Burkean Tropes and Kuhnian Science: A Social Constructionist Perspective on Language and Reality

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This essay constructs a language-centered perspective toward the social-rhetorical construction of knowledge by juxtaposing Kenneth Burke's philosophy of language with Thomas S. Kuhn's philosophy of science. Specifically, my reading is of Burkes “Four Master Tropes” (Grammar 503-17) and related writings in Kuhn's corpus. Burke has commanded attention in a variety of fields, including sociology, history, and literary criticism. With respect to his work on language and communication, Marie Hochmuth Nichols declared in 1952 that Burke was “the most profound student of rhetoric” in America (144). Forty years later, few would disagree. Furthermore, Kuhn's Structure of Scientific Revolutions has “had a wider academic influence than any other single book of the last twenty years” (Gutting v). In particular, Kuhn is credited as being the “father of current social constructionist thought” in a variety of disciplines (Bruffee 779). Accordingly, a cross-fertilization of these two important thinkers' writings should be a fruitful endeavor.

This essay is intended to contribute to two related, ongoing conversations: the unresolved debate over rhetoric's epistemic status, and the emerging controversy concerning the utility of the social constructionist account of discourse production. There has been considerable disagreement over the scope of the claims of those who attribute an epistemic status to rhetoric. Neo-Aristotelian rhetorical theorists such as Thomas Farrell are willing to grant that rhetoric generates “social knowledge” but not scientific or “technical knowledge.” More recently, J.E. McGuire and Trevor Melia have argued against what they call “rampant rhetoricism” in rhetoric of science scholarship (“Rhetoric”). They argue that while the form and validation processes of science display rhetorical qualities, the “content” of scientific discourse—that which scientific language is about—is ontologically different from that of other forms of discourse, and, hence, in an important sense, science qua science is non-rhetorical (“Some” 97). They support their position, in part, by invoking Burke's notion of “recalcitrance.” They claim
that Burke implicitly grants a special status to the discourse by physical scientists (89). In contrast, William Rueckert, Burke’s most famous expositor, has suggested that Burke goes too far when he treats the discourse of the physical sciences, social sciences, and humanities as “special idioms” that are equally open to “logological” analysis (26). Like Farrell and McGuire and Melia, Rueckert draws an ontological distinction between scientific and non-scientific language:

There is a problem here with [Burke’s mention of] the physical sciences, which . . . purport to accurately describe natural systems that exist apart from [humans] and words. The structure of matter and the ecological systems are not logological at all, and though our instruments may alter our perceptions, it is hard to understand how what Burke says here applies in the same way to the humanities and the physical sciences. (244n)

In response to the positions articulated by Farrell, Rueckert, and McGuire and Melia, I believe that a juxtaposition of Burke and Kuhn demonstrates that the primary tools or strategies with which we seek to order “reality” through language are the same for scientists and non-scientists. I attempt to demonstrate this point in the first part this essay by showing how Burke’s four master tropes are just as inescapable to the process of making sense of “reality” in science as they are in nonscientific discourse-producing activities. Furthermore, as I argue in the second part, from a Burkean-Kuhnian perspective there is no prima facie epistemological or ontological difference between scientific and nonscientific language-use, though there may be pragmatic differences. In the second part I explore and defend two concepts drawn from Burke and Kuhn: ontological relativity and epistemological pragmatism. The most important implication of these concepts is that, “logologically,” science as a way of knowing is not fundamentally different from non-scientific ways of knowing.

A second, related theme on which this essay is intended to shed light is the relationship between logology and social constructionism. One of the central premises of those who describe rhetoric as epistemic is that language “embodies and generates knowledge” that is relative to specific “discourse communities” (Berlin 167; cf. Fulkerson). As Knoblauch and Brannon put it, “discourse enacts the world” (60). Since language is a public phenomenon, the “reality” we encounter and share through discourse can be described as socially constructed. Accordingly, “creating discourse is equivalent to the process of coming to know, whether it happens in physics laboratories or law courts . . . or in writing classrooms” (Knoblauch and Brannon 52). Without doubt, social constructionism has proved to be one of the most important and influential perspectives in recent composition theory (Berlin 165-79; Dowst 65-86; Knoblauch and Brannon 51-73). It is arguably the case that much scholarship concerning social constructionism is concerned with its social and pedagogical implications rather than its theoretical articulation and defense. As a result, certain theoretical questions have remained unan-
served such that it is not surprising that social constructionism has been the
target of recent criticism (see Petraglia). The most relevant example for this
essay is the fact that, while it has been noted that "concepts, ideas, theories,
the world, reality, and facts are all language constructs generated by knowl-
edge communities," the task of articulating how language makes sense out of
our experiences remains largely unfinished business (Bruffee 777). That
such an articulation is now appropriate and necessary is evidenced by an
important series of essays by Thomas Kent in which he critiques social
constructionism's notions of discourse communities ("Very Idea"), dis-
course production ("Externalism"), and the role of consensus ("Hermeneutical").

Specifically and most saliently, Kent has critiqued accounts of discourse
production that rely on notions of discourse communities, conceptual
schemes, and language as an activity that organizes and "represents" reality.
Kent recently complained that one of the short-comings of social
constructionism is that its proponents have not yet explained "how commu-
nication operates as a public phenomenon" ("Externalism" 61). In the third
part of this essay, I suggest that a Burkean-Kuhnian perspective provides the
basis for responding to portions of Kent's critique, and I conclude that
human understanding is better understood as a matter of social construction.

Throughout the essay, I hope to make it clear that Burke and Kuhn have
much to offer each other: Kuhn provides a more in-depth view of the sciences
than does Burke, while Burke provides a perspective toward language far
broader in scope than that found in Kuhn's writings. In particular, Burke
offers a social philosophy of language that Kuhn argues is needed in the
philosophy of science, thereby correcting the lack of "attention philosophers
of science have paid to the language-nature link" (Essential 303).

Burke's "Four Master Tropes"
Burke contends that the four basic tropes play a major role in "the discovery
and description of 'the truth'" (Grammar 503). In addition to the figurative
use of the tropes, Burke maintains that there are corresponding "literal" or
"realistic" applications:

For metaphor we could substitute perspective;
For metonymy we could substitute reduction;
For synecdoche we could substitute representation;
For irony we could substitute dialectic. (Grammar 503)

Burke's approach to the four basic tropes varies from tradition in two ways.
First, Burke manages to maintain the integrity of each trope while acknowl-
edging their interrelatedness. In contrast, most literature tends to collapse
the four into what Hayden White calls the "romantic-poetic-Metaphorical
tradition" or the "realistic-prosaic-Metonymical tradition" (31-33). Second,
Burke emphasizes that each of the four tropes possesses a "literal" counter-
part; that is, the master tropes not only are used as literary devices to enrich fiction and poetry, but function in all discourse as an irreplaceable means of making sense of "reality." Burke's claim that each trope has "literal" or "realistic" applications is supported if one compares each of Burke's pairs with corresponding notions found in Kuhn's writings.

Metaphor
That science relies on metaphor can be argued at various levels of generalization. If one accepts such claims as I.A. Richards' statement that even "thought is metaphoric" because it proceeds by comparison (Philosophy 94), then obviously the entire "human conceptual system," including science, involve the process of metaphor (Lakoff and Johnson 6). Likewise, if one accepts the premise that "there is always an element of metaphor in language" (Campbell 119), then it would follow necessarily that "at its deepest level all discourse—even scientific discourse—is already metaphorical" (Henderson 23). Scientific discourse, as a whole, is distinguishable from other discourse in part by the fact that it is guided by distinctive "root" metaphors: a gendered perspective of science as "masculine" and nature as "feminine" (Keller), a view of reality that is "materialistic" and "mechanistic" (Pepper 186-231), and "the metaphoric notion that 'the world is mathematical'" (MacCormac xiii). Burkes sets his "Dramatism" against "Scientism," in part, because he believes that the symbol-systems of the physical sciences are no more "accurate" than other symbol-systems; rather, science represents one powerful, but limited, approach toward understanding reality (Rhetoric of Religion 14n, 38-39).

Burke and Kuhn enable us to move from the general axiom that "all language is metaphorical" to a more specific understanding of how scientific language utilizes the resources of metaphor. Burke defines metaphor as "a device for seeing something in terms of something else" (Grammar 503). Additionally, metaphors provide information about objects, processes, or events from a particular perspective. "Orientation" and "framework of acceptance" are other Burkean terms similar to "perspective" (Permanence 5-36). The Kuhnian counterpart to the metaphor/perspective pair is found in his notion of paradigms. Specifically, I suggest that the juxtaposition of Burke and Kuhn produces the following:

For metaphor we could substitute exemplar;
For perspective we could substitute world-view.

Two primary elements constitute paradigms: a "disciplinary matrix" of models, laws, and symbolic generalizations (for example, E=mc²) that all practitioners in a discipline share; and "exemplars," which are prototypical applications of these models, laws, and generalizations to explain or to describe nature. Through the acquisition and use of exemplars—which Kuhn
names as the "fundamental sense" of "paradigms"—scientists develop their professional vocabulary and "world-view" (Essential 293-319). In the physical sciences, these exemplars may use mathematical formulas: \( f=ma \), \( I=\sqrt{\frac{1}{R}} \), and so on. Or they may rely on more ordinary language: "survival of the fittest," "action equals reaction," and so on.

The importance of exemplars is that they function as organizing metaphors for perspectives (or paradigms): "every perspective requires a metaphor, implicit or explicit, for its organizational base" (Burke, Philosophy 152n). That is, when initially introduced they "show" a phenomenon in a way not previously recognized. Burke calls this the "revealing of hitherto unsuspected connectives." Metaphors exemplify relationships between objects that "our customary rational vocabulary has ignored" (Permanence 90). Consequently, Kuhn speaks of new paradigms providing new lexicons that "open new possibilities, ones that could not have been stipulated by the use of the old" paradigm-lexicon ("Possible Worlds" 21). Thus, new theories encourage the scientist to "see" and experience the world in a new way (Structure 85, 111-35). For example, by his "discovery" of Uranus, William Herschel effectively re-organized astronomy by shattering the time-honored number of planets. His exemplary work taught his fellow astronomers to view the heavens differently. According to Kuhn, that change in the vision of astronomers is a principle reason the discovery of twenty additional "circumsolar bodies" quickly followed Herschel's discovery (Essential 175).

A nonscientific example further illustrates Burke's and Kuhn's point. When Lyndon Johnson declared a metaphorical "war on poverty" and George Bush a "war on drugs," they introduced a new way of seeing the relationship between government and poverty or drugs. As the metaphor became more widely used and accepted, the notion of "war" became more "literal," such that what was once a "metaphor" might equally well be described in practice as a "model" for behavior or a "representative anecdote" that summarized the "real" nature of the phenomenon (Zarefsky). So, too, is the metaphorical function of exemplars quickly forgotten once they are accepted and used by a scientific community. Once a group of scientists has learned to see and understand what a portion of reality is "really like" through the symbolic representations of an exemplar, that exemplar is treated as a model of what a portion of reality "really is." Nonetheless, we ought not forget that "whole works of scientific research, even entire schools, are hardly more than the patient repetition, in all of its ramifications, of a fertile metaphor" (Burke, Permanence 95).

Earlier I noted that metaphors provide information from a particular perspective. As one learns to "literalize" a metaphorical perspective, one develops an "orientation" toward the world. Burke defines orientation as a "general view of reality," a "bundle of judgements as to how things were, how they are, and how they may be," a "system of meanings," and as an "interpretive attitude" (Permanence 3-14, 81, 118; Attitudes 260-63). Likewise, Kuhn
argues that a paradigm carries with it an implicit world-view. As Frederick Suppe puts it, "Kuhn views science as working within a perspective or Weltanschauung which shapes the interests of the science, how phenomena are viewed, the demands it makes on theories, and the criteria of acceptability it insists on for theories" (135). Just as Burke contends that the choice of a given interpretation "in turn influence(s) our selection of means" (Permanence 10), the world-view implicit in a paradigm commits its practitioners to how and what kind of research should be pursued. Kuhn identifies a cluster of commitments as constituents of paradigms: "conceptual, theoretical, instrumental, and methodological"—all of which are integrated into the scientists world-view (Structure 40). The importance of the change of worldview function of paradigms is, to Kuhn, even more important than the incremental knowledge provided by the discovery itself (Essential 176).

Metonymy
According to Burke, "The basic 'strategy' in metonymy is this: to convey some incorporeal or intangible state in terms of the corporeal or tangible" (Grammar 506). While the poet uses metonymy as a "figure," scientists, Burke claims, mean their reductions to be "real." Thus, while a poet helps convey the emotion of "shame" with a "movement of the eye, a color of the cheek," the "scientific behaviorist" reduces the state of shame to the corresponding bodily equivalents (Grammar 507). Such a process is particularly important given Burke's claim that "Language develops by metaphorical extension, in borrowing words from the realm of the corporeal, visible, tangible and applying them by analogy to the realm of the incorporeal, invisible, intangible" (Grammar 506).

In Rhetoric of Religion, Burke describes not two but four realms "to which words may refer": first, words for the natural, for material operations, physiological conditions, and the likethings that "would be in the universe even if all ability to use words (or symbols generally) were eliminated" (14); second, words for the socio-political realm; third, words about words; and finally, words about the "supernatural." Based on Burke's analysis, Rueckert has suggested scientific language is of a different order than nonscientific language since scientists "purport to accurately describe natural systems that exist apart from [humans] and words" (244n). That is, science is limited to the first realm, that of non-verbal "Nature." But here I believe Rueckert misses the significance of Burke's thinking. It is true that in Rhetoric of Motives Burke describes "positive" terms as describing "visible and tangible things" that can be recorded empirically, but he follows his description by wondering if "science is less positive than its apologists take it to be" (183-84). In Rhetoric of Religion, Burke says that "words are to the non-verbal things they name as Spirit is to Matter" (16). Thus, while it is true that scientists try to "reduce" reality to the material, they do so through language, which "cannot be identical with the non-symbolic": "If the symbol-using
animal approaches nature in terms of symbol-systems... then he [or she] will inevitably ‘transcend’ nature to the extent that symbol-systems are essentially different from the realms they symbolize” (Rhetoric of Religion 16, 21-22). That is, though scientists investigate the non-symbolic realm of nature (motion), their claims, beliefs, and theories are situated in the world of symbolic action.

Similarly, Kuhn points out that scientists always approach nature with a “considerable antecedent vocabulary” in place that tells them what things are real and what things are not (“Dubbing” 302). Scientific vocabularies change over time and, with them, the range of “real things.” Accordingly, the designation of certain “things” as “corporeal, visible, tangible” and others as “incorporeal, invisible, intangible” is, itself, a timebound, culture-specific linguistic act. Over time, “things” may move from one realm to another. Or, certain things may remain in the “corporeal, visible, tangible” realm but their “essential” or “definitive” qualities—such as “water” is H₂O, or “gold” is the substance with atomic number 79—may change over time (“Dubbing” 309-15).

Thus, though metonymy involves the use of words from one realm to elucidate another (from the natural to the socio-political, or the tangible to the intangible, for example), Burke points out that the residency of a term in one realm or another is often temporary: “words for the ‘supernatural’ realm are necessarily borrowed from the realm of our everyday experiences... [then, later] we can borrow back the terms from the borrower, again secularizing” what were “originally secular terms” (Rhetoric of Religion 7). Accordingly, for the purposes of this essay, Burke’s analysis can be adapted by analogically extending the corporeal/incorporeal dichotomy into that of “fixed” and “unfixed” referents. Burke's position would be reformulated like this: Language is learned and changes by metaphorical extension, in borrowing words from the realm of fixed and traditional meaning and applying them by analogy to the realm of unfixed and novel meanings.

Though such a reformulation leads away from the traditional definition of metonymy (see Lakoff and Johnson 35-40), it provides a better understanding of an important function of metaphor not fully established in the first section: what Kuhn describes as “establishing” or “fixing” the referents of terms (“Metaphor”). There are two separate conceptualizations of metaphor at work here. The first is what Richard Boyd and Kuhn call “constitutive” metaphors. These are metaphors that express ideas for which no “literal” paraphrase is known. Over time the metaphor becomes “dormant” or “conventional”; its meaning becomes fixed and traditional as it becomes integrated into the cultural tradition (Burke, Permanence 95; Lakoff and Johnson 139). For example, when semi-trailer trucks first appeared, the term “jackknifed” was understood metaphorically. Over time the usage of the term dulled the metaphor “effect” such that we now use the term “literally.” Likewise, over a period of time scientists ceased thinking of
light as wave-like or particle-like and think of light simply as waves or as particles. In each example a fixed and traditional meaning (a jackknife, a wave, or a particle) was used to establish the meaning of another phenomenon (a trucking accident or “light”). The metaphor “constituted” a new meaning (Lakoff and Johnson 139-46). According to Kuhn, constitutive metaphors play a fundamental and irreplaceable role in science (“Metaphor” 414).

Kuhn’s position is remarkably similar to Burke’s contention that all perspectives require an informing metaphor (Philosophy 152n). Since Kuhn states that the difference between “heuristic” models and metaphors (which are explicitly treated by the discourse community as “figurative”) and “metaphysical” models and metaphors (which are eventually treated as “literal”) is purely a difference of commitment and is not a difference of cognitive function or ontological status, then the key difference between Kuhn’s revolutionary and normal science is not the presence or absence of metaphors, but the perceived “life” or dormancy of the metaphors in use (Essential 298n; “Metaphor” 417).

Kuhn also contends that a “metaphor-like process” is at work even if a metaphor is not explicitly formulated to introduce a new set of meanings. New “patterns of reference” must be established cognitively when a new terminology (or set of meanings) enters a field, or when a new group of students learn about an existing terminology. Part of the process of socialization into a scientific discipline is for students to learn how to use what are initially experienced as metaphors as their literal vocabulary: “Just as reference must be established for each new element in the vocabulary of science, so accepted patterns of reference must be reestablished for each new cohort of recruits to the sciences” (“Metaphor” 410). Kuhn maintains that this process of fixing new referents is “metaphor-like” since the new terms call forth a new “network of similarities” perceived in nature. For example, the meaning of “earth” changed after Copernicus such that the earth was now viewed to be like Mars, since both are planets. Similarly, “salt-in-water belonged to the ‘family’ of chemical compounds before Dalton, to that of physical mixtures afterwards” (“Metaphor” 416). According to Kuhn, revolutionary scientific change always involves “a change in one’s sense of what is similar to what, and of what is different” (“What” 20).

Support for Kuhn’s description of the “metaphor-like” process is provided by Bruno Latour and Steve Woolgar’s study of the social construction of scientific facts. They contend that one feature of the rhetorical construction of laboratory “substances” in science is that the substances are first described in a more recognizably metaphorical fashion (“A is like B,” “A reminds me of B”) and that description eventually becomes “literalized” by making the predicate absolute: “A is B” (147). Similarly, Kuhn believes that these change-of-reference processes are a specially important feature of what he has called “scientific revolutions.”
Though the comparison is not as direct here as it is with the metaphor/perspective pair, the following substitution with the second pair is possible: The Kuhnian counterpart to the metonymy/reduction pair is his notion of "fixing meaning" or "establishing referents." Kuhn's equivalent to the metonymy/reduction pair includes "all those processes in which the juxtaposition either of terms or of concrete examples calls forth a network of similarities which help to determine the way in which language attaches to the world" ("Metaphor" 415).

**Synecdoche**

Burke considers synecdoche to be synonymous with representation. Synecdoche includes such meanings as "part for the whole, whole for the part, container for the contained, sign for the thing signified," "perception" for the "Thing perceived," and so on (Grammar 507). Burke makes a number of observations based on this definition; three of those observations and their parallels in Kuhn's writings are examined here. Burke notes that sensory representation is synecdochic "in that the senses abstract certain qualities from some bundle of electro-chemical activities we call, say, a tree," and these qualities "represent" a tree (Grammar 508). Similarly, Kuhn points out that a vast amount of "neural processing" takes place between the receipt of a stimulus and the awareness of a sensation (Structure 192-93; Essential 308; see also Bronowski 18-22, 43). Thus, Kuhn shares Burke's position that "stimuli do not possess an absolute meaning" (Permanence 35). Kuhn adds that "very different stimuli can produce the same sensations; that the same stimulus can produce very different sensations; and finally, that the route from stimulus to sensation is in part conditioned by education" (Structure 193).

Neither Kuhn nor Burke mean to imply that people can "see" anything they want. Burke maintains that "the universe displays various orders of recalcitrance" to our interpretations, and we are forced to amend our interpretations accordingly. Thus, our perceptions have an "objective validity" (Permanence 256-57). McGuire and Melia seize upon these statements to claim that Burke "implicitly at least argued for the special nature of scientific texts" ("Cautionary Strictures" 89), but in the passages cited by McGuire and Melia, Burke is not talking about science. His claims apply to all human activities that engage other people and the world through language. We can no more wish away "reality" in politics, economics, or psychology than we can in the natural sciences. In a move similar to Burke's talk of recalcitrance, Kuhn speaks of the "survival value" of our knowledge of nature "embedded" in the stimulus-to-sensation route: "In many environments a group that could not tell wolves from dogs could not endure. Nor would a group of nuclear physicists today survive as scientists if unable to recognize the tracks of alpha particles and electrons" (Structure 195-96). Though both Burke and Kuhn can be described as "realists" in the sense that
both acknowledge that our senses are stimulated by something beyond our bodies, they insist that what is processed as "stimuli" cannot help but be "coached" or "educated" by the exemplars ("master metaphors") that govern our world-view ("orientation"). Exemplars have an "essential cognitive function" in guiding the inference from stimulus to sensation. Kuhn believes that recognition of this function is crucial "to an adequate reconstruction of scientific knowledge" (Essential 308-13).

A second observation by Burke concerning representation is that "Meteonymy may be treated as a special application of synecdoche" (Grammar 509). Burke and Kuhn have similar thoughts on the issue of "reducing" quality to quantity. Burke makes two points: first, that the reduction is confined to one direction, from quality to quantity; second, that a quantitative approach (especially in the social sciences) can play only a derivative role: it cannot take the place of "metaphysics or religion" (Grammar 509-10). Kuhn is in substantial agreement on both of these points. First, Kuhn insists that a qualitative theoretical approach always precedes quantitative measurement. A scientific theory or law may be reducible to measurement, but the "route from theory to measurement can almost never be travelled backward" (Essential 197, 217). Second, while he does not make an explicit statement one way or another, Kuhn's writings suggest that he also would concede that there are areas of study for which a quantitative approach would be inappropriate (Essential 178-224, 340-51). There is an additional reason Kuhn would support Burke's description of quantification as "derivative," one that leads back to the previous discussion of sensory representation. Kuhn offers several examples from the history of science where the extant sense-data failed to match what the existing theories predicted. Over time, however, as a given paradigm gained theoretical support, the observed data "changed" so as to achieve the predicted results. Kuhn suggests that these "self-fulfilling prophecies" offer another reason why reduction from quality to quantity is necessarily confined to one direction (Essential 178-224; Structure 134-35).

Burke's final observation concerning synecdoche centers on his idea of the representative anecdote: "A terminology of conceptual analysis, if it is not to lead us to misrepresentation, must be constructed in conformity with a representative anecdote—whereas anecdotes 'scientifically' selected for reductive purposes are not representative" (Grammar 510). As an example of a misrepresentative anecdote, Burke asks us to think of the scientist who studies animals in order to make inferences about human behavior (as noted before, Burke is often poking at Behaviorists). As a reply to Burke it should be noted that scientists typically are aware of the need to establish the generalizability of their theories and experiments in order to avoid the potential pitfalls associated with reductionism. One might add that Burke's anecdote itself is not very representative of science as a whole; hence, he may be guilty of overgeneralizing a bit himself. But the validity of Burke's attack
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on science is a peripheral concern and is better addressed through answering the following two questions: First, are there "representative anecdotes" in Kuhns philosophy of science? Second, how does one determine if an anecdote is "really" representative?

As noted before, exemplars are examples of "good science" found in textbooks and journal articles that demonstrate how theories, formulas, and so on apply to nature. To the practitioners of a given field of science, these exemplars are indeed representative anecdotes once they function as models to learn and imitate. The assimilation of exemplars is, for Kuhn, a crucial part of the scientist's socialization into a given scientific community (Essential 313). In fact, the ability to use the generalizations "licensed" by the reigning paradigm-exemplars is the main thing science students are expected to learn by doing "problems," whether with pencil and paper or in laboratories (Essential 306). Yet, even if it is correct to associate representative anecdotes with exemplars, how does one determine if they are "really" representative? Phrased differently, in what sense are exemplars or representative anecdotes true? This essay follows Burke's lead in deferring an answer until exploring the fourth pair: irony and dialectic.

Irony

With respect to irony and dialectic, the link that Burke makes between "dialectic" and "dramatic" is set aside here in order to focus on his contrast of irony and dialectic with relativism. According to Burke, there are many "voices" in a dialectic; to give any one absolute priority over others constitutes "subjectivity." Burke thereby inverts the traditional meaning of relativism: "the greater the absolutism of the statements, the greater the subjectivity and relativity in the position of the agent making the statements" (Grammar 512). Irony arises when one attempts to produce a "development" that uses all the terms. Burke is advocating a "perspective of perspectives," a "total form" that subsumes the "sub-perspectives" in conflict. The "resultant certainty would consider none of the 'contributory voices' as precisely right or wrong, but as necessary modifiers to the newly created perspective" (Grammar 512-13).

Scientists generally refuse to embrace an ironic stance such as that advocated by Burke. Apart from philosophical reasons, it is simply not possible for highly instrument-dependent scientific disciplines (at least in the so-called "hard" sciences) to put into practice multiple, conflicting theories and to pass them on through training. Scientists, as Kuhn points out, constantly strive for what they believe to be the "one best solution" to their questions (Essential 346). Burke's suggestions of systematic "planned incongruity" (Permanence 92-94) and the deliberate cultivation of irony (Grammar 511-17) contradict the scientific impulse toward a monological account of nature (however impossible such a goal may be). However, there is a sense in which Burke's strategy of "dialectical transcendence" has a corollary in the
philosophy of science. Many philosophers believe that science progresses cumulatively by modifying theories as objections arise, and that these modifications push science ever closer to approximating "truth" (Rescher 19-39). The cumulative viewpoint suggests, for example, that Newtonian physics is assimilated, rather than rejected, by Einsteinian physics.

Kuhn, on the other hand, believes that the history of science contradicts the cumulative theory. His research suggests that science progresses through "revolutions" that are non-cumulative, making it impossible to determine if theories grow "closer" to the truth (Structure 92-110, 206). Kuhn challenges the possibility of a "perspective of perspectives" within science for two reasons. First, in the philosophy of science the notion of a "perspective of perspectives" has been imagined as a "neutral" or "objective" language that could subsume the competing paradigm-terminologies. Kuhn rejects the possibility of such a language. Such a terminology might be possible if stimuli possessed singular and "absolute" meanings, but, as mentioned earlier, such is not the case, and past attempts to formulate such a terminology have failed (Structure 121-27). Second, Kuhn maintains that paradigms are incommensurable. There is no formally logical or terministic means available to integrate, say, the Ptolemaic and Copernican views of the universe. Even if two scientists from competing paradigms used the same words, their "meaning" would be different ("What" 9-18). As a result, communication between two conflicting paradigms is "inevitably partial" (Structure 149, 200).

Some critics of Kuhn interpret him as saying that scientists advocating competing paradigms cannot communicate at all and that "incomparable" paradigms result in incomprehensibility (Kent, "On" 428). Kuhn has explicitly rejected such a reading: "Most readers of my text have supposed that when I spoke of theories as incommensurable, I meant that they could not be compared. But 'incommensurability' is a term borrowed from mathematics, and it there has no such implication" ("Theory-Change" 190-91). For example, the hypotenuse of an isosceles right triangle is "incommensurable" with its side, but the two can be compared with precision, despite the fact that there is no unit of length that measures both directly and exactly (Kuhn, "Commensurability" 670). With respect to competing scientific theories, Kuhn contends that there is no neutral observation language with which to talk about theories, but he admits that theories are compared all the time. Kuhn's point is only that descriptions (including his own) are always partial—both in the sense of partisan and incomplete—for there is no independent "theory-neutral" language; "no common language, into which both could be fully translated" ("Dubbing" 299). Cross-paradigmatic communication is partial in the same way that foreign language translation is always partial. Two foreign languages can be translated into each other, but always at a cost; the translation is virtually never perfect ("Commensurability" 671-81). Kuhn suggests that different scientists trained in different paradigms are like translators of foreign languages in that they must "go native" to under-
stand fully the things, values, and relationships expressed in their respective theories.

Returning to the earlier question concerning representative anecdotes, how does one determine if an anecdote (or exemplar) is "really" representative or true? Burke suggests that conflicts between anecdotes can be transcended by creating a "perspective of perspectives" that would include science as one perspective (*Rhetoric of Religion* 14n). Within science, Kuhn denies the possibility of creating such a perspective due to the incommensurability of theory-languages. Kuhn also maintains that it is impossible to match up scientific terminologies with what is "really there."

The foregoing discussion has demonstrated similarities and disparities in the thinking of Kenneth Burke and Thomas S. Kuhn. One theme emerges as significant: the tropological "strategies" through which we seek to order our experiences through language are the same for scientists and non-scientists. "Logologically," science as a way of knowing is not fundamentally different from non-scientific ways of knowing. Science is "revealed not as the privileged route to certain knowledge but as another intellectual enterprise, an activity that takes its place beside, but not above, philosophy, literary criticism, history, and rhetoric itself" (Gross 3). The following section seeks to explore some of the ontological and epistemological implications of Burke's and Kuhn's claims.

**Ontological and Epistemological Implications**

Both Burke and Kuhn appear to be open to attack for violating a fundamental premise of traditional ontology, the principle of non-contradiction: "It is a property of being itself that no being can both have and not have a given characteristic at one and the same time" (MacIntyre 542). Burke and Kuhn apparently violate the principle when they suggest that the same stimuli can possess different, even contradictory, meanings. According to traditional ontology, Burke and Kuhn allow that "things" can both be and not-be at the same time, and thus violate the non-contradiction principle. In the twentieth century, however, traditional ontology has undergone substantial revision. It is in the context of those changes that we can best identify and understand Burke and Kuhn's contributions.

Though each offers a different vocabulary to explain his point, Burke and Kuhn each suggest that the world is known primarily (though not necessarily exclusively) through our symbolizations. Burke's "correction on empiricism" posits that "we must always be admonished to remember, not that an experiment flatly and simply reveals reality, but rather that it reveals only such reality as is capable of being revealed by this particular kind of terminology" (*Grammar* 313). Thus, empirical "observations" are "but implications of the particular terminology in terms of which the observations are made" (*Language* 46). Likewise, recall Kuhn's admonition that paradigms influence
what data will be drawn from a given stimulus. Thus, "something like a paradigm is prerequisite to perception itself" (Structure 113).

The notion that captures Burke and Kuhn's approach to language and reality is what Willard V.O. Quine calls ontological relativity. Like Burke and Kuhn, Quine rejects the idea of "absolute meanings," instead arguing that terms have meaning only relative to a certain "frame of reference" (48-49). Quine argues that just as in relativistic physics a given frame of reference is necessary to make the space-time continuum comprehensible, so too our language constructs points of view, perspectives, or theories. In relativistic physics, predications about position and speed are not absolute; they are relative to specific frames of reference. Just as the meaning and reliability of the statement, "The jet is moving at a speed of 400 mph," can be assessed only within an implicit or explicit frame of reference, to "say that water is liquid \( H_2O \) is to locate it within an elaborate lexical and theoretical system" (Kuhn, "Dubbing" 313). Quine's "frame of reference" has its parallel in Burke's orientation and Kuhn's world-view: "This network of terms and predicates and auxiliary devices is, in relativity jargon, our frame of reference, or coordinate system. Relative to it we can and do talk meaningfully and distinctively" (48).

Such an approach stresses the abstractive nature of language. In the process of abstraction, certain aspects of experience are "selected" with which to manage: "For all the complexity and richness of language, experience is immeasurably more complex, and richer in information" (Barnes 28). Burke describes abstraction as a "drawing from" (Permanence 104). Thus, when an experience of an entity is described, some aspects of that entity-experience are selected or "drawn from" to the neglect of others. As Martin Heidegger puts it, a predication about an entity gives it a "definite character," but this predication necessarily narrows the "content" of possible meanings (196). To say that "the hammer is heavy," for example, is to "point out" one way the hammer is, which, for the moment, neglects other ways for the hammer to be (197). What an entity is, or even that it is, depends upon whether and how it is instantiated through a particular orientation or frame of reference.

Such a process of abstraction should not be considered "faulty" or malevolent; rather, it is vital to the ordering and comprehension of human experience. Just as in physics a given frame of reference makes the space-time continuum comprehensible, so our "concepts" manage to cope with part (but never all) of what William James called the "flux" of perceptual experience (442). Calvin O. Schrag contends that "selection is not in itself a mark of distortion or falsification. Selection is simply an implication of the finitude of human knowledge" (65). According to Schrag, the "reification of meaning" into "facts" is an unavoidably abstractive process. Schrag's equivalent to James' "flux of sensation" is an "originative," "precategorical," and "primordial" realm of world-experience that presents itself "not as discrete
data but as experienced totalities in which figures and background are interwoven" (88-90). Latour and Woolgar's anthropological investigation into laboratory life is consistent with the preceding description. They note that "actual scientific practice entails the confrontation and negotiation of utter confusion" (36). Similarly, Kuhn notes that scientists and non-scientists alike must "sort out" the "flux of experience" (Structure 128, "What" 9).

From out of this flux, Kuhn contends, languages "cut up the world" in different, even contradictory, ways ("Reflections" 268). He also stresses that a given interpretation should not be considered "more real" than another ("Metaphor" 417-19; Structure 206). For example, we might describe an ocean wave with either a poem or a mathematical formula: each abstraction instantiates a different orientation toward the ocean wave that is more or less useful for particular ends. What social constructionists ask us to take seriously is the common sense notion that we can look at the "same" phenomenon in many different ways: economic, philosophical, poetic, psychological, and so on. Each of these orientations or "frames of reference" will yield a somewhat different understanding of "reality." Accordingly, Burke concludes that "different frameworks of interpretation will lead to different conclusions as to what reality is" (Permanence 35). Phlogiston is "real" relative to a particular theory, just as electrons are to another. As Richard Braithwaite puts it, "To say that theoretical concepts exist is to assert the truth of theory in which they occur" (80).

An important and relevant Burkean concept here is that of "terministic screens." Once a given discourse community (such as an academic discipline) employs a particular set of terms consistently over time to describe particular aspects of experience, the terms tend to perform a filter-like function by directing attention to some aspects of the "objects" under study and not to others. All "meaningful" human experience is formed experience, organized through a continual process of abstraction, bordering, and categorization (Gregg 25-51). Differences in the way a language encodes a domain of experience influences how individuals conceive "reality" in that domain. Burke suggests that this process is unavoidable: "Any nomenclature necessarily directs the attention into some channels rather than others" (Language 45). Thus, Burke declares that a set of terms is not only a selection of reality, but also a "deflection" of reality as well (Grammar 59).

Burke illustrates his notion of terministic screens with a visual metaphor:

I have particularly in mind some photographs I once saw. They were different photographs of the same objects, the difference being that they were made with different color filters. Here something so "factual" as a photograph revealed notable distinctions in texture, and even in form, depending on which color filter was used for the documentary description of the event being recorded. (Language 45)

There is a strong parallel here with Kuhn's explanation of the reality-ordering function of paradigms. Burke and Kuhn agree that even something
as "objectively there" as behavior or the "earth" must be observed through "one or another kind of terministic screen, that directs the attention in keeping with its nature" (Burke, *Language* 49). Kuhn's description of the relationship between a scientific language and the "world" it projects is very similar to Burke's notion of terministic screens: "To possess a lexicon, a structured vocabulary, is to have access to the varied set of worlds which that lexicon can be used to describe. Different lexicons—those of different cultures or different historical periods, for example—give access to different sets of possible worlds, largely but never entirely overlapping" ("Possible Worlds" 11). Kuhn suggests that one of the defining characteristics of a scientific revolution is that "the set of objects or situations" that scientists produce discourse about—that to which their terminology refers or "attaches"—changes ("What" 19). In short, in a paradigm shift, one terministic screen is replaced with another: "What characterizes revolutions is, thus, change in several of the taxonomic categories *prerequisite* to scientific descriptions and generalizations" ("What" 20; emphasis added).

If language only enables us to address limited portions of "reality" at any given time, then traditional understanding of "truth" and knowledge is put in jeopardy. Consider Jacob Bronowskis claim: "That is just the nature of the universe—whatever partition you make of it gives its own answer, which is not the whole answer" (100). Does this mean that we are committed to total relativism? If each selection of "reality" is also a deflection, is there a sense in which any given statement is more or less true than any other? This is precisely the objection raised by Kent against certain versions of social constructionism ("Externalism" 61-62). In reply, I suggest that Burke's and Kuhn's writings suggest that a pragmatic approach to truth must replace the traditional correspondence theory of truth.

Kuhn tells of two scientists who were asked whether a single atom of helium was or was not a molecule: "Both answered without hesitation, but their answers were not the same. For the chemist the atom of helium was a molecule because it behaved like one with respect to the kinetic theory of gases. For the physicist, on the other hand, the helium atom was not a molecule because it displayed no molecular spectrum" (Structure 50). The correspondence theory of truth suggests that "truth" consists of some form of "agreement" between belief and fact, between a person's opinion of what is and what "really is" (Prior 223-28). But if such a definition is accepted, what is to be made of Kuhn's anecdote? Is a single atom of helium "really" a molecule or not? Obviously, the analysis so far suggests that there is no way to answer the helium atom question through an appeal to a "match" with "objective reality"—what is "really there" independent of theory commitments. In this instance, each scientist's world-view or orientation told him or her what a molecule must "be" (Structure 51). The results were two different accounts, or, more pragmatically, two different ways of coping.
A pragmatic approach to truth avoids this quandary by suggesting that different sorts of utility (rather than "match with reality") are the criteria by which we evaluate claims. According to James, the function of thought is not to copy or image reality, but to form ideas in order to satisfy "needs and interests" (Ezorsky 427). Thus, both of the scientists' answers are treated as "true" to the extent that they work well to satisfy the needs (prediction, control, and so on) of each respective discipline. Implicit support for a pragmatic approach can be found in Burke's works. The role of pragmatic interests or utility is noted by Burke initially with respect to sensory representation: "Our interests shape our 'perception' of objects"; second, in the functioning of a world-view: "An orientation is a schema of serviceability"; and third, in his description of "Reality" as "what things will do to us or for us" (Permanence 214, 21, 22). In short, humanity "lives by purpose—and purpose is basically preference" (Permanence 235).

Kuhn explicitly rejects the relevance of the correspondence theory of truth for science ("Road" 6-7): "There is, I think, no theory-independent way to reconstruct phrases like 'really there'; the notion of a match between the ontology of a theory and its 'real' counterpart in nature now seems to me illusive in principle" (Structure 206). Kuhn's descriptions of the process of paradigm choice, on the other hand, lends support to a pragmatic approach. He argues that theories or paradigms must be "better" or "more successful" than their competitors in solving the problems or "puzzles" with which science is faced (Structure 17, 23, 77). Paradigm choice reflects the values of the particular scientific community involved, which could include predictive ability, consistency, aesthetic considerations, and so on (Structure 155-58, 184-86, 206). The "objective" or "rational" character of these values stem from their shared and public character rather than from a match with what is "really there" (Essential 320-39; "Rationality"). "What's to be evaluated" in scientific discourse, claims Kuhn, "is the desirability of a particular change-of-belief": which body of knowledge "is better for doing whatever it is that scientists do" ("Road" 6). Philosopher-scientist R.G.H. Siu states the point in clear and simple terms:

For practical purposes it does not matter whether the general adaption syndrome, the Newtonian law of gravitation, LaPlace's nebular hypothesis, and the flatness of the earth are real or not. It is only important that the principle be useful. The scientific version of truth is based on the workability of the theory in practice and its ability to predict accurately within the limits of interests. . . . In some respects the pragmatic approach provides science with a forward momentum. (22)

Burke/Kuhn and the Internal/External Debate

I conclude this essay by positioning the preceding discussion with respect to recent criticisms of social constructionism published by Thomas Kent. Kent has argued against accounts of discourse production that feature notions of discourse communities, conceptual schemes, and language as something that
organizes and represents reality. He believes that there are two “insurmountable” problems facing such accounts: skepticism and an inability to account for the “public nature of discourse production”:

When expressivists and cognitivists claim that language mediates between the subject and the world, or when the social constructionist claims that language is relative to a discourse community, clearly a separation exists between an inner realm of mental states and an outer one of events and objects, a separation that creates doubt about the possibility of knowing with any certainty the world or the minds of others. (“Externalism” 61)

Clearly, Kent’s concerns are directly relevant to the account provided here. Since he believes that no “internalist” model “can tell us very much about the public nature of discourse” and that such a model “valorizes internal mental states to the detriment of communicative interaction,” he concludes that “internalists” can formulate “no coherent response to the skeptic’s complaint that we can never know with certainty anything at all” (“Externalism” 62).

The Burke/Kuhn perspective developed here resists, I believe, the “internalist” label Kent wishes to apply to social constructionists. While both Burke and Kuhn acknowledge the role language plays in shaping individual perception and cognition, they also stress the importance of social interaction. Their language-centered perspective transcends or bypasses the Cartesian internal/external gap criticized by Kent, for it is precisely language that functions to bring about a shared understanding of the world. A central part of scientific education, Kuhn argues, is to teach would-be scientists to produce a particular sort of discourse—that is, how to use a particular set of words: “Knowing what a word means is knowing how to use it for communication with other members of the language community within which it is current” (“Dubbing” 301). It is through the process of acquiring a shared language that members of a given discourse community come to inhabit a shared “reality.” Thus, when scientists (or anyone else, for that matter) learn a language, “knowledge of words and knowledge of nature are acquired together” (“What” 21). Furthermore, the whole process of producing scientific knowledge involves generating discourse and persuading fellow scientists to accept one’s claims (Gross, Ziman). Scientific language and knowledge is, for Kuhn, “the common property of a group or else nothing at all” (Structure 210).

It is precisely because scientific discourse is public that we speak of social construction and the importance of a shared language. Kent notes that “the public nature of language-in-use presupposes knowledge of other minds and of the world in which we operate” (“Externalism” 63). Kuhn and Burke, I suggest, would agree, because for them knowledge of a language is knowledge of other minds and of the world. As Kuhn notes, not all scientific knowledge is linguistic (Structure 191-98). But that is no reason to deny the significance
of the processes of discourse production that generate scientific claims, which are linguistic products. Burke and Kuhn would agree with Kent's claim that when we use language we are sharing concepts; "if we did not share concepts, if we had no idea about the mind of another or about the world we share with others, communication would be impossible" ("Externalism" 66). Burke and Kuhn contribute to our understanding of how such concepts become shared. What might be at one point a Davidsonian "passing theory" can become reified such that it persists in time and spreads through space to a larger populace. Thus shared, it makes sense to describe a cluster of concepts and shared interpretations as a "paradigm," "conceptual scheme," or "orientation" that is common to a particular "discourse community."

With respect to the "problem of skepticism," I suspect that both Burke and Kuhn would respond with a shrug. I am not sure what Kent means by knowing "with certainty" ("Externalism" 62). If "certainty" means producing claims that have been found reliable and useful, then Burke's and Kuhn's pragmatic approach to "truth" suggests that we are very often successful. The question is not whether science and other human practices produce "certainty," but how and why some practices are more successful than others. Detailed case studies, such as Kuhn's work in The Copernican Revolution, his study of Max Planck (Black-Body), Ludwik Fleck's famous study of the modern concept of syphilis, and Latour and Woolgar's analysis of the social construction of "TRF" help to advance our understanding of how specific knowledge-claims change and how "certainty" is rhetorically induced (see also Gross). Kent's turn to Davidson's theory of meaning suggests that Kent does not believe that "certainty" means something more, something along the lines of absolute or timeless confidence. Accordingly, I believe it is incumbent upon the opponents of social constructionism to demonstrate an alternative conception of "certainty." In the meantime, Burke's and Kuhn's writings urge us to accept that any sense of certainty is necessarily contingent. Any predication of what-is takes place historically in a given culture instantiated linguistically within a particular orientation; which, in turn, may be seen from a different orientation to be incomplete. There is no "Gods eye view" of reality availability to humanity (Bronowski 70). What remains is neither strictly internal (subjective) nor wholly external (objective), but is a matter of intersubjective understanding shared through language. Our understanding is social in the sense that our concepts are human-made and are part of a shared language. Our understanding is constructed in the sense that our claims, interpretations, and orientations constitute "conceptual fabrics" that weave together contingent sets of beliefs and social practices. In short, human understanding is approached productively as a matter of social construction.

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Notes

1 I see no prima facie reason for believing that Kuhn would disagree with Burke's notion that in human symbolizing, in general, science represents but one perspective that needs "correction" by multiple alternative perspectives in a "perspective of perspectives."

2 Part of the problem with Kent's labeling is suggested by the fact that Kuhn often draws heavily from the later Wittgenstein and W.V. Quine—philosophers Kent calls "externalists." Richard Rorty, another "externalist" according to Kent, has acknowledged his debts to Kuhn many times over.

3 I set aside for another time the question of whether or not Kent's use of Donald Davidson's writings solves the problems he poses to social constructionist accounts of discourse production (see Kent, "Externalism" and "On").

Works Cited


