still essentially unknown, it is a symbol. Furthermore, every psychological phenomenon is a symbol when we are willing to assume that it purports or signifies something different and still greater, something therefore which is withheld from present knowledge” (de Laszlo 1959, 275). The archetypes are such symbols of the unconscious, and these “are not disseminated only by tradition, language and migration, but these can rearise spontaneously, at any time, at any place, and without any outside influence” (Jung 1969, 13). They are, in short, the psychological means that underwrite metaphor, in particular, the anagogic material out of which *dianoia* is forged in such realms as literature, religion, and even science. Put in a more general way, it is the cognitive substrate which forms the wellspring for insight and discovery.

ON THE EVOLUTION OF THE EPISTEMOLOGY OF DISCOVERY

What has been outlined here is not a mere taxonomy of literature but rather a historical record of the evolution of a most significant epistemology centered on metaphor. Its hierarchical nature bespeaks its evolution in much the same way—although the correspondence here is not one-to-one—as Piaget’s (1950) genetic epistemology and stage theory deal with the evolution of the intellect (Phillips 1975). On the borrowed principle that ontogeny recapitulates phylogeny, the evolution of the formal operations period in intellectual development out of earlier, precursive periods—in particular, the concrete

operations period—finds a striking parallel in the evolution of this figurational epistemology where *anagogia*, the most abstract form of thought, has evolved from the *literal* level of metaphorical meaning. It is, as it were, the highest form of consciousness evolved from a more literal, bicameral⁶ cognitive period.

This may be taken even further. The evolution from analogy to metaphor, from the *formal* level to the *anagogic* dimension, reflects the evolution from consciousness to unconsciously derived inspiration. Thus, even though analogy has enjoyed high epistemological priority, it nonetheless does not describe the so-called eureka moment most appositely. It has, however, been recognized as “one of the first steps in all knowledge and accompanies its progress throughout” (Wolf [1930] 1962, 129). Furthermore, it has been suggested that “analogies are not ‘aids’ to the establishment of theories; they are an utterly essential part of theories, without which theories would be completely valueless and unworthy of the name” (Campbell 1920, 129). Notwithstanding this honorific treatment of analogy, it must still be recognized as only the *subjunctive*, provenient form of metaphor which lacks spontaneity and, therefore, the *creative* impulse underlying metaphor. Its insistence upon *functional* similarity, if not structural similarity, reflects contrivance and thus limits the contribution made by insight. On the other hand, metaphor, which is two stages removed in this taxonomically grounded model of epistemology, reflects a more evolved cognitive process, that is, *insight* from which discovery follows.

This argument is buttressed, albeit convergently, by synectics theory, which argues for both descriptive and inductive metaphors, where the former reflects the nature of analogy and the latter is seen as the resultant of an *essentially subliminal process*, that is to say, insight. Metaphor, on this view, is essentially a mental principle which is “inherent in language and grounded in the nervous system” (Gordon 1961, 113). Inherent in this analysis is the hierarchical, evolutionary view of metaphor which is grounded in the central nervous system. It is argued, for instance, that “contemporary theory about language holds that language is essentially metaphorical in its nature and development. This theory is grounded in the school of neurophysiology which maintains that symbolization is an inherent function of the nervous system, that the nervous system does not return direct impressions of the external world but indirect symbolical representations. This position further maintains that the rudimentary symbolization process of the nervous system is elaborated on higher and higher levels, culminating in the brain” (Gordon 1961, 111-12).

Artificial intelligence—in particular, the discussion focusing upon “strong AI” (Searle 1980)—provides yet another striking parallel for the evolution of the epistemology herein described. Dreyfus and Dreyfus (1986), for instance, argue that human beings possess an intelligence that machines simply cannot match. Their argument is predicated on an analysis of human cognitive skills ranging over five hierarchical levels: “novice,” “advanced beginner,” “competent performer,” “proficient performer,” and “expert.” From its perigal literalness and simple rule manipulation, this hierarchy culminates in “know-how,” where the expert is fully involved in the situation, has little awareness of the skill involved, and therefore makes little conscious use of analytic reasoning. One operates here in a larger world, where one visualizes and manipulates whole objects and situations. There is a compelling resemblance here to the cognitive processes underpinning *anagoria*, the radical form of metaphor, and in light of this analysis it comes as no surprise that the consensus view holds the aspirations of “strong AI”—conceived in its prophecies as well as its research—to have been largely undermined. After all, this form of metaphor, undergirded by an unconscious, holistic, “know-how” approach, underwrites scientific epistemology according to the psycholiterary model, and as Aristotle pointed out in his *Poetics*, the mastery of metaphor is “the one thing that cannot be learnt from others” (Bywater 1909, 1). It seems to be more a matter of aptitude and praxis, where self-reflection plays virtually no role.

Thus, the epistemology whose evolutionary traces have been outlined here is not a matter of mere semantics, as might be suggested upon first glance. Rather, metaphorical aptitude—the driving engine of insight and discovery—bids fair to displace “scientific method” in occupying center stage of the theatre of epistemology. Most importantly, however, it draws together the disciplines that heretofore have sought refuge in methodocentric, often *methodolatrous*,⁷ distinctness. Creativity, cognitively speaking, is all of a piece, and literature, religion—the wellspring of *all* Western literature (Frye 1982)—and science share equally in the enterprise.

NOTES

1. Literally, *Weltanschauung* means “worldview.” In Humboldt’s linguistic philosophy, the “world-view (*Weltanschauung*) of one people differs from that of another people to a hitherto unheard-of degree, and . . . this is due to the extreme differences in the ‘internal structure’ (*innere Sprachform*) of their respective languages” (Penn 1972, 19).

2. “*Scientistic thinking*” is a term used (by some) to denote a slavish following of scientific practice, despite the inauthenticity of its application to a particular subject (i.e., social psychology, among many other instances). (See, for example, Koch 1981).

3. *Hypotheticalism* refers to the application of "scientific method"—in particular, the *hypothetico-deductive method*. The general practice, at least as far as psychology is concerned, involves logically testing an experimental hypothesis against the null hypothesis of no effect.

4. *Henosophical*, as I apply this term to philosophy in general and to epistemology in particular, is etymologically derived from such religious belief systems where one system enjoyed primacy over others. It suggests the primacy of discovery in the pluralistic domain of scientific epistemology—that is, corroborationism, falsificationism, *inter alia*, in general, and point fitting as well as null hypothesis-testing as more particular examples of this "pluralistic domain."

5. This is regarded as a particularly pernicious "nonverbal" fallacy of arguing in a circle, that is, using an unproved premise to prove a conclusion which is then used to justify the premise.

6. The bicameral mind, which antedates the emergence of consciousness and the ability to introspect, is described by Jaynes (1976) as the ancient mentality characterized by auditory hallucinations and originating in the brain's right hemisphere. These hallucinations guided people during periods of stress and novelty.

7. David Bakan (1974, 158) coined this term as an apt characterization of the "method worship" which is rife in the psychological sciences. It is, however, generally conceded that a preoccupation with "method" is characteristic of *all* the sciences.

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