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By

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ABSTRACT

IN(TER)PLAY: THE RHETORIC AND ECOLOGY OF CREATIVITY

By

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This inquiry unites the fields of cultural studies, critical studies, and rhetoric in order to problematize the historical conception of creativity as a characteristic (or cluster of characteristics) found in the "creative exemplar" who embodies the Romantic and modernist ideology of the singular, exceptional, isolated "genius" who solves a problem or produces a product labeled as "creative." It attempts to open a new conceptual space for creativity that interrupts the repetition of this Romantic/modernist ideology by making visible its indebtedness to power relationships invested in a disenfranchising "rhetoric of exclusion" meant to contain its meaning, and it refigures creativity in light of the postmodern view of humans as conditioned, situated subject positions, materially and discursively constituted, each occupying different culturally-based sites of meaning, employing different uses of language, and engaged in different social practices. While it does not deny that individuals can be agents of creativity, it suggests that creativity is a radically distributed effect of interactive ecological factors of which individuals are a part, the function of an entire network of activity, and it finds that recognition of products or behaviors as "creative" is always contingent. It locates creativity not "in" individuals as an innate characteristic or "in" contexts or "in" cultures, but in the complex interplay of the relationships among multiple overlapping elements always in play.

To Allan, my first reader and critic, who gave me the precious gift of time and space to write and never made me feel guilty for neglecting him.

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Because it reconstitutes and extends the thinking of many others, this project is evidence of its own contention that new knowledge rarely emerges from the thinking of a single, isolated individual. Thus, the preparation of this manuscript and the ideas it contains would have been impossible without the help of others I take this opportunity to thank. I benefited enormously from the generous criticism and advice of Ed Ingraham, Dean Rehberger, Jim Stalker, and, especially, Diane Brunner who supported me in this work from its meager beginnings, pushed my thinking to another level, and believed in my ability to complete it when I was not so sure.

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INTRODUCTION

Looking at Creativity

I
Among twenty snowy mountains,
The only moving thing
Was the eye of the blackbird.

II
I was of three minds,
Like a tree
In which there are three blackbirds.

III
The blackbird whirled in the autumn winds.
It was a small part of the pantomime.

IV
A man and a woman
Are one.
A man and a woman and a blackbird
Are one.

V
I do not know which to prefer,
The beauty of inflections
Or the beauty of innuendoes,
The blackbird whistling
Or just after.

VI
Icicles filled the long window
With barbaric glass.
The shadow of the blackbird
Crossed it, to and fro,
The mood
Traced in the shadow
An indecipherable cause.

VII
O thin men of Haddam,
Why do you imagine golden birds?
Do you not see how the blackbird
Walks around the feet
Of the women about you?

VIII
I know noble accents
And lucid, inescapable rhythms;
But I know, too,
That the blackbird is involved
In what I know.

IX
When the blackbird flew out of sight,
It marked the edge
Of one of many circles.

X
At the sight of blackbirds
Flying in a green light
Even the bawds of euphony
Would cry out sharply.

XI
He rode over Connecticut
In a glass coach.
Once, a fear pierced him,
In that he mistook
The shadow of his equipage
For blackbirds.

XII
The river is moving
The blackbird must be flying.

XIII
It was evening all afternoon.
It was snowing
And it was going to snow.
The blackbird sat
In the cedar-limbs.

~"Thirteen Ways of Looking at a Blackbird," Wallace Stevens

Wallace Stevens' poem "Thirteen Ways of Looking at a Blackbird" bears a particularly apt relationship to the inquiry I present here. It provides a vision of

what it means to see that which escapes knowing and yet is "involved" in everything we know. The poem suggests a way of looking at a concept by examining how it repeats itself, a repetition not of the same, but of difference that co-constructs and extends its reality. It is a lesson in complementarity, the unceasing juxtaposition of things as they are and as they may be that exhausts the possibilities of language, reveals the limitations of the single perspective, and suggests the futility of trying to fix meaning once and for all. Stevens builds one image on another, suggesting that any description or definition is both improvisational, depending on the "interplay" of elements, and provisional, always "in play," and, therefore, *only* theoretical, anticipating the responses of others to fill in what is lacking---the "counterpoint to what we have failed to see," as the poet Alison Deming says. So, Stevens' poem is meant here as a playful admission that things only exist in relationship to other things, as a connecting thread among the parts of this work, and as a reminder of the nature of our "seeing," the slipperiness of concepts, and the power of the social imagination.

I have titled this work *In(ter)play: The Rhetoric and Ecology of Creativity* to take advantage of the double meaning it suggests. Not only does my study argue that creativity is the effect of the "interplay" and interaction of many factors, it also suggests that these factors are always "in play," always evolving and unfinished. The study itself also depends on the interplay of other elements I regard as being in play: the fields of rhetoric, critical studies, and cultural studies. And, finally, to some extent, in the way I have presented my work, I have allowed its form to follow the function I have imagined for it.

Near Kamakura, an ancient capital of Japan about an hour southwest of Tokyo by bus, there is a Buddhist temple known as Hasedera that overlocks both the city and the Pacific Ocean. I mention the temple here because the grounds are notable for the beautiful wind-swept gardens of delicate, deep-purple iris that propagate themselves in the rich volcanic soil by developing the characteristic horizontal "roots" that are not really roots at all. They possess buds, nodes, and scale-like leaves with the potential to reach out and connect from many points and to produce flowering shoots above the ground even in late December when I saw them. I find this pattern repeated in Stevens' poem, in Gregory Bateson's concept of "mind" as the complexity or intersection of individuals interacting with others and their environment, and in the ten-foot high, carved wooden statue of one of Japan's most popular deities Juichimen---eleven-faced Kannon. Each face represents a stage of enlightenment and allows the Kannon to cast an eye in every direction, thus remaining eternally vigilant, open, and aware.

In the spirit of the Kannon and Steven's poem, I have attempted to construct a rhetoric of creativity, of productive knowledge, arranging the parts of this work to juxtapose differing views across a variety of disciplines in order to provide a different architecture for "seeing" that will position readers in the in(ter)play of its struggle to construct meaning and knowledge.

The first chapter introduces the problem of creativity and suggests how an understanding of its nature has eluded us. It also suggests why this has occurred, who may have been harmed as a result, and how a different understanding of creativity might operate. Chapter Two traces the historical

construction of creativity as an object or phenomenon of study and suggests how it became a "problem." Chapter Three examines how language and rhetoric work, particularly how concepts are formed and how this process may be related to the problem of creativity. Chapter Four examines the crucial effect of awareness of difference and its importance as "new information." It suggests that creativity surfaces in the "play of difference," and it argues that human survival depends both on the transmission of certain "unslippable" concepts and the play of difference that forces concepts to "slip." Finally, Chapter Five takes up the discussion of how ecological thinking works and how rhetoric re-constituted as an art of productive knowledge might contribute to the operation of an ecology capable of surfacing creativity.

CHAPTER ONE

The Problem of Creativity

Among twenty snowy mountains,
The only moving thing
Was the eye of the blackbird.

Creativity, like Wallace Stevens' blackbird, seems poised on the boundary between order and chaos. Following different avenues of inquiry, experts have examined this phenomenon from a variety of perspectives for over a hundred years. Since the first empirical study of human abilities by Francis Galton, published in 1869, creativity research has continued in fits and starts up to the present time, focusing at various times on the characteristics of creative people, creative processes (conscious and unconscious), and environmental influences. In general, studies of creativity have regarded it as a statistically infrequent or novel idea or product that adapts a commonly understood reality, as a process occurring within a particular individual at a particular time, and as a personality trait unevenly distributed among human beings. More recent approaches have stressed the role of social, cultural, and environmental influences and the search for ways to encourage it.[1] While these inquiries have revealed certain features of creativity and added to our knowledge of it, they have, however, merely marked "the edge of one of many circles." Hardly able to agree on a "name" for this concept, neither have they been able to establish precisely what creativity is. Moreover, they have often mistaken "the shadow of equipage for blackbirds."

Creativity refuses to be fully known, yet it is "involved" in everything we know. It is a recursive concept that attempts to describe a dynamic process always *in play*, evolving, and unfinished and always in *interaction* with social, cultural, and environmental components---a strange loop that, like Stevens' blackbird, when examined folds back on itself, reintroduces itself from a different perspective, and develops a new sense. Understanding this dynamic, unpredictable, and apparently disorderly concept requires a different lens, one that will grant another way of looking at the "blackbird."

This inquiry re-examines creativity through the lens of rhetoric. Although rhetoric's relationship with creativity may best be described as schizophrenic, the fate of rhetoric has been linked historically with that of creativity. On the one hand, reflecting particular regimes of truth, rhetoric has framed the commonplace notion of creativity as the characteristic of a few exemplars this inquiry critiques and has preserved the "tensions" that have troubled attempts to understand it for more than a hundred years. Absence of critical inquiry, reflection, and analysis that is both historically and socially contextualized has deterred alternate understandings and obscured who has benefited from maintaining this view, thus allowing "theory" to confirm and reify social "realities" that have been constructed and that can be re-constructed differently. On the other, figured differently, rhetoric can also work against hegemony by evoking alternative possibilities and can surface creativity.

Demonstrating the former link between rhetoric and creativity, in the upsurge of research into creativity that occurred in the 1950s, for example, few

studies questioned why women were only rarely acknowledged as "creative." Ravenna Helson's studies of creativity in women found, "There was a naïve use of psychoanalysis and personality-trait concepts to 'blame the victim,' with what seems now a surprising blindness to the effects of cultural values, social roles, and sexist thinking" ("Creativity" 46). She reported that there was among some researchers a sense of puzzlement, but the prevailing "common sense" opinion then was that women were generally unsuited to creative endeavors because they lacked the necessary ambition, independence, and assertiveness. Helson also found that there was general agreement that women "were---and should be---more interested in their families than in fame or scientific advances" (46). Unable to "see" through the influences of cultural and social norms and move beyond the boundaries this "rhetoric" had constructed, many researchers simply believed that women lacked the originality necessary for creative thinking and the ability to think abstractly. To borrow Ludwig Wittgenstein's words, they may have thought they were "tracing the outline of nature," but they were "merely tracing around the frame through which [they] looked at her. . . and language seemed to repeat it to [them] inexorably" (114-115).

Moreover, until recently who knew that Crick and Watson's discovery of the double helical structure of DNA depended heavily on the scientific work of a little known woman, chemist Rosalind Franklin? Franklin had made original and critical contributions to the understanding of the structure of graphite and other carbon compounds. And, using the process of X-ray crystallography, Franklin was the first to discover that the sugar-phosphate backbone of DNA lies on the

outside of the molecule. She also explained the basic helical structure of the molecule. Unfortunately, however, her work data and her unpublished conclusions were provided without her knowledge to Crick and Watson, and they used her data (along with the data of other scientists) to build a detailed description of DNA's structure that, in 1953, was finally correct. But, Franklin did not share in the rewards of this achievement. The recent revelation of her key contribution suggests that discursive practice, the role of the social order, and the power relationships that sustain it play important roles in determining what counts as creativity not only in science but in other fields as well.

Further reinforcing this point, the title of Linda Nochlin's essay asked, "Why Are There No Great Women Artists?" Considering this question led her to conclude that failure to consider the influence of social conditions led to the flawed conclusion that women lack the ability to make great art. Art historians have argued in a wholly circular fashion, that if women had artistic genius, it would reveal itself. Since, in their view, it has not revealed itself, they concluded that women must lack artistic genius. Moreover, acceptance of this argument precluded examination of other factors that may have contributed to this effect such as access to role models and training (domain knowledge) and the impact of social responsibilities historically imposed on women that may have resulted in the lack of time, energy, and focus necessary to make "great art."

It is important to point out that women did, of course, produce art (just as they wrote and did mathematics and science), much of it in the form of crafts for the home like quilts, crewel, and other stitchery projects, for example, but

evidently such work did not qualify as "great art" when measured against a standard that does not include such work in the category.

The same arguments have been made, not only in reference to the artworks women have created, but also in reference to various other creative efforts socially and politically constructed standards have routinely excluded from the category historically for a variety of reasons. Mary Helen Washington, in the forward of the 1990 edition of Zora Neale Hurston's novel *Their Eyes Were Watching God*, notes that for thirty years after its first publication the book had been unknown, having been rejected by the male literary establishment. Washington cites one particular white reviewer who in 1937 could not believe that a town both inhabited and *run* by Negroes could be real and further points out that black male critics also rejected the work as "being out of step with the more serious trends of the time" (x). That its fiftieth anniversary edition in 1987 was a bestseller illustrates the significance of social, political, and environmental conditions in determining whose works get a "reading" and when. Currently, of course, quilts (which most often are collective projects) and other home-made crafts may sometimes be counted as "great" or "creative," especially if they represent a vision of something greater than the creative ability of the individuals who had a hand in creating them.

The story of Sophie Germain is also instructive as it reflects the reported experience of the few women who have managed to contribute significantly to the field of mathematics in spite of strong opposition to their participation. According to Simon Singh, the science historian and author of *Fermat's Enigma*,

it had been common practice over the centuries to discourage women from studying mathematics and other sciences. Reportedly, Sophie's interest in studying such an "unfeminine" subject as mathematics so alarmed her father that he attempted to discourage her by confiscating her candles and clothes and refusing to heat her room. Nevertheless, she managed to obtain a secret supply of candles, wrapped herself in blankets, and taught herself number theory and calculus. Although her father eventually relented and supported her research, that would only take her so far because she remained isolated from further training and the latest ideas.

When no one else took her interest in mathematics seriously, in 1794, she assumed the identity of Monsieur Antoine-August Le Blanc, an inept student who had left the Ecole Polytechnic in Paris. This ruse worked until Joseph-Louis Lagrange, the supervisor of the mathematics course who also happened to be one of the finest mathematicians of the time, noticed a remarkable transformation in the work of Monsieur Le Blanc and forced Germain to reveal her true identity. Fortunately for the field of mathematics, Lagrange did not dismiss her but instead became her mentor and her friend, thus allowing her to develop her skills and confidence. Her work did not disappoint. In fact, she made significant contributions to the field of mathematics (discovering the Germain primes) and to the solution of the legendary Fermat theorem. Later, however, discrimination and isolation led her to ultimately abandon the study of pure mathematics. It is worth noting that institutionalized discrimination against women in mathematics continued well into the twentieth century. Germain's story suggests that one

answer to a question of why there are so few great women mathematicians, then, may have little to do with a perceived lack of ability in women and leads to me to wonder what might have been accomplished had women been encouraged to participate in the field over the centuries.

The preceding examples suggest that a theory of creativity that regards it as an innate characteristic of only a few and that by its very focus rules out complete examination of the complexities involved ignores the fact that individuals are *social* beings, conditioned by their location in culture. It also fails to adequately interrogate how the criteria for deciding what constitutes creativity came into being historically and sidesteps the question of who and what determines "standards" of "human greatness." This theory, with its roots in the Platonic idea of truth as accessible only to certain "gifted" individuals, has infused Western thought and pedagogy, continued to frame thinking about the nature of creativity, and gained credence through its continual circulation in the deep discourse structures of regimes of truth imposed by dominant forces who want to sustain their power by controlling cultural structures and practices and authorizing what counts as knowledge. The claim that only certain people are innately capable of creativity in art, literature, science, or any other field and that others, a majority of the population, are not (because if they were, there would be evidence) has thus been allowed to suppress alternative explanations. Further, employed as the basis for public policy decisions, it has resulted in depriving the "others" of experiences that might manifest creativity in a variety of fields.

However, as Jonathan Culler suggests, "The nature of theory is [also] to undo, thrcugh a contesting of premises and postulates, what you thought you knew . . . " (*Literary* 17). As "a pugnacious critique of common-sense," theory can [also] open space for the critique of received belief systems and cultural structures/practices in order to examine the unequal relationships in the circulation of power and the knowledge it constructs, a primary aim of this inquiry. No other examination of creativity in any discipline has considered it in this light.

A Rhetoric of Creativity

Aristotle defined rhetoric as "an ability, in each [particular] case, to see the available means of persuasion." According to translator George Kennedy, he identified it as belonging to the genus *dynamis*, meaning "ability, capacity, faculty" (*On Rhetoric* 36n) and recognized rhetoric's potential as manifested not in the actual oral or written text or even in persuasion itself, but in the "art of seeing" how persuasion might be achieved. "To see," Kennedy notes, meant "to be an observer of" and "to grasp the meaning or utility of" and located in rhetoric the ability to *imagine other possibilities* through "invention," a capacity akin to creativity (36n).

Aristotle defined all art as the "reasoned capacity to make something" (289). For him, "making" (art/techne) was distinct from acting (practice) and from theorizing (philosophy). Rhetoric's appropriate concern, according to Aristotle, was the coming-into-being of something capable of *either* being or not being (289), something whose origin could be found in the maker but not in the thing made and whose "art" required both material at hand and an external mover. He

found its first principle, then, in a creator and its end in a user, suggesting the necessity of social interaction. (*Art* here is not a product like a painting or a sculpture; rather, it means the "shaping," "constructing," or "making"---Aristotle's own term---associated with the conscious production of the elements of any discipline, like the art of constructing a mathematical proof for example.)

Although Aristotle rejected Plato's distinction between true and false art, when he referred to rhetoric as the "counterpart" of dialectic, he reinforced Plato's view of it as a poor cousin unworthy of a seat at philosophy's banquet table, relegating it to the kitchen with the cooks (*Gorgias* 465c). Rhetoric's fit in either place has been the subject of continuing debate. Nevertheless, the suggestion that rhetoric is modeled on philosophical method (dialectic) has tended to cover over its significance as a way of "creating" productive knowledge.

For Plato, rhetoric constituted mere flattery, "not an art, but the occupation of a shrewd and enterprising spirit" (*Gorgias* 463). Central to his argument was the distinction he drew between philosophy's project of *episteme* (knowledge) and rhetoric's project of effecting belief or *doxa* (opinion). He believed the search for truth to be the process of recovering what the soul already knows, a solitary introspective effort resulting in "a recollection of those things which our souls beheld aforetime as they journeyed with their god, looking down upon the things which now we suppose to be, and gazing up to that which truly is" (*Phaedrus* 249b). Truth "which truly is" Plato regarded as immutable, transcending the contingencies of time and place: "Philosophy holds always to the same" (*Gorgias* 482). And, he concluded that rhetoric, the art of discourse, "the art

which secures its effect through words," employed by "one who goes chasing after beliefs, instead of knowing the truth, will be a comical sort of art, in fact no art at all" (*Phaedrus* 262c). Because he regarded rhetoric as "a creator of conviction that is persuasive but not instructive about right and wrong" (*Gorgias* 455), he considered it an unreliable tool in the recovery of truth.

Plato also saw it as a resource for his competitors, the sophists, who he believed used "imaginative" tricks to deceive and manipulate people and lead them away from truth (G*orgias*). The sophists, on the other hand, understood rhetoric as a tool for social interaction (what, in their view, made people most human), finding its highest purpose in public debate in the polis. The inventive capabilities of rhetoric suggested to them the endless play of *both* the possibility of truth and its impossibility.

Plato's own rhetoric, voiced through Socrates, sought to contain its potential and control it. He did not imagine Truth as accessible to everyone. He regarded only individuals of certain standing (the guardian class), supposedly endowed with superior skills and mental structures, able to fully "recall" it. Moreover, he considered social interaction detrimental to this process; solitude was for him the necessary precondition for the philosophic act. Invention, as he conceived of it, then, was not invention in the sense of producing new or different knowledge. Rather, he envisioned it as the process of great skill and effort whereby privileged individuals attained Truth, a transcendent entity infinitely re-circulating within a closed system. This conception of truth as accessible only to

certain "gifted" individuals has infused Western thought and pedagogy and supported the notion of creativity as the "gift" of a privileged few.

In the early twentieth century, however, Mikhail Bakhtin rooted his philosophy of language not in sophistic rhetoric or in Plato's system, but in the Socratic method of inquiry as he believed it operated before Plato distorted it to serve his own ends. Sensing the underlying concept of the Socratic dialogues, he wrote in the *Problems of Dostoevsky's Poetics*,

> At the base of the genre [the novel] lies the Socratic notion of the dialogic nature of truth, and the dialogic nature of human thinking about truth. The dialogic means of seeking truth is counterposed to *official* monologism, which pretends to possess a ready-made truth, and it is also counterposed to the naïve self-confidence of those people who think . . . that they possess certain truths. Truth is not born nor is it to be found inside the head of an individual person; it is born *between people* collectively searching for the truth, in the process of their dialogic interaction. Socrates . . . brought people together and made them collide in quarrel, and as a result truth was born; with respect to this emerging truth Socrates called himself a 'midwife,' since he assisted at the birth . . . (110).

Under Plato's system, Bakhtin believed that the Socratic dialogue had "degenerated completely into a question-and-answer form for training neophytes (a catechism)" (110), becoming the "absolute word," the one logic and language of truth. However, he further reasoned that as this word comes into contact with competing, different meanings for the same things, it feels the force of dialogism: a fluidity, a slipping beyond established boundaries that resists systematic efforts to fix or "centralize" and close down the potential for different, new meanings. One transgression beyond the apparent boundaries of the word can lead to other transgressions and can threaten the entire system, forcing it open to

new potentialities that are relative, conditional, and context-full, and dependence on context insures that a word spoken (or written) is "heteroglot," a mixture of many. Thus, its always and already existing "novelty" can invade the space of privilege, "breaking through to its own meaning . . . born in dialogue as a living rejoinder within it . . . shaped in dialogic interaction . . . a concept of its own object in a dialogic way " (*The Dialogic* 279). Bakhtin considered rhetoric's relationship with *living* human beings, its internal orientation toward response from others, and its potential for creating openings within systems as particularly significant. He believed "truth" to be tentative at best, and he considered the effort of Plato's solitary individual trying to arrive at truth through introspective contemplation tantamount to "trying to pull oneself up by one's own hair" (*Toward* 7).

In *Rhetoric Reclaimed* Janet Atwill suggests that rhetoric may actually belong to an alternative order of knowledge, a part of Aristotle's original system that fell into obscurity when the binary opposition of theory and practice began to dominate Western thought. From ancient sources, some more than a century prior to Aristotle, Atwill recovers rhetoric as an art of "productive knowledge," a context-full, processural model that contains no stable disciplinary body of knowledge and takes as its concern the specifically "human" capacity to intervene and invent (7). It was associated with uncertainty and the transgression of boundaries and limits, with the disruption of received knowledge, with the creation of new

subjectivities, and with the production of new possibilities---"a desire for 'more' that challenges or redefines relations of power" (7). She notes that Aristotle consistently found in rhetoric features of this order of knowledge: It does not belong "to a single defined genus of subject;" it is "capable of admitting two possibilities;" and it has the "capacity to be otherwise" (175).

Atwill's inquiry also verifies that in Aristotle's system the aim of productive knowledge differed significantly from the aims of theoretical and practical knowledge: Its purpose was not to "define an object of study" or "formalize a method." Rather, its aim was to make use of both the "rational structuring" of the world and interruptions of that structuring that render it uncertain, moments capable of transforming "what is" into "what could be" (70).

Atwill argues that the most distinguishing feature of productive knowledge was its different sense of time. Philosophy's claims were regarded as enduring and timeless in the sense of *chronos* or abstract time. On the other hand, productive knowledge was thought to take advantage of time in the sense of *kairos*, particular time or timeliness, "seizing the moment" and unfolding within it (57). Atwill notes, "'Knowing how' and 'knowing when' are at the heart of kairos, distinguishing techne from rule-governed activities that are less constrained by temporal conditions" (59). Rule-governed activities have difficulty responding to kairos precisely because they are rule-bound and cannot adjust flexibly or

quickly to change. Thus, the more activities are codified or formalized, the less flexible and less responsive to change or difference they become.

Productive knowledge, on the other hand, is always contingent; dependent not only on time, but also on context, on the status of existing knowledge, and on those involved in it at the moment. In the *Nicomachean Ethics*, Aristotle went so far as to exempt productive knowledge from the laws of his logic (*Nicomachean* 1.3). He suggested that it obeys a *different* logic, one in which something can both be and not be, like a "rain" that is a "mist," for example. Or, as Ahab proclaims in *Moby Dick*, "You have seen him spout; then declare what the spout is; can you not tell water from air? My dear sir, in this world it is not so easy to settle these plain things."

Rhetoric, as an art of productive knowledge, then, may be regarded the "undecidable middle term" that deconstructs the binary of theory and practice. In a 1990 interview in the *Journal of Advanced Composition*, Gayatri Spivak (in reference to Paul de Man's *The Resistance to Theory*) describes rhetoric as the "residue of tactical indeterminacy" that resists systematic logic and "escapes the system" despite attempts to contain it. As neither theory nor practice, its fluid activity between them continuously generates tension and dis-order (Spivak says "un-ease") and is capable of upsetting equilibrium and "bringing both into crisis."

The rhetoric of productive knowledge is distinctively different from rhetorics that reproduce knowledge imposed by dominant forces and

made to function as truth. It resonates against both knowledge as theory and knowledge as practice to create an "awareness" of other possibilities, and tireless in its critique, its tendency to act as a tool for developing that awareness is to hold off closure, interrupt repetition and habituation, and point toward other possibilities. Rather than reflecting received knowledge, it challenges and informs static disciplinary models of knowledge, recasting them as productive rhetorical transactions that open them to alternative possibilities.

This potential for being a productive, generative intellectual process also links rhetoric to creativity. As an art of "'knowledge as production,' not *product* . . . [of] invention and articulation, rather than *representation* (*Rhetoric* 7), creativity manifests through rhetoric---through "seeing" the available means of persuasion. I argue that creativity *may be* the productive knowledge this rhetoric surfaces, knowledge that, as Atwill suggests, is defined against every distinguishing feature of Western culture and education. A dynamic "power," never a static, normative body of knowledge, it resists identification with a normative subject, "In Hesiod's Prometheus narratives, every exchange of a techne creates a different order of power---different subjectivities. As such, there are no well-defined boundaries between subject and knowledge. Consequently, it is difficult, if not impossible, to make techne conform to either Plato's equation of knowledge and virtue or to Quintilian's vir bonus" (7) and, perhaps, partially explains our failure to fully understand it.

Against the backdrop of existing knowledge, then, creativity emerges from a complex of relationships between and among people and their social and environmental contexts, a chaos that defies our attempts to bring it to order. Rather than the mystical, mysterious experience Romantics found embodied in autonomous individuals, I argue that creativity is, instead, the effect of the *persuasive* interaction of individuals, environments, constraints, possibilities, processes, and products with no singular, readily identifiable point of origin. Like Bakhin's description of the Rabelaisian grotesque body growing out of and giving birth to itself, always exceeding its boundaries, it is "a body in the act of becoming . . . never finished . . ." (*Rabelais* 317). Bakhtin noted Pinsky's description of the paradoxical nature of the grotesque, ". . . it brings together that which is removed, combines elements that exclude each other, contradicts all current conceptions. . . is related to the paradox in logic . . . contains great potentialities" (32n). But, as Nobel chemist Ilya Prigogine and physicist Isabelle Stengers suggest, because Western thought has trained us so thoroughly to think in terms of origins and linear causality, large, complex, non-linear systems seem "counterintuitive"---they do not act in the ways we think they should and so escape our understanding.

An Ecology of Creativity

Prigogine and Stengers contend in *Order Out of Chaos* that such complexities require us to see and think in new ways. They invite us to consider, for example, far-from-equilibrium *dissipative structures* that appear to begin spontaneously. Transforming apparent disorder (thermal chaos) into order, their

behavior reflects the interaction of the system *with its surroundings*, a kind of "prebiological adaptive mechanism." In these structures, chemical clocks (periodic chemical processes) appear and behave in quite coherent and rhythmical, but completely unexpected ways. For example, if we imagined some of these molecules to be red and others blue, as Prigogine and Stengers suggest, because of their chaotic motion, we would expect to see more red molecules at one moment and then more blue molecules would appear, blending with the red for a purple effect with sporadic flashes of red and blue. However, this is not what occurs. First, the system is all red, and then, suddenly, it is all blue, and the changes occur at regular intervals and reveal an orderly pattern with all molecules changing their chemical identity *simultaneously.* To do this, according to Prigogine and Stengers, the molecules would have to be "communicating" in order to change *as a whole*. In a state of dis-equilibrium, a dissipative structure, thus, "perceives" differences in its surroundings and responds accordingly.

In older, more mechanistic models of natural phenomena the fluctuations and disturbances of dis-equilibrium meant trouble, a breakdown of the system, decay, and eventual death. But, dissipative structures demonstrate instead the capacity of living systems to respond to disorder with new life, to achieve order out of chaos. The disorder resulting from the awareness of difference in surroundings, instead of meaning trouble, is re-generative, a source for a new and higher order, and once a higher order has been attained, it is irreversible. I argue that "ecological" thinking, an approach derived from the study of structures

like the ones Prigogine and Stengers describe as well as from evolution and chaos theory, is a way of understanding creativity as productive knowledge.

In complex adaptive systems, networks of independent agents act and interact with each other while at the same time they react to and co-construct th environment. Because they are so large, dynamic, and unpredictable, it is difficult for us to "see" the pattern of their order and manage all the variables, so they appear disorderly. Moreover, the slightest of disturbances in one part of th resulting web of relationships comprising them has the potential to radically transform not only the local system, but also the larger systems in which it may be embedded. Thus, the significance of Einstein's reform of the concept of simultaneity and his theory of special relativity, beyond its impact on the discipline of physics itself, was its fundamental violation or shattering of a universally accepted principle of the physical world as people understood it. Transforming the intellectual imagination and allowing people to see the world differently---it changed everything.

Ecological thinking posits a different model for creativity. Its domain is nc just the inner workings of the consciousness of individuals; rather, it is embodiec in the *network* of social action and the events of everyday life as well as in the work of formal disciplines and in people engaged *with others* in a variety of culturally constructed and natural systems made and remade continually. Thus ecological thinking is dialogical in Bakhtin's sense, stressing a line of inquiry tha accounts for process, relationship, interaction, and integration within and among networks that are constantly changing. As a kind of calculus that can account fc

the dynamics of interaction among disciplines, integrating different "languages," methods, and theories, ecological thinking may not only shape a different view of creativity, but also help to make it operational.

In "Pathologies of Epistemology" from *Steps to an Ecology of Mind*, Gregory Bateson theorized *mind* as the perception of difference and response to it transmitted in closed networks or systems. "Mind," he wrote, is "a necessary, an inevitable function of the appropriate complexity, wherever that complexity occurs" (490). Thus, in considering whether or not a computer "thinks," for example, he concludes that it does not, "What 'thinks' and engages in 'trial and error' is the man *plus* the computer *plus* the environment. And the lines between man, computer, and environment are purely artificial, fictitious lines. . . [they are] pathways along which information or difference is transmitted. . . .What thinks is the total system. . ." (490-491).

Bateson further suggested that, if indeed this is so, "the unit of evolutionary survival turns out to be identical with the unit of mind. . . . *Ecology*, in the widest sense, turns out to be the study of the interaction and survival of ideas and programs (i.e., differences, complexes of differences, etc.) *in circuits* [my emphasis]" (491). Bateson saw ecological thinking as necessary to the continued existence of the human species. He believed the ability to recognize threats to survival to be dependent on the development of a keener awareness of and respect for difference in order to correct the potentially disastrous epistemological errors deeply rooted in human habits of mind and to guard against choosing the wrong unit of survival.

Ecological thinking works across traditional boundaries of the disciplines to understand information, integrate ideas, and perceive patterns acting within them that may also re-connect them to each other. Prigogine and Stengers observe, in fact, that lessons learned in one discipline often inform work in others. "The real lesson to be learned from the principle of complementarity," they note, "consists in emphasizing the wealth of reality, which overflows any single language, any logical structure. Each language can express only part of reality"(225).

As I imagine it, an open intellectual ecology among disciplines whose distinct languages afford only partial views, would not necessarily attempt to unify their diverse epistemologies, but rather, would re-integrate them in "apposition," a simple juxtaposition, that, while preserving differences, would connect them in a liminoid interface, "a plurality of independent and unmerged voices and consciousnesses, a genuine polyphony of fully valid voices," to borrow Bakhtin's words, "spread out on a plane as an eternal harmony of unmerged voices or their unceasing irreconcilable quarrel . . . one great communal performance" (*Problems* 160). I have structured this study as an exercise in ecological thinking that cuts across disciplines. As Culler has suggested, "Theory [itself] is interdisciplinary" (15)---the effect of its discourse extending beyond the specific discipline in which it originates. Noting lessons learned at a 1995 international conference titled "Einstein Meets Magritte," Brian P. Coppola and Douglas S. Daniels suggest,

> The students of Magritte [an artist of the surreal] can teach the students of Einstein that 'H2O' is not, in fact, water, but only its

> representation. The attachment and derivation of meaning from information is a feature in all intellectual activities . . . In our chemistry course there is as much a place for Magritte's *La Trahison des Images* ("The Treachery of Images"), with its disarming message *Ceci n'est pas une pipe*, as there is for images of gamboling, space-filling yet two-dimensional molecular representations that are no more "molecules" than Magritte's image of a pipe is a pipe (13).

In a 1998 *Atlantic Monthly* article titled "Back from Chaos," Edward O. Wilson resurrected the term *consilience* from an 1840 work of William Whewell who coined the term. *Consilience*, according to Wilson, literally means "the 'jumping together' of knowledge as a result of the linking of facts and fact-based theory across disciplines to create a common groundwork of explanation" (48). He suggests that the fragmentation of knowledge is an "artifact of scholarship" that has produced "confusion," and he believes that the arts, sciences, and other disciplines ought to work together to re-integrate their thinking in "circuits" of understanding. Ecological thinking encourages the "border crossing" that Wilson, Prigogine, and Stengers see as crucial to the further development of knowledge.

This inquiry, thus, unites the fields of cultural studies, critical studies, and rhetoric in order to problematize the historical conception of creativity as a characteristic (or cluster of characteristics) found in the "creative exemplar" who embodies the Romantic and modernist ideology of the singular, exceptional, isolated "genius" who solves a problem or produces a product a culture labels "creative." In so doing, it attends to the following questions: How has rhetoric historically framed the concept of creativity? What barriers has this thinking constructed against the potential for creativity to be perceived and to operate differently, especially in schools? In what other ways might human creativity be

understood? How is it possible? It attempts to open a new conceptual space for creativity that interrupts the repetition of the Romantic/modernist ideology mentioned above by making visible its indebtedness to power relationships invested in a disenfranchising "rhetoric of exclusion" meant to contain its meaning.

Matters of Taste and Value

Coupled with the eighteenth century birth of modern aesthetics and the judgment of taste (Burke 1756; Kant 1790), this ideology sought to restrain creativity and shape its definition according to the political and economic interests of the dominant culture by deploying a "rhetoric of commodification and containment" that has pitted creativity against representation and meaning as product against meaning as process (Graff 1979). In the conditions of competition that ensued when economies based on capital began to emerge, the evolving "individual" began to strive against others for a place in the world. The "judgment of taste" became the scene of discrimination and exclusion. Changes in economic and social structures in the eighteenth and nineteenth centuries led to a notion of taste (and aesthetic experience) that defined it in terms of social class. Pierre Bourdieu's twentieth century empirical study, reported in *Distinction: A Social Critique of the Judgement of Taste*, led him to conclude "that all cultural practices . . . and preferences in literature, painting, music, are closely linked to educational level (measured by qualifications or length of schooling) and secondarily to social origin," predisposing "taste" to function as a marker of "class" (1). Thus, the notion of taste as the "eye" or "ear" for recognizing worthy

or creative works of art, music, literature is a "product of history reproduced by education" (3). Because shifting notions of "value" have always played a key role, although often invisible, in a culture's criteria for acknowledging certain behaviors or products as "creative," such aesthetic responses may be more accurately regarded as "valuable" *because they serve class interests*.

But, not only did the notions of taste described above separate high culture from low culture and by extension the bourgeoisie from the working class, it also separated art from science. But, of course, science is also a cultural system with its own conventional procedures and structures of belief, not unrelated to the judgment of taste, making judgments about what is "creative" (or "worthy" or "beautiful" or "elegant"). Despite their differences, how various social and cultural systems create value in potentially creative acts and products---or not---is integral to understanding this phenonmenon.

Barbara Hernstein Smith argues in *Contingencies of Value* that no judgment is "totally unaffected by particular social, institutional, and other conditions of its production or totally immune to the (assumed) interests and desires of its (assumed) audience" or unresponsive to them (102). However, Smith also points out that it is a fallacy to argue that unless one judgment can be shown to be more "valid" than another, all judgments must be regarded as "equal." She contends that the concept of validity understood as objective "truth-value" is simply *not available* as a standard for making comparisons or measurements among various judgments. While judgments can be "seen" as "good" or "bad," she says, "their value must be understood, evaluated, and

compared . . . as something other than truth-value or validity in the objective, essentialist sense" (98)---as old garage sale maxim suggests, "one person's treasure is another's junk." Noting that individuals routinely accept and reject value judgments they are offered in light of their own experience and knowledge, Smith points out that there is no way to be certain of the "validity" of this knowledge, and there is "no end to the theoretically infinite regress . . . of evaluating evaluations, just as there is none to that of justifying the justifications of judgments or grounding the grounds of knowledge" (100).

However, according to Atwill, rhetoric as productive knowledge is more likely to disrupt standards of value in cultural systems than to protect them and, thus, may account for attempts by dominant forces in a culture to control its operation. Igor Stavinsky, for example, broke new ground with *The Rite of Spring*, writing in an unfamiliar complex rhythmic style and harmonic style, but on the evening of May 29, 1913, public outcry reportedly transformed Paris' Theatre des Champs-Elysees into a scene of pandemonium. The audience raged over what it felt was a profane effort to destroy music, and critics roundly dismissed the work. But, according to Howard Gardner, the "disconnections, disjunctions, repetitions, and abandonments that had so strained the early listeners became the essence of the work for a younger audience, which had its listening habits nurtured by repeated performances. . . . The same lines of division determined the initial reactions to works like Joyce's *Ulysses*, Eliot's *The Waste Land*, or Picasso's *Portrait of Gertude Stein*, *Les demoiselles d'Avignon*, and the early cubist works" (*Creating* 207).

In another, perhaps more familiar example, the "too many notes" complaint of Emperor Joseph II made in reference to Mozart's *Abduction from the Seraglio* (dramatized in Peter Shaffer's film *Amadeus*) was a widely shared notion in the eighteenth century. Several of Mozart's compositions were so far beyond the musical understanding of those who lived in the eighteenth century that many musicians of the time regarded them not only as incomprehensible but also as unplayable. Yet today, musicians routinely play these works.

The Play of Difference

Creativity is a common feature of the ways of making and doing that come into being between and among human beings as they interact with existing knowledge, with each other, and with their social and physical environments. In this sense, it is often the opposite of traditional (and often inconvenient) ways of behaving. Moreover, it is an effect particularly marked by difference, new information that interrupts the repetition of the same and threatens the status quo and that is, consequently, both desired and feared. It is the capacity to transform *what is* into a projection of *what could be,* revealing, as Foucault said in *Madness and Civilization*, another order of consciousness, "the end and the beginning of everything" (281), which modernist notions of certainty, universal truth, binary logic, and scientistic forms of knowing seek to contain within the order of the same (288). A source of "energy" or disorder that tends to increase in unstable or "non-equilibrium" situations, "awareness of difference" may establish enough of an opening in a system to activate transformative possibilities.

Because human beings are capable of acts of imagination, intuition, and insight, they are able to "see" and "grasp the meaning of" possibilities beyond the reach of a binary/mechanical logic. And, their responses to the concrete historical and material conditions differ according to the particular circumstances of their lives. Each human being "sees" through different eyes and, thus, is a source of alternative knowledge derived from different concrete experiences: We depend on others for knowledge that we cannot "see" because of our distinct locations and experiences in culture.

Indeed, the only thing "the same" about humans, beyond basic evolution and physiology, is that they are all different. In the interplay of these differences between and among human beings and among the multiple subject positions they occupy (each marked by plurality and otherness of basic consciousness), creativity surfaces and supports the emergence of new subjectivities. To borrow from Bateson's thinking, what is "creative" is the entire network of relationships. So, creativity is "common," even crucial, to human behavior, but it, nevertheless, opposes the notion of a unified and autonomous, self-sufficient Cartesian ego and refuses confirmation as an essential feature of a universal and transcendent human nature.

My inquiry refigures creativity in light of the postmodern view of humans as conditioned, situated subject positions, materially and discursively constituted, each occupying different culturally-based "sites" of meaning, employing different uses of language, and engaged in different social practices. It does not deny that individuals can be agents of creativity; rather, it suggests that creativity extends

beyond the boundaries of individuals into the social collective as the prior condition necessary to the apparent "genius" of individuals. In this sense, creativity is a radically distributed effect of multiple interactions among individuals, their particular social and environmental circumstances, and existing knowledge. Surfacing creativity, then, requires a rhetoric capable of generating ways of thinking that resist systematic efforts to normalize and contain the heteroglossic forces of the social---a rhetoric of productive knowledge that recognizes creativity as *social* imagination, the ability to "see" a different world as it seeks ethical alternatives in relationship to and in interaction with others.

What makes creativity such a slippery concept is that it may be an effect of the "edge"---in ecology, the borderland between niches or territories where they intersect, overlap, and bump up against each other's differences; where change is underway; and where "abrasion and enticement" is keenly felt and acted out in the encounter with otherness, the "counterpoint to what we have failed to see." Such places, as poet Alison Deming says, are "rich in life forms and survival strategies" (220).

Writing (particularly poetry), mathematics, and performance art are certainly different "territories," separate subcultural disciplines, composed of diverse internal paradigms, that also "bump up against each others' differences" as intersecting, overlapping components of culture in general. I draw examples from each of these disciplines to demonstrate the view of creativity emerging from my work. In and through them, creativity may be seen surfacing, as Richard Schechner suggests in *The Future of Ritual*, in "performed dreams . . . spoken,

danced, sung, and acted out . . . [on the] playfield betwixt and between the ethological, the neurological, and the social" where "the continued encounter between imagination and memory [is] translated into doable acts of the body" (262-263).

Writing

In *Phaedrus*, the god Theuth claimed that writing would make people wiser and that it was the key to memory. Plato recognized that a significantly different mental operation was required to produce *logos* (spoken *and* written discourse), enabled by the separation of language from the person producing it and he wanted to develop this innovation. However, in doing so, he risked threatening the power of those who were invested in institutions the oral traditic meant to preserve. That is, he was "caught" in the conflict between the older or tradition and the new literacy the development of the Greek alphabet allowed.

In order for both Plato and his ideas to survive and thrive, he had to find way to both appease those in power and at the same time enable the development of this new mental operation. So, in a rather ironic move, he used writing to condemn writing. In *Phaedrus*, he made the king in Socrates' story respond to Theuth's claim in the following way, "If men learn this, it will implant forgetfulness in their souls; they will cease to exercise memory because they re on that which is written, calling things to remembrance no longer from within themselves, but by means of external marks. What you have discovered is not recipe for memory, but for reminder. And it is no true wisdom that you offer yo disciples, but only its semblance. . . " (275). Recognizing the fundamentally

conservative and *political* nature of change, he could promote the thought process enabled by the mental innovation while still appearing to "protect" the traditional way of life. However, in so doing, he inscribed on Western thought the rather pervasive idea that writing is speech's inferior, a characterization that has endured and proved somewhat problematic.

Centuries later, Rousseau, who also wrote, would, rather ironically, refer to writing as "nothing but the representation of speech, . . . a bizarre case of giving more care to the determining of the image than to the object." Not only was writing (as the development and subsequent use of alphabets to communicate and to articulate one's thoughts) a revolutionary invention itself, a bifurcation in the scheme of orality that changed everything, it is also a prime example of collective creativity, the cumulative effect of diverse individuals working in diverse social and environmental contexts against an often resistant backdrop of existing knowledge. Once it was apparent that literacy was an irreversible phenomenon, however, dominant forces recognized, as Plato did, that it represented a potential danger to its interests and moved to control it.

Mathematics

At the very heart of mathematics is the concept of mathematical proof, the procedure through which a proposition can be accepted and established with finality. The desire for proof has been the motivating force in mathematics for more than 2500 years (*Fermat's* 7). To arrive at proof, the mathematician begins by writing down an initial set of assumptions or axioms he believes describes a particular concept or "universe" of interest to him. Then, by means of logical

deduction from these initial axioms, if the logic is correct, he proceeds to establish the "truth" of that concept. Once proven, it is established forever. According to Philip J. Davis and Reuben Hersh in *The Mathematical Experience*, however, beyond establishing this truth, the mathematician's highest aspiration is to achieve "a lasting work of art;" whether or not a proof is useful is not an issue from a pure mathematical point of view---"utility is inferior to elegance and profundity" (88).

In the *Elements*, Euclid listed five principles from which mathematicians believed all truths about plane geometry can be deduced. These axioms were regarded as ideal examples of rigorous proof, self-evident and accepted without question as starting points in the search for truth. As such, mathematical proof was alleged to represent knowledge that is more certain (because it is independent of sense impressions, opinion, and prejudice) than that accumulated by other disciplines. It should be no surprise, then, to find that mathematics occupied a central place in Plato's system of knowledge. For him, the truths of geometry were changeless and universal truths, proof of the existence of the realm of absolute eternal truths he regarded as the basis for knowledge of the Good (*The Mathematical* 325).

As mathematics grew as a discipline, the fifth of Euclid's five axioms, the Parallel Postulate, however, proved especially problematic. Attempts to deduce it from simpler assumptions failed, and mathematicians ultimately had to admit that, while intuition suggested that it was true, it could not be proven. Euclid's axioms evidently omitted many basic assumptions that he had unconsciously

used to derive theorems following from them. Moreover, the nineteenth century invention of non-Euclidean geometries implied a loss of certainty not only in mathematics, but also in human knowledge in general. But, it was Kurt Godel's Incompleteness Theorem that forced mathematicians to reconsider what it means to say that something is "true" in mathematics.

Godel's Theorem says that in any axiomatic system that is sufficiently rich to do elementary arithmetic, there will be some statements that are "true" but that cannot be proven from the axioms. His Incompleteness Theorem, thus, demonstrated to the horror of the mathematical community that there is a limit to the knowledge mathematics can attain through deduction and separated the mathematical proof from the idea of "truth." Raymond Wilder in *Mathematics as a Cultural System* suggests that proof in mathematics is actually culturally determined. As mathematics has developed, each generation of mathematicians has found it necessary to confirm or disconfirm the "hidden assumptions" of previous generations (40). In this sense, then, proof is a "cultural artifact" through which the part of the culture possessed by any one individual is continuously linked to the parts possessed by others, past and present, through communication and language. And, although the mathematician's initial working out of a proof (like a writer's completion of a piece of writing) may appear to be a solitary activity, he doesn't begin from an entirely clean slate (*tabula rasa*). Rather, he builds on work others have done before him and, then, depends on others to confirm the validity of his proof.

In *Personal Knowledge*, Michael Polanyi suggests that "seeing" a problem in mathematics (or any other discipline for that matter) that is worth solving may itself be creative, an irreversible heuristic act. As he points out, legendary mathematical problems have passed from generation to generation unsolved, but nevertheless, efforts to solve them have developed the field of mathematics in other ways.

Polanyi further contends that creativity cannot be a strictly logical performance in any discipline. He characterizes the obstacle to be overcome in solving a problem as a "logical gap," and he argues that "the width of this gap [may be] the measure of creativity . . . the plunge by which we gain a foothold on another shore of reality" (120). The conventional rules of mathematical deduction alone, for example, may provide "public paths for drawing conclusions from *existing* knowledge" (my emphasis), but leaping across the logical gap to new knowledge requires divergence from existing knowledge and conventional processes of reasoning (120). The striving for strict formalization in mathematics in an effort to eliminate ambiguities (like the striving for strict denotation and transparency in language), thus, may be "self-defeating" because creativity---knowledge that is productive of "novelty"---is less likely to emerge from procedures that are algorithmic.

Performance Art

In *Unmarked: The Politics of Performance*, Peggy Phelan observes, "The question of belief always enters critical writing and perhaps never more urgently than when one's subject resists vision and may not be 'really there' at all (1).

Performance art is a mixed media avant-garde art form, originating in the Dada performances and Surrealist spectacles of Modernism, in which *performance* was the key element. It occurs entirely in the "present," in real time and then disappears---it cannot be repeated or reproduced, so it is entirely contingent. While a particular work can be performed again, each performance is different as artists interact differently with different audiences. While it can be recorded or otherwise documented, but what is "saved" is something other than performance, "To the degree that performance attempts to enter the economy of reproduction it betrays and lessens the promise of its own ontology [which] . . . is nonreproductive" (146).

According to Coco Fusco in *English Is Broken Here*, Dadists dressed up and danced as "Africans" and made primitive masks and sketches in their performances. She cites Tristan Tzara's declaration, "Thought is made in the mouth," as a performative parallel to Cubism referring directly to the Dadaist belief that the tradition of Western art "could be subverted through the appropriation of the perceived orality and performative nature of the 'non-Western'" (45). However, the first instances of performance art may, in fact, have been the events of the Gutai Art Association, founded in Japan in the early 1950s, that reportedly symbolized the spirit of art as "action," creating various time-based works and set the stage for the "Happenings" of the 1960s. John Cage's "4' 33"" (four minutes and thirty-three seconds of silence) performed in 1952 also challenged the standard notion of both time and content that have come to characterize performance art.

The content of performance art is most often a commentary on society, usually dealing with current philosophical and political issues and movements. For example, in "Shoot" (1971) the artist Chris Burden actually allowed himself to be shot in the arm, suggesting the helplessness of a country watching its youth wasted in the Vietnam War and challenging the "value" of the war. In the post Civil Rights era, performance artists have taken on feminist, gay, racial, and ethnic issues that have challenged cultural hegemony, making it a dangerous as well as provocative art form. Consequently, it receives a paucity of grant funding and a high degree of censorship. But, the primary transgression of performance art for which it is punished is its resistance to the "reproductive ideology of visible representations." As Phelan points out, it is difficult to "find a theory of value for that which is not 'really' there, that which cannot be surveyed within the boundaries of the putative real" (1). Performance art, thus "clogs the smooth machinery of reproductive representation necessary to the circulation of capital" (148), resists commodification (How does one collect the ephemeral?), and pushes the limits of convention perhaps more than any other art form.

As Davis and Hersh suggest, "When scientists propose laws of wide generality, they set forth rules of law in place of primeval chaos. When an artist draws his line or a composer writes his measure, he separates out of the infinitude of possible shapes and sounds *one* which he sets before us as ordered, patterned, and meaningful" (*The Mathematical* 172). As one of my colleagues once suggested, human beings are always trying to order things in

order to find comfort (or "beauty" or "elegance") in a disorderly world, a hedge against the perceived chaos of the unknown.

As it considers the matters introduced above and develops another look at creativity, this work is aimed at making the "open-ended commitment" Jonathan Culler suggests is the "importance of theory." Recognizing that my arguments will be provisional and anticipating the responses of others to shape them further, I argue that creativity emerges in the places where individuals, disciplinary knowledge, and social and environmental conditions intersect in the complexity (some might say "chaos") of relationships, multiple elements in apposition and always "in play." Like the "the eye of the blackbird" in Wallace Stevens' poem, it may be "Among twenty snowy mountains/The only moving thing."

Notes

[1] Each of these views of creativity will be cited and more fully described in Chapter Two. Their mention here is to emphasize generally the fact that, although creativity is involved in everything we know and although it has been studied for more than a hundred years, we still do not understand its nature.

CHAPTER TWO

A History of Thinking about Creativity and The Emergence of the Creative Exemplar

I know noble accents
And lucid, inescapable rhythms;
But I know, too,
That the blackbird is involved
In what I know.

As an occurrence of the unfamiliar, creativity has long been associated with magic and the supernatural, evidence of the existence of another world beyond conventional understanding. As the ability to bring something new into existence, to create something out of nothing, it has also been associated with the divine act of creation. But, because human beings have been regarded as incapable of making something out of nothing, the human act of creation has more often been regarded as involving the re-shaping, re-construction, or re-making of what has been given. A broad and all-encompassing concept, creativity has referred to a wide variety of effects in human behavior, including achievements in the both arts and the sciences. From the point of view of Western philosophy, one parameter of this study, it has also been linked to the human ability to imagine. According to Richard Kearney in *The Wake of Imagination*, the ability to imagine has historically been regarded as either "a *representational* faculty which reproduces images of some pre-existing reality" or "a *creative* faculty which produces images which often lay claim to original status in their own right" (15). However, although some 20th century investigators using a we-know-it-when-we-see-it approach have identified characteristics of people,

products, and processes as "creative," *creativity* per se has escaped precise definition.

Stephen Kosslyn in *Image and Mind* has suggested that, prior to an inquiry, it may be unreasonable to expect a definition of something about which so little is known (although it may have been widely investigated) and that "it is not necessary to begin with a crisp definition of an entity in order to study it" (469). Nevertheless, contemporary psychological studies of creativity often begin with the following widely accepted "conceptual" definitions. Incorporating the key elements of *novelty* and *appropriateness*, it is regarded as "that process which results in novel work that is accepted as tenable or useful or satisfying by a group at some point in time" (Stein cited in Amabile 37-38). It fulfills at least three conditions: It is "a response or an idea that is novel; that is adaptive to, or of, reality" (solving a problem or accomplishing a recognizable goal that is heuristic rather than algorithmic); and that finds its "original insight" sustained and fully developed. Creativity is, thus, "a process extended in time and characterized by originality, adaptiveness, and realization" (MacKinnon 485). These definitions, while not entirely unproblematic, frame a notion of creativity that spans every domain of organized human activity and, perhaps, may allow this inquiry to examine the discourse that has constructed it, note transformations of it that have occurred at particular historical moments, and speak of it productively.

Every age has looked askance at those who act outside cultural convention. Thus, cultures have often viewed creativity ambivalently, revering and embracing it on the one hand and fearing and condemning it on the other.

Creative behavior that, either implicitly or explicitly, criticizes the dominant values of a culture threatens it and may invoke a range of reactions: suspicion, jealousy, and reactionary resistance (in the desire to preserve and consolidate power). Moreover, educational instruction as usually developed by a dominant culture invested in maintaining the status quo and reproducing its relations of power has privileged conformity and normative discourse and punished non-conformity. Order and conformity have been valued over curiosity that questions cherished notions, and management of the group has been the primary aim.

Nevertheless, Paul Feyerabend in "Against Method" warns against the tendency of pedagogy to disable the ability of students to think for themselves, "Do not work with stable concepts. Do not eliminate counterinduction. Do not be seduced into thinking that you have at last found the correct description of 'the facts' when all that has happened is that some new categories have been adapted to older forms of thought, which are so familiar that we take their outlines to be the outlines of the world itself" (36).

So, writing against "noble accents and lucid, inescapable rhythms," a "counterinductive" history of thinking about creativity "introducing, elaborating, and propagating hypotheses which are inconsistent either with well-established theories or well-established facts" (26) might take the following suggestion as its point of departure (with apologies to William Shakespeare): The first thing we do, let's ban all the poets.

Plato considered poets subversive and dangerous to the "well-ordered state." In Book X of *The Republic* he attacked art in general and poetry in

particular because he considered the poet's creations, like the painter's, to contain "an inferior degree of truth . . . concerned with an inferior part of the soul" (paragraph 97), thrice removed from the eternal Idea he believed to be only imperfectly reflected in an "unreal" world. He claimed that art (an ability to "make," "shape," or "construct") is a *mimetic* function of the lower order of human existence that merely reproduces the world of images. And, he believed poetry to be deceptive and harmful, diverting people from the truth, arousing their passionate interest in trivial matters, unnecessarily exciting them, interfering with their moral and intellectual development, and ultimately harming the good.

Poetry, he wrote, "feeds and waters the passions instead of drying them up; she lets them rule, although they ought to be controlled, if mankind are ever to increase in happiness and virtue . . . [He] who listens to her, fearing for the safety of the city which is within him, should be on his guard against her seductions and make our words his law" (paragraph 104-109). He believed that poetry aroused the emotions, in his view the most dangerous part of the human psyche (associated with material "becoming"), and threatened the psychological harmony and balance necessary to its attainment of virtue. Thus, Plato would admit to his ideal state only the kind of poetry that praised gods and famous men. Defenders of that other poetry would need to "speak in prose on her behalf" to show "not only that she is pleasant but also useful *to States* and to human life" (paragraph 108).

Plato's primary concern in *The Republic* was the effect of poetry on the development of the "ideal state," the development of individuals, and the

relationship between them. He aimed to discredit Homer, the exemplar of traditional orality whose influence on Greek thought up to that time had been significant, and thereby called into question the value of his language (poetry) in the search for the truth.

In his *Preface to Plato* and elsewhere, Eric Havelock notes that everything the Greeks knew at that time had been stored and retrieved using the rhythmic language of the dominant oral tradition. Power thus accrued to men with "superior memory and a superior sense of verbal rhythm." Moreover, the poetic tradition required learners' *uncritical* acceptance in order to engage their memory. "Acceptance and retention," Havelock argues, were made "psychologically possible by a mechanism of self-surrender to the poetic performance, and of self-identification with the situations and the stories related in the performance" (198).

Prior to Socrates, the dialectical question had functioned to interrupt a speaker in such a performance, asking him to repeat a statement he had already made and suggesting that it needed to be "rephrased" or made more understandable or perhaps more memorable (198). But, interrupting the flow of the poetic performance and repeating a statement meant using words that were likely less poetic and more prosaic. Thus, as Havelock writes, the dialectical question became in the last half of the fifth century B.C.E. "a weapon for arousing the consciousness from its dream language and stimulating it to think abstractly" (209). Plato argued that those who seek the truth must forsake the traditional language of poetry (image and metaphor) and accept the language of philosophy

(calculation) instead. For him, philosophy was the appropriate method for moving beyond myth to reason.

Because the oral, poetic tradition had served as the primary means of educational instruction in ancient Greece for hundreds of years, however, the "innovation" Plato presented through the persona of Socrates threatened the very institutions the oral tradition meant to conserve. To some extent, then, Plato's attack on poetry may be regarded as a clever (some might say "creative") misdirection meant to conceal his more fervent attack on its use as a method of educational instruction.

Indeed, the "crime" for which the Greeks condemned Socrates to death was, according to Havelock, his actively expressed opinion that education ought to "be professionalised, its context being no longer set by poetic tradition and by practice but by the dialectical examination of 'ideas,'" a notion those in power may have regarded as a threat to the way of life that supported their political and social status (*The Muse* 5). Both Plato and Socrates played paradoxical roles in this matter: Socrates never wrote. He was "an oralist," but he used oralism, "as a prosaic instrument for breaking the spell of the poetic tradition, substituting in its place a conceptual vocabulary and syntax, which he as a conservative sought to apply to the conventions governing behavior in an oral society in order to rework them" (5). Doing so made him a flashpoint for conflict. On the other hand, Plato did write, and, although he condemned them, he also cleverly employed poetry and imagination, using the drama of Socrates' dialogues (fictions) and the myths Socrates recounts (certainly metaphorical in nature) to

make his argument. Unlike Socrates, however, he was successfully able to span the old way of knowing and the new one. His attack on poetry "managed" the perceived cultural crisis and effectively demonstrated that the evolution of ideas is fundamentally conservative *and* political.

Socratic dialectic, Havelock claims, originated in the conflict between the older oral tradition and the new literacy allowed by the Greek alphabet. The Greeks employed different words for these two distinct kinds of human communication: *epos* as orally preserved speech and *logos* as both spoken and written discourse, as the mental operation required to produce it and as a symbol of the prosaic and literate activity it allowed (113), language separated from the person who produced it. The "visual" separation of language from its source gave rise to the human *psyche* and encouraged a new focus on the individual and the "personality of the speaker," a focus that provided a basis for Western moral philosophy and founded the belief in individual identity and personal liberty (120). Moreover, the individual became a key element in Plato's process of coming to truth. He believed that truth exists only in the mind in "ideal forms," once known but forgotten. While he regarded experience to be an illusion, he believed that the ideal forms to be eternal and immutable, accessible by thought alone. Thus, only through the process of "reason," by looking inward to "re-call" it, could individuals "know" the "truth."

In *The Republic* Plato outlined a way to resolve the potential problems associated with logos and the re-location of "knowledge" from the state to the individual, from public collective memory to private thought, by proposing a

"reform" of educational instruction. Havelock suggests that it was no accident, for example, that the first discipline in Plato's proposed curriculum was arithmetic, thinking that required learners to solve problems, not merely remember. Doing arithmetic meant separating from, rather than identifying with, a series of phenomena in order to examine it "objectively and measure it." For Plato arithmetical thinking was the equivalent of elementary dialectic, leading to the "uncovering of 'mental dilemma' (*aporia*)" (*Preface* 210).

In the end, Plato had to conclude, however, that the ideal state he described in *The Republic* could never exist, except perhaps in the minds of the few capable of seeing it. Some scholars have suggested that leading his readers to this conclusion was his larger purpose. Anticipating political resistance, Plato incorporated in his description a constraint on the development of the newly autonomous individual consciousness: It would be educated by the philosopher and supervised by a guardian class. Plato further made it apparent that he did not expect most people to achieve its full program of growth culminating in the awareness of the ideal forms and realization of the truth. Because of their "ignorance," he believed that most individuals would, instead, have to be persuaded of the "truth," relying on those who had achieved understanding and who were, thus, in the best position to exercise control.

In Volume II of *Paideia*, Werner Jaeger argued that in writing *The Republic* Plato meant to transcend the Greek ideal of participation in the polis as the locus of education, redirecting its focus to the perfection of the "state" of the human psyche or soul. He believed that only through the Socratic conflict could the

individual "be truly and wholly one with the 'state'---the realm of the divine" and only "by conscious, deliberate obedience to the law of the state *within himself*" (my emphasis) find "true freedom," an idea that would recur later in "the European idea of free human personality, based not on any man-made law but on knowledge of the eternal standards" (356-357). Janet Atwill in *Rhetoric Reclaimed* suggests, however, that Plato's description of his hierarchical state with its careful attention to the details of internal as well as external order "amounts to a prescription according to which subjects both acquiesce to and reproduce the relations of power crafted by the guardians" (148), thereby protecting his own position (and, astutely, that of the guardian class), maintaining power and control, and also ensuring that philosophers would be only "exceptional individuals" likely to emerge from it. Havelock summarizes this circumstance in the following way:

> For the stage was now set for a genius . . . This genius was found, and he in turn found another genius for his disciple, who could correct and systematize the logic of his master's discoveries. Their joint efforts created 'knowledge' as an object and as the proper content of an educational system; divided into the areas of ethics, politics, physics, and metaphysics. Man's experience of his society, of himself and his environment was now given separate organised existence in the abstract word" (*Preface* 305).

Some scholars argue that the apparent "genius" of Plato (and later that of Aristotle) developed because the culture was "ready" for the changes it promoted and encouraged it. Whether or not this circumstance could have occurred a century earlier, however, is a matter of conjecture beyond the scope of this study. Studies of creativity have long debated whether individuals or cultures are its primary locus.

Ironically, some would argue that Plato's ability to persuade his culture of the value of his thinking---his rhetoric---may be regarded as a key element of his genius, in particular, and creative genius, in general. Social psychologist Dean Simonton has suggested, for example, that both in the origination of novel ideas and in the socio-cultural acceptance of them, creativity may be the result of "chance processes" involving the intersection, in a particular historical context, of a person, process, product---the usual concerns of creativity studies---as well as *persuasion* ("Creativity, leadership, and chance" 386-387). Thus, Simonton has argued for the idea of "creativity as persuasion" (in lieu of the other usual considerations) because he believes that individuals can "become creative" only to the extent that they can convince others of the value of their work, an idea that has particular significance for this study. In this sense, Plato's "genius" may be regarded as just such an instance of creativity, a phenomenon requiring, if not magic, at least persuasion---a sleight of hand.

Dispelling the Magic

Use of the term *creativity* to refer to novel behavior or new knowledge is contemporary. Prior to the twentieth century, creativity was subsumed either in the category of magic or in the category of genius. In a study of creativity published in 1976, Silvano Arieti reported that beginning about 1550, the word *genio* began to be used to refer to painter-writers like Leonardo, Vasari, and Telesio. By 1700, the word *genius* had come to mean "an incomprehensible and

mysterious force animating certain human beings" and also referred to individuals who exhibited this force (293). By the twentieth century, it referred to human beings who had made extraordinarily creative contributions to the knowledge base. Such people have been rare and, as Arieti noted, have appeared in "clusters" at certain times in history, such as the Greek classical period and the Renaissance, a pattern suggesting that the occurrence of creativity may have more to do with ecology (an intersecting matrix of the individual with socio-cultural-environmental circumstances) than isolated individual greatness.

According to Arieti, anthropologists Alfred Kroeber and Charles Edward Gray both considered culture to be the principal factor in creativity, perhaps revealing their anthropological bias. Kroeber suggested that individual personalities are "inevitable mechanisms or measures of cultural expression," and Gray proposed an *epicyclical theory* to explain the clusters of creativity evident since antiquity. He found that they corresponded to a historical series of concurrent economic, social, and political cycles. Each of these cycles included four different stages of development---formative, developed, florescent, and degenerate---that developed at different intervals, and he theorized that when the developed and florescent stages of the three cycles coincided, clusters of creative exemplars occurred. He confirmed his theory in a study of the history of Western civilization that demonstrated a relationship between economic, social, and political factors and the incidence of creativity. Gray's theory,

however, could not account for the relatively small number of creative people shaped by these factors at peak times. Moreover, it did not end the debate of whether the creativity of individuals results from cultural change or is responsible for it.

Another anthropologist Leslie A. White argued, however, that "a given cultural tradition does not affect all brains in a society equally" and that creative exemplars are not people of exceptional capability, but rather people in whom "a significant synthesis of cultural elements has occurred" (cited in Arieti 301). Arieti's own analysis of the relationships between individuals and their cultures supported White's argument and led him to suggest that some cultures are "creativogenic," enhancing individual and collective creativity, while others are not, thus inhibiting it. He also concluded that while the creative process may manifest to some extent within individual psyches, long regarded as the repository of creativity, it occurs as only *one element* of an "open system" in which cultural elements interact with individuals at a given time and in a given place favorable to creative production (312). The resulting relationships "synthesize" within individuals who become agents of creativity, producing something novel that at the same time also changes the culture itself.

Unfortunately, Arieti referred to this process as a "magic" synthesis, further conflating creativity with magic, but he also pointed to nine factors common to creativogenic cultures that have little to do with the mystical art: the availability of cultural and physical means, openness to cultural

stimuli, emphasis on becoming rather than being, free access without discrimination to cultural media, freedom, exposure to different/contrasting cultural stimuli, tolerance for and interest in divergent views, interaction of significant persons, and promotion of incentives (324).

In *Promethean Fire: Reflections on the Origin of Mind*, Charles J. Lumsden and Edward O. Wilson advanced another theory: The mechanism of creativity might be a function of both biology *and* cultural innovation, one acting upon and sustaining the development of the other,

> Somehow the evolving species kindled a Promethean fire, a self-sustaining reaction that carried humanity beyond previous limits of biology. This largely unknown evolutionary process we have called gene-culture coevolution: it is a complicated, fascinating interaction in which culture is generated and shaped by biological imperatives while biological traits are simultaneously altered by genetic evolution in response to cultural innovation (cited in Deming 168).

How this "self-sustaining reaction," perhaps the initial seed stock of creativity, began is a mystery unlikely to be solved. Opportune innovation may simply have ensured the survival of the species that then incorporated it into the knowledge base of its developing culture where it would be "taught" and "learned" until it was disconfirmed by the next innovation. Each successive generation, this theory suggests, evaluates and builds upon the "creative" acts of the preceding one. Then, novel behaviors mobilize new forms of practice and social and mental habits that become "genetically encoded" in individuals over time and "biologically" influence cultural development in a continuous and reciprocal feedback loop.

In "Generativity Theory and Creativity" Robert Epstein pointed out that from a behavioral perspective, organisms develop an inventory of possible behaviors that may serve as a foundation for novel behavior. When confronting a problem, an organism first attempts to solve it by responding with a behavior drawn from its existing inventory. If a behavior fails, it will over time drop out of the organism's inventory and be replaced by stronger and more appropriate one drawn from behaviors that having worked in other circumstances might also successfully solve the problem at hand. Thus, an organism's previous experience provides a base from which "ongoing, novel" behavior may emerge. Epstein refers to this process as the "principle of resurgence," and his studies suggest that the creative process may be a healthy, adaptive function of all living organisms. In speaking of this process, however, Epstein deliberately avoids the use of "the language of creativity" because he fears its "heavily value laden" language will obscure understanding of the generative phenomena that he argues is the basis of novel behavior. Further, he suggests that while *action* may be regarded as "generative," *reaction* may be "corrective and inhibiting," rendering the creative product itself a "poor index of the creative process" because it is continuously edited and judged by the "behaving individual" *reacting* "as an agent for a larger cultural entity" (139).

David Perkins in *The Mind's Best Work* also argues for an evolutionary perspective of creativity suggesting that its best mechanisms are, indeed, generation, selection, and preservation. "Natural selection," thus, applies as much to the evolution of creative thought as to the evolution of species (150).

Further, Simonton's "chance processes" theory, mentioned earlier, both for the emergence of new ideas and for their acceptance by the culture in which they occur, depends on some way of generating ideational variation, a consistent selection process that eliminates all solutions except those featuring an "adaptive fit" which, then, can be preserved and reproduced for later use.

The recurring theme of creativity as an intrinsic, "mystical" *individual* ability has, however, significantly marked the history of its study. In the nineteenth century creativity became an object of speculation and study, but the first studies examining the phenomenon lacked the rigor of scientific research conducted later and reflected a generalist perspective drawn from a variety of disciplines rather than the heavily psychological perspective of the twentieth century. Conclusions, often based on personal experience and observation, were questionable at best. But, as Madelle Becker notes, the questions these studies attempted to answer are remarkably similar to those of twentieth century investigations of creativity.

Definitions of creativity in the nineteenth century often blurred the distinction between intellectual and creative genius. According to Becker, George Washington Bethune (1805-1862) argued, for example, that "creative" genius depended on a number of cognitive abilities like the power to combine ideas, imagination, judgment, quick perception, perseverance and memory (220). Bethune also argued that just because individuals had not demonstrated creative genius at a particular point in time did not mean they never would. Further, economist William S. Jevons (1877), who anticipated later studies by Guilford, Torrance, and others, also regarded genius as "essentially creative," consisting

of "divergence from the ordinary grooves of thought and action" (cited in Becker 221).

Francis Galton, a cousin of Charles Darwin, studied the biographies and autobiographies of eminent men in the first empirical study of human abilities, reporting his "findings" in *Hereditary Genius* in 1869. They suggested that men of "genius" were found at the upper level of a normal distribution of mental abilities. He "tabulated the lineages" of the eminent people he had selected for his study and argued for "eminence" as an adequate measure of natural ability, linking all types of achievement to his measures of mental ability. Not surprising for the historical period in which he lived, Galton also attempted to compare the abilities of different races in the interest of developing a race of greater than average ability. Although his interest in eugenics might raise questions about his research today, his study, nevertheless, influenced later researchers who used his methodology in their own attempts to determine the particular qualities of intellect and personality that compose contemporary notions of genius and creativity (221).

Walter Bagehot (1873) and later William James (1880) supported the notion of creativity as a sociological phenomenon. According to Becker, Bagehot believed that civilizations moved through one stage when permanence was valued most and then through another when variability became more desirable. Progress, he suggested, depended on a nation's ability to maintain its permanent structures while permitting variability. James, meanwhile, believed that favorable

environmental conditions allowed people of high ability to lead their societies into new eras.

Believing that Galton's work and his own had confused "talent" with "genius," Cesare Lombroso (1891), a professor of legal medicine at Turin, considered genius a manifestation of a "diseased" mind that exhibited "degenerative" characteristics as "compensation for considerable development and progress accomplished in other directions." His work described the deviant behavior of many historical geniuses although he eventually came to question the reliability of historical reports. Nevertheless, his studies supported the early association of creativity and genius with the pathology of insanity. Becker noted, however, that later researchers found that intellectuals and artists of the Romantic period might have deliberately adopted idiosyncratic behaviors in order to distance themselves from those they believed to be less gifted, thus contributing to the development of the stereotype of the "mad genius."

Lombroso also argued that while almost no significant difference could be attributed to gender in the heredity of insanity, "in the heredity of genius the masculine sex prevails over the feminine in the proportion of 70 to 30" (223). The perceived lack of creativity in women continued well into the 20th century, as I noted in Chapter One, supported by the work of researchers predisposed to this theoretical bias.

Later, at the turn of the century, Alfred Binet in France and Charles Spearmen in England established the basic principles for measuring human intellectual abilities. At the request of the French government, Binet had

developed a test for identifying mentally retarded children, and after a series of revisions, the familiar Stanford-Binet IQ test emerged. Becker notes that early versions of this test included measures of what researchers would later call "divergent thinking" that were evidently dropped in later versions. Nevertheless, many studies used these tests as measures of both general intelligence and creativity.

Meanwhile, Josiah Royce, addressing the annual meeting of the American Psychological Association in 1897, according to Becker, identified "invention" with new ideas or systems of ideas and suggested that they involved "intelligent variations of habits already acquired and present in the individual." He believed that all mental activity has the "element of novelty," but regarded socially significant inventions as involving "processes more complex, and more mysteriously rational than this ordinary routine of variability will explain" (223).

Some of those who studied creativity in the nineteenth century also saw a strong connection between the encouragement of individualism and democracy and the creativity of a particular culture. Bethune, for example, Becker notes, recognized that more creative individuals appeared in some historical periods than in others, concluding that some democratic cultures, therefore, were likely to nurture creativity to a greater extent. But, Bagehot also later argued that the cultivation of creativity was "incredibly difficult" because humans "are too fond of their own life, too credulous of the completeness of their own ideas, too angry at the pain of new thoughts, to be able to bear easily with a changing existence" (cited in Becker 226). He also regarded educational institutions as "the asylums

of the ideas and the tastes of the last great age" more likely to "pooh-pooh" new ideas than to embrace them. Royce, meanwhile, argued against the "pathology of genius" by suggesting that important inventions occur when individualism is encouraged and "when independence, private enterprise, is favored by the social environment" (cited in Becker 227).

Theodule Ribot (1900) identified two types of creativity: aesthetic and practical, and suggested that creativity was contingent on intellect, emotion, and unconscious inspiration. He may have been the first to use the term *incubation* to refer to the unconscious work of problem-solving that he believed occurred in the unaware individual. He also thought that the tendency of some creative people to be dominated by their work was responsible for the "pathological theory of genius" (225). Perhaps most important, Ribot suggested that invention might result from the human desire to "live more comfortably," and he believed that creativity might originate in "needs, appetites, tendencies, and desires" common to everyone. He also argued, however, that only a "few privileged individuals" actually experienced the rare combination of circumstances from which it could emerge (224).

As early as 1908, concerned with how unconscious impulses affect creativity, Freud saw a relationship between the work of the artist, daydreaming, and children's play. But, in the 1930 work *Civilization and Its Discontents*, his thinking also seems to reinforce Ribot's argument by claiming the very possibility of a culture and its developing civilization to be dependent on the "organic repression" of individual freedom and self-satisfaction. His theory suggested that

a biological imperative might be operational in the interplay among "civilizing forces" (motivations socially/culturally encouraged but felt individually) and individual desires. This interplay, he believed, exerts a modifying influence on individual trajectories, attempting to divert and change them for the greater good and normalizing them according to custom. Freud had theorized the superego as the structure where social and cultural forces subdue the instinctive responses of individual psyches. Some individual trajectories, however, will evidently not be diverted. According to Freud, this conflict between the forces of civilization and instinctive individual desires for freedom and self-satisfaction never ends. Creativity may, thus, emerge from this dynamic as a manifestation of the basic desire of Freud's "ordinary man" to continually re-define the terms of his own existence within the constraints of "civilizing" forces.

Beginning at the midpoint of the twentieth century, psychological studies of creativity began to focus on empirical analysis of the creative person, the creative process, and the creative product. An overwhelming number of them focused on the "creative person." In fact, in his 1950 address to the American Psychological Association J. P. Guilford defined creativity in terms of the "person" and suggested "the psychologist's problem is that of the creative personality . . ." (cited in Amabile 21). But, not until Guilford's address did anyone question what tests routinely used by psychologists and education experts to measure intelligence were actually measuring. He pointed out that each item on most of these tests had only one *pre-determined*, correct answer, so they were testing for "convergent" thinking. The tests not only disadvantaged imaginative, divergent

and, quite possibly, "creative" thinkers, they also failed to identify them---a serious failure, given the urgent interest in the wake of World War II to identify creative thinkers.

Extending Galton's earlier work, some investigators took up the cause Guilford had identified and continued to study the biographies and autobiographies of recognized creative individuals in order to determine the particular qualities of mind and personality that make them distinct. Others, Donald MacKinnon and Frank Barron (1962) for example, studied the abilities of individuals identified as "creative" in laboratory conditions over intensive weekends of formal interviews and personality and intelligence tests. Still others studied individual differences, both cognitive and motivational, comparing those who achieved high creativity scores to those who did not. These studies have resulted in many measures of personality that supposedly identify creative individuals.

Teresa Amabile argues in *Creativity in Context*, however, that much of this work was (and presumably still is) based on the assumption that "the important characteristics of creative people are largely innate, . . . and that these characteristics clearly and reliably separate creative people from noncreative people" (5). The aim of such studies, she further suggests, beyond distinguishing people who do well on creativity tests from those who do not, has been to identify personality and cognitive characteristics that appear to describe creative people and to attempt to predict the occurrence of creative behavior.

On the other hand, researchers focusing on the "creative process" have attempted to distinguish patterns of thought or information-processing habits that underlie creativity. Gestalt psychologists, for example, have studied the mechanisms of insight. Others have taken an information theory approach that regards creativity as a function of particular "set-breaking heuristics" and relates it to computer-based notions of human intelligence. Margaret Boden's work, for example, has argued for the viability of a computational model of creativity, and she has tested her theory against various artificial intelligence programs in an attempt to model how human creativity may work.

Still other studies of human cognition have focused on problem-solving and other common notions of creativity supported by empirical findings from business and education. Amabile notes that Alex Osborn's "brain-storming" process is representative of this category of research. In this process, people learn to use a set of heuristics to generate creative solutions to problems. The ideas generated by people using this approach have been compared to those generated by others to determine the efficacy of this approach in influencing the occurrence of creative responses.

The "creative product," however, has been regarded as *the* defining evidence of creativity. In most definitions of creativity, novelty and appropriateness of the resulting product are key elements. In his essay "The Condition of Creativity," for example, Jerome Bruner argued that a product is "creative" if its novelty "surprises" an observer who at the same time finds it "completely appropriate" (21). Subjective evaluations of creative products have,

however, proved to be somewhat problematic. Researchers have had difficulty determining exactly what judges mean when they call a product "creative." Moreover, it is not clear what features of a product lead judges to characterize it as "creative." According to Amabile, many subjective assessments fail to distinguish creativity from other concepts such as "technical correctness" or "aesthetic appeal," for example. She also argues that cases where researchers train judges to use definitions of creativity they provide or to agree with one another prior to an assessment call the meaning of inter-rater reliability of creativity assessment into question, and studies relying on measures of eminence from historical sources are, she says, "contaminated by personal, political, and other factors" (32).

Far fewer studies have examined the effects of social or physical environments on creativity although Torrance's work is notable in this category. Amabile argues, in fact, that the dominant focus on individual differences in psychological studies of creativity has occurred at the expense of other potentially productive areas of inquiry, "There has been a concentration on the creative person, to the exclusion of 'creative situations'---i.e., circumstances conducive to creativity. There has been a narrow focus on internal determinants of creativity to the exclusion of external determinants. And, within studies of internal determinants, there has been an implicit concern with 'genetic' factors to the exclusion of contributions from learning and the social environment" (5). Her contention is that social and environmental factors significantly affect creative performance.

Amabile's *Creativity in Context* is a 1996 update of an earlier work *The Social Psychology of Creativity* (1983) in which she argued that creativity is less a personality trait or general ability than a *behavior* resulting from particular constellations of personal characteristics, cognitive abilities, and social environments. Her interactive model of creativity is based upon three major components: mastery of knowledge in a particular field and the skills and talent to produce the requisite behaviors within it, the cognitive and personality characteristics traditionally viewed as underlying creative acts, and task motivation (intrinsic and extrinsic factors). Using the model she has developed, researchers have been able to measure the effects of environmental factors on creative production, and much of her research has focused on how extrinsic factors get in the way of creative production. Her findings demonstrate, for example, that the expectation of evaluation can lower creative production and that being able to choose whether and how to engage in a project can increase it. Her work suggests that while the right kind of motivation can actively shape creative work, the wrong kind can destroy it, a finding that has profound implications for educational practice.

In the last twenty years, however, researchers and theorists have begun to attend more closely to the other "ecological" factors (social, cultural, and environmental) influencing creativity and to focus on the interaction between the external and internal environments of individuals. Howard Gardner's work is notable in this regard. Nevertheless, the focus on creative persons and

individual differences, even in Gardner's work, remains dominant in the field of creativity research.

Among Gardner's works is *Creating Minds* (1993). This work builds upon his earlier work in *Frames of Mind* where he developed his theory of multiple intelligences, challenging the common notion that human intelligence is a distinct entity human beings possess in varying degrees. Gardner initially identified seven autonomous human intelligences---linguistic, musical, logical-mathematical, spatial, bodily-kinesthetic, intrapersonal, and interpersonal ---and developed a cognitive profile for each of them (he has since identified an eighth one---naturalist) . In his view, these intelligences, although rarely isolated, are always expressed in "the context of specific tasks, domains, and disciplines" which develop the criteria for assessing levels of competence attained within them.

Gardner uses his theory of multiple intelligences, then, as the point of departure for *Creating Minds* in which he examines seven extraordinary individuals, each a representative example of one of the intelligences he has theorized and each credited with revolutionizing a particular domain or field. For him, general creativity, like general intelligence, is a myth. Detecting similar patterns of behavior and circumstances among the representative individuals whose lives he studied and among the elements common to their varied achievements, he develops, somewhat predictably, a theory of "multiple creativities" and, then, synthesizes the representative creator. In so doing, he advances the idea that creativity exists only as a judgment or evaluation from

within a closed system, a particular domain (culture, community, or "competent field"). That is, acts or products are creative to the extent that a particular domain calls them "creative." He claims that in absence of such a judgment, there is no way to determine whether an act or a product "merits" this label.

Gardner's theoretical bias, however, may have led him to look for differences across certain domains of accomplishment (the intelligences he identified in *Frames of Mind*) and, in my view, predisposed him to find just what he found, "the distinctive character of activities" characteristic of each of the seven creative exemplars whose lives he examines. Moreover, although he claims to have found no unusual biological or psychological factors exclusive to their creative behaviors or beyond the normal functioning of any human being, he nevertheless finds his seven models to be "extraordinary" because they seem to "seek a degree of asynchrony" that is "more productive." He does admit, however, that there is no empirical way to measure this phenomenon (*Creating* 383).

Finally, although he refers to the "representative creator" he describes in the end as *she*, it is worth noting that he includes only one woman in his study (ironically, as an example of bodily-kinesthetic intelligence/creativity). Gardner's studies of extraordinary personalities, while they account to some extent for the influence of important social and cultural issues like gender and race for example, always come back to the notion of creativity as "something special" that is "in" the representative creators he has studied or "in" the modern era he privileges, issues of concern at the heart of this inquiry.

Creativity by Mihaly Csikszentmihalyi, another relatively recently published (1996) work, questions the "location" of creativity, using interviews with more than ninety "creative" people well known in various fields. As Gardner does, Csikszentmihalyi, a social psychologist, focuses on the relationship between these individuals and the fields in which they work. But, he also suggests that ideas and products called "creative" rarely come from the mind of just one person, that it is easier to manipulate environments to encourage creativity than to try to make people "think more creatively," and that creativity is seldom the result of "sudden insight."

Csikszentmihalyi suggests that creativity surfaces from the systematic interaction of three components: a cultural domain or field containing "symbolic rules," a person who adapts these rules in a novel way or establishes new rules, and the expert "gatekeepers" of the domain who acknowledge the novelty as "creative." In his view, it is impossible to define *creativity* in absence of this recognition based on criteria that change from domain to domain. Thus, he concludes that creativity is less an attribute of individuals than one of socially constructed systems making judgments about them, and he suggests that instead of asking *what* creativity is, the usual question of creativity research, perhaps it is more germane to ask *where* it is. Csikszentmihalyi finds creativity "in" the cultures or disciplines he refers to as domains. His study, however, does not explain acts of creativity that may be found *outside* (and perhaps prior to) the traditional disciplinary fields and domains of the closed systems he identifies. Since there is no recognized field of "nurturing," for example, there is no way to

assess creativity in nurturing although he admits that it is important to human survival.

Csikszentmihalyi also distinguishes between *Creativity* (with a capital *C*) that significantly changes some aspect of culture and *personal creativity* that he suggests does not. However, just because no one was in the forest to "hear" the "sound" of the falling tree, does not mean that it did not fall, nor does it mean that the fall was insignificant to the culture. For a variety of reasons, cultures have often historically failed to recognize creativity that, in retrospect, was rather significant. As I mentioned in Chapter One, early twentieth century audiences, for example, were not "ready" to hear Stravinky's *The Rite of Spring* (Gardner 24). And, "irrational numbers" could not be used as a new resource for mathematics until after the death of Pythagoras because of his power to "control" mathematical thought.

Csikszentmihalyi does devote his final chapter to "prescribing" ways to "enhance personal creativity," a prescription he extrapolated from his interviews of *Creative* people. While it may be helpful in some ways, like Gardner's study of "representative creators," it perpetuates the myth of creativity that makes ordinary people believe that they cannot be creative in ways that are "important" to society and that *Creativity* is beyond them.

Where the various psychological approaches to the study of creativity clearly differ, then, is in their regard for which factors are most significant to creativity. However, Robert S. Albert and Mark A. Runco, in their conclusion to *Theories of Creativity*, suggest that, regardless of their point of view, those who

study creativity must account for the influence of *individual differences* because to fail to do so denies a fundamental characteristic of creative behavior---its divergence from "the prevailing consensus, pattern, style, or method" regardless of whether or not it "is intentional and, on the part of the individual, deliberate or statistical and environmentally generated" (264). Paradoxically, however, the focus on "talented" individuals as exemplars of creativity, originating in psychoanalysis, has significantly interfered with our ability to fully "know" creativity and has restricted it to the exceptional few, a view that might be more convincing if researchers were able to examine differences in the characteristics of people *before*, rather than after, they were acknowledged as creative.

On the other hand, Albert and Runco also argue that creativity "is never the private, hidden experience it was once believed---especially by the Romantics or the analytically oriented---but, rather, is an intricately *shared* experience with no one identifiable moment of origin," and they remind us that cultures do dictate "what areas of performance will be appreciated," acknowledging and encouraging "different aspects of members or even different members of that culture" (262) or failing to do so.

The history of thinking about creativity includes views not only from the disciplines of psychology and social psychology, however, but also from thinkers in other disciplines who are interested in human thought processes as well. In the *Art of Thought* (1926) Graham Wallas, a political scientist, theorized creative thought as a four-stage process: preparation, incubation, illumination, and verification. He credited the German physicist Helmholtz with describing the first

three stages while he added the fourth stage and provided the explanation. In the "preparation" phase, creative people first investigate a problem and do the preliminary work of searching, collecting, listening to others, and letting their minds range freely in many directions. In the "incubation" phase, they do not think consciously about the problem. The collected material remains "stored" in mind for an indeterminate period of time. "Illumination" occurs when creative people draw upon this collected material and "see" a solution to the problem. This solution is then subjected to critical evaluation in the "verification" phase. Many people who have studied creativity have either maintained this terminology or modified it slightly, but the unanswered question has always been precisely how the initial stages of preparation and incubation result in illumination.

In *The Act of Creation* (1964), Arthur Koestler, a novelist, took a somewhat mystical view of creativity. Koestler called the key concept of his theory *bisociation*---the simultaneous activation and interaction of two previously unconnected concepts. The potential creator perceives "a situation or an event in two habitually incompatible associative contexts." Koestler provided examples from humor, science, and the arts where bisociation, defined as the intersection of disparate "matrices" (abilities, habits, or skills---any pattern of ordered behavior---governed by "codes" of fixed rules), occurs. The collision and fusion of two concepts creates something new. Koestler, however, did not make it clear precisely how this occurs except to say that it does.

David N. Perkins in *The Mind's Best Work* (1981), mentioned earlier, suggests that creativity actually depends on very ordinary human thought

processes: noticing, directed remembering, realizing, problem-finding, understanding, reasoning critically, and recognizing analogies. He believes that these resources of the human mind enable, not creativity per se, but the *process* of creating or selecting from among many possible alternatives. The more "skillful" the selecting becomes the greater the "creative quality." However, Perkins also suggests that potential creators' personal histories, the histories of their cultures, and the physical world in which they live may "pre-select" to some degree what skills they will develop and, therefore, what they will attempt. Bourdieu's work, as I explain in Chapter Three, supports this idea. Perkins does, however, consider the *process of creating* accessible to all who are willing and able (or perhaps enabled) to immerse themselves deliberately and critically in a problem, look broadly for connections or relationships, recognize the probability of multiple alternatives, and actually imagine or "pilot" them.

In a relatively recent update of an earlier investigation, *Notebooks of the Mind* (1996) by Vera John-Steiner explores thinking in general and creative thinking in particular, as the subtitle suggests. A professor of linguistics and education, she analyzes the thinking processes of artists, philosophers, scientists, and others using information gathered from interviews, autobiographies and biographies, letters, journals, and notebooks. She foregrounds her approach in the theoretical work of Vygotsky and Bruner, taking a social-historical view that understands creative behavior and the construction of knowledge as social and that attempts to challenge the notion that cognition is a purely individual process.

John-Steiner focuses on the *processes* of thinking rather than on its various products with an interest in exploring cultural, historical, and developmental differences involved in how thinking works. She links them to the choices individuals make among the many "languages of thought" or "inner symbol systems" that may be available to them as a product of their cultural and historical contexts. John-Steiner also finds thought "embedded *in* the structure of the mind" itself (my emphasis) where end-products like musical compositions, elegant mathematical proofs, dance movements, and writing require multiple internal and external transformations which have not been fully explored. A major concern of her work was to explore these transformations.

In the end, however, John-Steiner suggests that differences between creative and ordinary thought processes may be found in the differences among human beings in the varying degree of their willingness to sustain commitment to the pursuit of an idea. A counterinductive account of creativity, however, might suggest that human beings who, while they are not without sustained commitment and a passion for an idea, may be thwarted by lived circumstances and a culture's unwillingness to invest in the possibility of their creative agency. Beyond understanding creativity as a process of selection and pre-selection (historical, social, and cultural) as Perkins and John-Steiner do, however, the question that still remains is how and why the creative agency of only certain members of a culture is enabled to respond to cultural prescriptions.

Douglas Hofstadter's work is also notable for its exploration of the nature of human thought as it relates to creativity and the ability of artificial intelligence

to imitate it. In *Metamagical Themas*, he suggests that each new idea conceived in the human mind may actually begin life as a "compound" of previous ideas that interact and are, thus, re-activated. As in metaphor and analogy, the mind perceives one thing in terms of another and detects a "compelling mapping" of a pattern present in both---the "magic beyond the magic," Hofstadter calls it. But, he is not referring to the inexplicable process Koestler and others have described. Rather, according to Hofstadter, it is the consequence of the way "conceptual molecules" form at every level of complexity. At the point of "isomorphism," he argues, deep emotion, identification with others, and a different perception of reality converge to generate divergent or novel ideas. He believes the continuous "acts of re-seeing" resulting in these perceptions to be of key significance while the particular contexts in which they occur contribute the unique and unexpected. Inherent in this process is a certain "fluidity of mind" that blurs boundaries and produces a kind of "crooked awareness" (my interpretation of Hofstadter's notion of "slippability") characterized by a willingness to transgress previously established limits while still holding on to traditional, deeply-held, "unslippable" concepts. Hofstatder suggests that the potential for creativity permeates the mental processes of human beings. In his view, their ideas are like living organisms: They breed, fuse, re-combine, evolve, and spin out limitless variations.

Similarly, while his work does not address creativity per se, the concept of creative potential is also central to the work of Mikhail Bakhtin. This potential is

realized through dialogism, an interactive process he believed is reflected in human thought. In *The Problems of Dostoevsky's Poetics* he wrote:

> The idea *lives* not in one person's *isolated* consciousness---if it remains there only, it degenerates and dies. The idea begins to live, that is, to take shape, to develop, to find and renew its verbal expression, to give birth to new ideas, only when it enters into genuine dialogic relationships with other ideas, with the ideas of *others*. Human thought becomes genuine thought, that is, an idea, only under conditions of living contact with another and alien thought, a thought embodied in someone else's voice, that is, in someone else's consciousness expressed in discourse. At that point of contact between voice-consciousnesses the idea is born and lives (87-88).

Bakhtin saw ideas not as "individual-psychological" formations, but as "inter-individual" and "inter-subjective"---their creative potential released as a the result of dialogic communion between consciousnesses and the lived lives they inform, like every word which is profoundly influenced by the anticipation of being heard, understood, and answered by the voices of others with different perspectives. He reasoned that "word" is a "two-sided act" that in its encounter with "otherness" in a particular, never-to-be-repeated context results in something that would not otherwise have occurred. Life can, thus, never be "finalized." It retains its potential for novelty because it invites countless interpretations over time.

Significantly, I have found few studies of creativity in the humanities. However, NCTE and ERIC, in a series of papers on issues in the teaching of English, did publish *Creativity in the English Program* by Rodney P. Smith, Jr. in 1970. He attempted to establish working definitions of "creativity" and "English," survey then current research in creativity which he considered "too sketchy for complete exegesis," and discuss the relationship between creativity and English

studies. The study followed the usual paradigm of that period, examining classic creativity theory and its relationship to five predictable categories: the early grades (elementary), literature, language, drama, and *creative* writing (but not writing in general), providing a laundry list of activities meant to encourage creativity in each category. Smith noted, however, "it is easier to anatomize creativity than to summon it up at will in ourselves or cause it to appear at will in those we teach" (4).

Ultimately, Smith had to admit that creativity eludes definition, but he concluded that divergent thinking and creativity, based on research data available then, appeared to be synonymous and that learning itself may be considered a creative act. Of the relationship between creativity and English studies, he also concluded that creativity could not be simply equated with creative writing; rather, *language production itself* may be considered a creative act.

Then, in 1971, Janet Emig in her examination of the composing processes of twelfth graders characterized writing as "a species of creative behavior." She thought a connection might exist between the stages of creative thought that had already been identified by others and the stages of the writing process. However, her study focused primarily on describing the composing processes as she observed them through think-aloud protocols based on the problematic assumption that "a writer's effort to externalize his process of composing somehow reflects, if not parallels, his actual inner process" (40). She had to admit, however, that composing aloud does not capture the act of revision, a

rather significant feature of the composing processes of accomplished writers and other creative artists. So, while her study broke new ground by describing the composing processes of the students she observed and, thus, helped teachers and others begin to understand the developmental dimensions of writing, because of the limitations of her study, it could not account for students' writing processes as necessarily creative acts.

Studies that followed Emig's did, however, focus on the lack of opportunity in school settings for creative expression. In a study of writing in the nation's secondary schools in 1981, Arthur Applebee reported that students were given few opportunities to do writing that demanded more than summarizing, reporting, or analyzing given information. Only 8.2 percent of the 182 ninth graders whose writing he examined and only 7.2 percent of the 167 eleventh graders' writing involved any kind of "creative" expression that encouraged students to use their imaginations or to take risks.

A similar study conducted by James Britton and his colleagues in England had reported in 1975 that as students grew older, the number of academic opportunities for creative expression decreased: 23 percent of eighth graders' writing, 24 percent of tenth graders' writing, but only 7 percent of twelfth graders' writing included opportunities to write fiction, to "theorize," or to do the kind of writing that demands commitment or revision or that encourages students to experiment or to discover what they think.

Psychology, biology, cognitive theory, science, education, philosophy, computer science, linguistics, and various other disciplines have contributed to

the history of thinking about creativity. Perhaps that is what coming to a fuller understanding of this illusive concept requires. Peter B. Medawar observed in *Induction and Intuition*, "The analysis of creativity in all its forms is beyond the competence of any one accepted discipline. . . psychologists, biologists, philosophers, computer scientists, artists, and poets will all expect to have their say. That 'creativity' is beyond analysis is a romantic illusion we must now outgrow. It cannot be learned perhaps, but it can certainly be encouraged and abetted" (57).

I have constructed the table below to provide a frame for the contents of the prior section and to map the section that follows:

Table 1 - The Changing Locations and Sources of Creativity

Historical Period	Style of Life or Culture of the Self	Location of Creativity	Sources
Antiquity	Practice of civic virtue in public negotiation and persuasion. Recognition of self-interested but common human nature. Interest in experience of the individual, but no concept of the subject.	No concept of creativity per se. The individual search for "truth," but accessible only to privileged few.	The divine demiurge Muses
Medieval Period	Concern with morality as a function of Christian revelation.	In the individual as an instrument of and in the imitation of God.	God God's Grace Magic
Modernity	Coherent, knowable, universal subject. Conscious, rational, autonomous, individual.	In the knowing subject. In products/behaviors produced by subjects.	The individual, a function of an individual's rational cognition/innate abilities Biology/genetics/evolution
Postmodernity	Multiple, fragmented, heterogeneous, de-centered subject positions Socially constructed	In multiple sites, but still centered on the "creative" individual.	Interactive social, cultural, and environmental conditions and processes

The Emergence of the Creative Exemplar

According to the Greek myth, Prometheus (whose name means "fore-sight") stole fire from the gods and gave it to man, allowing him to warm himself, to cook, to make tools, to devise arts, to invent language, and generally to enable technology and learning---everything needed for a more comfortable life. Mankind, thus, acquired the power to shape the world by transforming nature into culture or "civilization." For this grave transgression, however, Zeus chained Prometheus to a rock and sent an eagle to devour his immortal liver every day until the god took pity on his son and released him from bondage. This myth in its several manifestations since antiquity has been associated with the introduction of consciousness or mind in humankind and also with the rebellious spirit it purportedly engendered.

In *The Wake of Imagination*, Richard Kearney points to the obvious relationship between the Prometheus myth and the story of Adam's fall: In both narratives, the "hero" perpetrated an act of rebellion against the divine order, thus causing a rift between the gods and man. This act *unlawfully* disrupts the apparent "harmony of nature" by empowering humans to imitate the gods and to substitute their own acts for the divine acts of creation (80). But, the message of these stories is ambiguous. Although the rebellious act in each case was regarded as an "offense against God," it was also a *necessary* act for the progress of human culture. In the classical mind (and later in the medieval mind), then, creative imagination or consciousness could not escape its *lawful* definition as a mere imitation of the divine act of creation. Its freedom was thus

regarded as arbitrary, and its "originality" was conditional; it was regarded as mere *mimesis*, an act of simulation. Conforming to the ambivalent model of "pharmakos" where the sacrificial goat is neither innocent nor guilty but always *between*, mimesis may, as Kearney observes, be regarded both as a "remedy" because it enables future generations to recall human experience and as a "poison" that deceives people into believing that a mere copy can be "original" (83). In classical Greek culture, then, creative consciousness was never regarded as an internal individual subjective power, but only always reduced to the imitation of a power greater than itself.

In light of Plato's view of philosophy as a shift from mythology to reason, one could argue that it was reasonable for him to condemn creative imagination to the lower order of existence as a mimetic function associated with the material world and oppose it to reason associated with the attainment of the ideal forms of pure being. The divine demiurge, the original source of truth, had created the material world for humans to inhabit, and only through reason could they "return" from it to Truth or "correct knowledge" and the "ideal state" of being. Reflecting the world of the senses, creative consciousness (the origin of poetry and the other arts) could only lead humankind away from this state. The "crime" of Plato's poet, then, was to dare to make the "invisible source of truth visible" in metaphor and image, seeing "crookedly" (and encouraging others to do so), transgressing the opposition of being and non-being, and calling into question the other Platonic oppositions that found Western thought (95). According to Kearney, creative consciousness is in this sense "the disobedient son who

threatens to subvert the patriarchal law of the metaphysical system---a law which safeguards the rights of inheritance by outlawing the counterfeit claims of imitators, pretenders, and imposters" (95).

A critical, creative mind is critical and creative on all fronts, open to the play of comparison and difference. Plato, worried about this propensity, regarding the "play" of imagination evident in the poetry and the other arts as a threat to understanding the truth embodied in the ideal forms as fixed, timeless, and self-identical. Therefore, in his view parents needed to strictly control it, "If you control the way children play, and the same children always play the same games under the same rules and in the same conditions, and get pleasure from the same toys, you'll find the conventions of adult life are too left in peace without alteration. . . . Change, except in something evil, is extremely dangerous" (cited in Kearney 98). The play of creative consciousness introduces uncertainty and ambivalence into our understanding of "the same." Thus, according to Plato, while reason has the capacity to unify the soul, a highly critical and creative consciousness threatens to disperse it into the "play of contradiction" (97). Having awakened critical consciousness in the newly autonomous individual, Plato sought to prevent "dangerous" flights of imagination by placing it under the supervision of reason's rules. To capture the classical sense of creative imagination Kearney refers to Benedetto Croce's summary in *Aesthetic*, "Ancient psychology knew fancy or imagination as a faculty midway between sense and intellect, but always as *conservative* and *reproductive* . . . never properly as a productive autonomous activity" (my emphasis) (112).

In the medieval period between antiquity and modernity, creative consciousness continued to be primarily regarded as mimetic activity at least one remove from God. However, the writings of St. Augustine linked classical concern for ontology, which privileged the "original truth of pure being" over the process of "becoming," with theology in the medieval model of "faith seeking understanding." Kearney notes that in Augustine's system creative thought came under further suspicion. He condemned the "profane imagination" as an *ethical* transgression, a *choice* between good and evil rather than an attempt to subvert fate. In the Christian view of this transgression, man (Adam) is further burdened by the notion that he *chooses* to participate in "evil," stealing knowledge forbidden to him, while in the classical conception, Prometheus simply defies the divinely pre-ordained plan. In Augustine's view the role of creative consciousness was to serve more Godly intellectual purposes. Throughout the medieval period the search for truth was associated with its recovery in the classical sense from its traditional source rather than the discovery of something new.

In *Rescuing the Subject*, Susan Miller notes that Augustine "overturned the Ciceronian 'good man' in favor of the credibility of the Christian 'Word,' which could be divorced from its human source and given credibility through the sermonic 'text'" (8), effectively demonstrating that the preservation of dogma was valued more than innovation. Moreover, as Daniel Boorstin points out in *The Discoverers*, monks who served as scribes in this period took neither credit nor blame for "original" texts. Names were not usually attached to manuscripts, but

when they were, they did not necessarily establish "authorship" in the modern sense (530). Bizzell and Herzberg suggest that medieval Scholasticism, a hybrid of Aristotelian empiricism and Christian thought, "required the individual to seek to know external reality rather than emphasizing the mind's power to re-imagine and shape reality" (465).

However, as Kearney further notes, creative consciousness played an ambivalent role in the life of the medieval mind, *both* as necessary to reason and as an obstacle to its highest aim of spiritual contemplation. The view of Richard of St. Victor was, for example, that, "while it may function as a useful instrument of *re-presentation*, imagination must not be confused with the original *presence* of reason to itself" (cited in Kearney121). He also cautioned against the confusion of reason with the sensory life of the body associated with imagination. Imagination could "lawfully" mediate "between the inner mind and the outer body," preserving the strict opposition between spirit and matter, but Richard also argued that the purpose of philosophy was "to justify the mind's transcending this world of sensation and imitation in search of a Supreme Being. . . God himself as the Original Cause and creator of the universe" (122)---classical philosophy in the service of Christian Revelation. But, he failed to address the question of how the human mind could come to contemplate God's "self-identical" love *except* by using its imaginative powers and yet remain human (123).

St. Thomas Aquinas' "metaphor of the storehouse," however, serves best as *the* classic model of the medieval imagination, "For the reception of sensible forms the proper and common sense is appointed; but for the retention and

preservation of these forms, the phantasy or imagination is appointed, which are the same, for phantasy or imagination is, as it were, a storehouse of forms received through the senses" (cited in Kearney129). Thus, its mediational role could be either positive, connecting the inner life of the mind to the outer life of the body, or negative, deviating from the rules laid down by scripture. But, while Aquinas believed that imagination was necessary to human understanding precisely because it is human, truth (things-in-themselves) was regarded as the privileged possession of God. In this sense, the medieval conception of creative consciousness corresponded closely to the classical conception discussed earlier.

This view, however, failed to account for the teeming imagination of the popular folk culture expressed in celebrations of carnival, a significant subculture opposed to the official Christian culture and fundamental to medieval life as it was actually lived by the people. This counterculture accorded significance to three taboos: magic, dreams, and the body. In so doing, it "fostered the notion of a *personal human consciousness*. . . an integral part of human and natural reality" (138). This notion would become significant later in Renaissance humanism and in the appearance of the creative exemplar.

The autonomous consciousness creating truth out of itself emerged in the moment of modernity when the anthropocentric model of the human mind supplanted the onto-theological model that preceded it. This shift did not occur suddenly, according to Kearney, but rather it can be traced to the subtle contradictions suggested at first in part by the aforementioned marginalized

popular folk culture and by the esoteric hermetic movements of Renaissance and post-Renaissance mysticism. However, the seeds of this change also had already been planted in the general culture of Renaissance humanism with its insistence on human beings as the immediate source of all truth and on their power to know and shape the world, thus recognizing the creative potential of human consciousness and re-directing it to the service of human rather than divine purposes (155).

Early Renaissance thinkers had already begun to look for a different model of the human mind, one that, while it remained faithfully Christian, would go beyond Scholasticism to also encourage the development of individuals. Renaissance humanism thus would to some extent challenge religious authority and seek the revival of secular learning (finding it in Cicero's *humanitas*---his word for the Greek *paedeia*, perceived as the ideal format for education), but at the same time it still reinforced Christian doctrine. Charles Trinkaus', as cited by Janet Atwill in *Rhetoric Reclaimed*, described the Renaissance notion of creativity in the following way: "The capacity of man to command and shape his world was regarded as an emulation of divinity, since it was in this respect that man was created in the image and likeness of God" (22). But, as Atwill further observes, in the new world of Christian humanism man was evidently acting most like God when he was fully developing his individual talents.

The invention of the printing press also influenced the changes afoot in this period. Elizabeth Eisenstein in *The Printing Press as an Agent of Change*

notes that comparatively well-stocked bookshelves permitted more opportunities to consult and compare data,

> Contradictions became more visible; divergent traditions more difficult to reconcile. The transmission of received opinion could not proceed smoothly. . . Even while confidence in old theories weakened, an enriched reading matter also encouraged the developments of new intellectual combinations and permutations . . . . Once old texts came together within the same study, diverse systems of ideas and special disciplines could be combined. . . . [creating] conditions that favored new combinations of old ideas at first and then, later on, the creation of entirely new systems of thought (74-75).

Print also made it easier to associate the names of particular authors with these ideas. New forms of authorship and invention thus undermined older notions of collective authority in all manner of texts and deeds.

Descartes' philosophy ("I think therefore I am") locating the source of truth in human subjectivity, however, marked a significant break with medieval Scholasticism. Although Descartes gave the human mind priority over objective being, a nod to modernity, he nevertheless retained the pre-modern notion of creative consciousness as merely mediating between the mind and the body. Because he was committed to a rationalist perspective, he also viewed creative imagination as a mimetic and refused to recognize it as anything more than "the quasi-material residue of sensory experience which, in fact, obscures the self-reflection of the *cogito*," leaving intact the medieval suspicion of its contamination by "errors of corporeal contingency" (cited in Kearney 161). Noting this circumstance, Rousseau would remark later that Descartes' philosophy had "cut the throat of poetry." Again. But as Kearney points out, this opposition to creative consciousness was common to the rationalist philosophers of the

seventeenth century. Leibniz, for example, could find no role for it whatsoever since it always fell "short of reason" and thus lacked "true being" (162).

Rationalism and logic defined the Enlightenment project in a seventeenth century marked by revolutions. These revolutions changed everything previously understood about the nature of truth, human beings, and the societies in which they live. Science shifted to the experimental method and discovered a mechanical universe based on laws of logic and mathematics, and philosophy began to pay attention to the human psychological and cognitive processes of perception, communication, and reflection in order to determine how the mind works to uncover the truths of the physical world important to both scientific progress and the universal aspects of human nature. And, the discovery of a "common" human nature led to the drive for socio-political equality, the desire for new forms of government recognizing this equality, and the emergence of market economies.

The development of liberalism as a theory of society and government led to the growth of individualism and encouraged both representative democracy and the growth of market economies. By mandating fair and equal treatment of all regardless of their position in society within a system of representative democracy and market relations, liberalism tended to encourage creativity and to strengthen the notion of creativity as an *individual* activity.

John Locke's philosophy, characteristic of the time, however, re-emphasized the division between reason and creative imagination as means of arriving at truth. Echoing Plato's earlier advice, he admonished parents who

discovered the tendency to flights of imagination in their children to "stifle and suppress it as much as may be" (cited in Kearney 164). But, at the same time, David Hume's skeptical account of empiricism was declaring both reason and the reality it informed to be inventions of imagination which "makes us reason from causes to effects, and . . . convinces us of the continued existence of external objects" (*An Enquiry* 266). He argued that this perceived identity was nothing more than a quality the human mind attributed to a unity of perceptions in its own imagination.

Thus, as Kearney notes, acts of creative imagination no longer considered merely mimetic became ends in themselves. The only truth the human mind could know, according to Hume, was the one its sensible experiences suggested to its own imagination, and that meant no "truth" at all. Having reduced reason to the imagination, he then referred to it as "inconsistent and fallacious" (265) and the "dangerous" occasion of mistakes among philosophers (267). Hume found himself trapped in a logical circle, looking for reason in a different version of imagination to rescue him.

Distressed by Hume's conclusions, Kant resolved to rescue the metaphysical project from both the rationalists and the empiricists, and in so doing he established modernity's conception of the *productive* imagination. He argued in *The Critique of Pure Reason* that imagination is not simply a reproductive or mimetic act of a passively received reality, but an *a priori condition* for all that is possible for the human mind to know---the dynamic, common "unknown root" of *both* sensible experience and the understanding,

capable of "creating" its own truth and value. He argued that objectivity would be incoherent without the understanding *and* the synthesis of sensible intuition upon which it depends, "Thus, the order and regularity in the appearances which we entitle *nature*, we ourselves introduce. We could never find them in appearances, had not we ourselves, or the nature of our mind, originally set them there" (*Pure* 147). Sensory impressions supply the content of thought while the understanding supplies the "form" by which the human mind can grasp it.

Moreover, Kant argued that while the imagination is to some extent "reproductive," connecting a preceding perception to a subsequent one, its "productive" function governs which combinations of perceptions take precedence over others in the autonomous act of synthesis. The human imagination thus replaced "being" and God as the transcendent origin of all meaning, a stark reversal (often referred to as Kant's "Copernican Revolution") of classical and medieval thought, ensuring a primary role, Kearney notes, for creative imagination in modern theories of knowledge, art, and aesthetics (157).

In the *Critique of Judgment*, however, Kant went a step further to suggest that in aesthetic judgment the creative imagination closely connects with the concept of freedom. The "beauty" of an object, he suggested, results from the sense of freedom the mind obtains from it, recognizing an "inner finality of form" much like the element of complete appropriateness or satisfaction associated with contemporary definitions of creativity. There are no rules or controlling authorities for aesthetic judgment; people cannot be convinced of beauty, for example, on the grounds of proof. Only in the "play of imagination," freed from all

external controls and following its own rules, does the human mind create its own order and meaning, precluding any purpose outside itself---in Kant's words, "purposiveness without purpose." Imagination, thus, produces its own activity---not a *reflected* image, but a new creation, "a finality without end."

However, Kant also seemed to retreat to an earlier position that something exists "out there" beyond human imagination. He suggested that while experience of the beautiful results from the freedom of the imagination to work without limits, the experience of the sublime results from creative consciousness coming up against its own perceived limitations and realizing that its potential is greater still. But, Kearney argues that Kant may have been suggesting instead that the experience of the sublime results from the attempt to further understand the infinite depths of the imagination and, in so doing, produces a sense of "awe precisely of the human power to frame ideas which cannot be intuited" 176).

While aesthetic judgment occurs in response to particular objects, Kant argues that the judgment of "taste" is itself universal because every human being has a creative imagination. The "harmonious activity" of the imagination derives from the "universal communicability" of the judgment of taste. It is a capability shared by everyone, not limited to a few extraordinary individuals. Kant had argued that without the experience of the "beautiful" or the "sublime" rationality remains incomplete. Only in aesthetic experience that is subjective and universal---an unfettered moment of shared affect, do human beings gain an understanding of the relationship of their mind to the world. However, Kearney also points out that Kant "admitted that the 'harmonious interplay between

imagination and understanding,' which the products of art embody is something we cannot 'conceptualize,' but only 'feel,'" and in a sense, he thus reduced imagination to mere feeling and distinguished it, once again, from reason, anticipating the split between science and art. Further, as Bourdieu points out in *The Logic of Practice*, Nietzsche noted that Kant "like all philosophers," had failed to view the "aesthetic problem" from the point of view of the creator, considering art and the beautiful only from the point of view of the observer, thus unconsciously introducing "spectator" into the idea of the "beautiful" (34).

Nevertheless, Kant's philosophy influenced both German idealism and Romanticism. Arguing that human imagination rivaled that of God Himself, the German idealists decisively broke with the notion of imagination as an imitation of divine creation and also subsumed reason in its power. So, as Kearney notes, Goethe could create a Faust, for example, as a "hero," a new subjectivity, who dared to overreach his mortal circumstances by making a pact with the devil. The characteristics of "overreaching" or transgressing institutionalized limits, creating new subjectivities, and altering relations of power (which can be traced back to Aristotle's conception of "productive knowledge") began to mark creative consciousness and the imagination. The growing German middle class also began to shape a new vision of "a universal order of free, equal autonomous human subjects. . . . This bourgeois public sphere [would break] decisively with the privilege and particularism of the *ancien regime*, installing the middle class, in image if not in reality, as a truly universal subject" (Eagleton 19). At stake, Terry Eagleton argues, was the "production of an entirely new kind of human subject"

who would be guided by the *law* within its own identity rather than by oppressive external powers. But, Eagleton also contends that if in the 18th century the aesthetic became particularly significant, "it is because the word is shorthand for another whole project of hegemony, the massive introjection of abstract reason by the life of the senses. What matters is . . . this process of refurbishing the human subject from the inside, informing its subtlest affections and bodily responses with this law that is not a law . . . as though it is *we* who freely fashion the laws to which we subject ourselves" (42-43).

The Romantics found their validation in imagination's endless play of freedom. Samuel Taylor Coleridge coined the term *ensemplastic* to refer to the power of creative consciousness to shape disparate elements into a unified whole, a notion he borrowed from the German idealist conception of the productive imagination, reformulating Kant's transcendental imagination as follows,

> The primary imagination I hold to be the living power and prime agent of all human perception and as a repetition in the finite mind of the eternal act of creation in the infinite I AM. The secondary I consider as an echo of the former, coexisting with the conscious will, yet still identical with the primary in the *kind* of its agency, and differing only in degree and in the mode of its operation (XIII).

Coleridge believed that the primary imagination captured the sensible objects of nature in the autonomous act of synthesis while the "secondary" imagination, a "synthetic and magical power," was capable of overriding both the formal logic of non-contradiction by "balancing and reconciling opposite or discordant qualities" and natural perception by casting familiar objects in a new light. Given the

potential of the human imagination as the Romantics understood it, nothing seemed beyond human capability.

But, as science increasingly dominated nature and the promise of bourgeois society dissipated into self-interested competition and the exploitation associated with industrialization and expanding capitalism, Romanticism had to find a way for the human subject to continue to be "creative" in spite of bleak historical realities. So, in an act of defiance, Romanticism simply "negated" these realities, radically splitting "nature" from "culture," and "ending the relation to the omnipotent diety which kept man in bondage, romanticism allowed the transcendental imagination to exult in its own self-referential play" (Kearney 187-188). In this new scenario, Adam and Prometheus became heroes, "liberated" from the stigma of their former ethical and epistemological trangressions, new models for the rest of humanity.

While the Romantic notion of human creative consciousness collapsed under the weight of the "reality" of historical circumstances, it nevertheless has remained alive in the persona of the creative exemplar who emerged from the rubble. History knows him and his deeds by his name: Einstein's Theory of Relativity. Freud's Theory of the Unconscious. Mozart. Picasso. The Heisenberg Principle. He is the figure of a solitary autonomous, perhaps slightly eccentric, individual who, in isolation from the rest of the world, creates out of his own creative consciousness something "novel" yet "completely appropriate" for the moment, an original invention or discovery widely recognized as "creative." Yet, every act of attempting to "measure" this creativity alters it.

CHAPTER THREE

Language and Rhetoric: Authorizing the Operation of Creativity

I do not know which to prefer,
The beauty of inflections
Or the beauty of innuendoes,
The blackbird whistling
Or just after.

Language is powerful. Not only is it a tool for expression, it also organizes our experience and influences the meaning made of it. The power of language manifests in the ways it is used to classify and arrange sensory impressions to create order and meaning in a culture. Indeed, because of its shaping power, control of language has been a bone of contention throughout much of history, structuring the study of human science as Michel Foucault suggested in *The Order of Things*. But, it is possible to break its containment. A rhetoric of productive knowledge, capable of surfacing creativity, can work against hegemony by evoking alternative possibilities.

Language "authorizes" what in a culture may be "thinkable," and that plane of reality, once confirmed, is then sustained by continual repetition and circulation in what Foucault refers to as "regimes of truth," the discourses in a society of those who, in effect, produce "proper" language, "who are charged with saying what counts as true" (*Power* 131), serving and enforcing their vision of what exists, what is good, and what is possible. Although it is important to point out that control is rarely total (as the surfacing of creativity suggests), I argue that these discourses, as they have attempted to constrain language, have also

constrained the operation of creativity, perhaps to our detriment. They have shaped current thought according to the political and economic interests of elite cultural forces and controlled what counts as "new" knowledge. The significance of the relationship that exists between language and the operation of creativity is inescapable.

The development and operation of language has been instrumental in human evolution. In order to develop language at all, the human brain had to evolve in certain ways beyond that of its closest animal relative. In October 2001, the journal *Nature* reported that researchers in England had, in fact, discovered a gene, subsequently labeled "FOXP2," that may be required during embryonic development for the formation of the brain regions associated with speech and language. While FOXP2 is not exclusive to humans, differences in its sequence or the way it works in humans may reveal how this ability evolved and why they developed linguistic communication systems while other animals did not.

A year later, in August 2002, *Nature* further reported that researchers at the Max Planck Institute for Evolutionary Anthropology had compared human FOXP2 with the same gene found in the chimpanzee, gorilla, rhesus macaque, and other animals and suspect that this gene evolved in the human population within the last 200,000 years (coinciding with the historical emergence of "anatomically modern" humans) and increased chances for survival by helping them communicate better. They found that key changes in the DNA of human FOXP2 appear to have affected the development of facial bone and muscular

structures and the ability to make the fine movements of the mouth and larynx that allow speech to occur, and they speculate that these changes may have led to the further development of the regions of the brain associated with language. Language, then, as it developed allowed information to be passed more efficiently from one generation to the next and may have led to the significant expansion of the human population.

However, that the evolution of humans may be the result of certain pre-linguistic advantages such as the development of the FOXP2 gene mentioned above is not a new idea. In *Personal Knowledge*, Michael Polanyi also contends that man's intellectual superiority to other animals may be almost entirely the consequence of language development. Evidence he reviewed shows, for example, that humans are only slightly better at solving the same kinds of problems set for animals *if linguistic clues are excluded in research experiments* (70). However, he further suggests that nearly undetectable tacit "inarticulate faculties" may also account for language acquisition and the huge increase in human mental capacity that followed. Articulation in language, Polanyi claims, is always incomplete, relying on "mute acts of intelligence" common to both humans and other animals. Defining *language* as any form of symbolic representation (including mathematical notation), he argues further, however, that both the process of linguistic representation itself and the operation of language symbols support the process of thought in humans. He identifies three stages through which a symbolic representation of experience may lead to new information: (1) primary representation, (2) reorganization, and (3) interpretation

of the result (80). Accordingly, for him, language development and its subsequent operation require being able to establish signs, note their appropriateness, and interpret the potential relationships arising from them. Although other animals appear to be capable of each of these functions separately, as Polanyi points out, they do not appear to be able to combine them as humans can (82).

Polanyi findings, although they differ slightly, follow those of Lev Vygotsky. Using the developmental approach pioneered by Piaget, Vygotsky found that the development of thought in children does include both nonverbal thought (Polanyi's "mute acts of intelligence") and pre-intellectual speech. But, perhaps because he focused on the development of thought in children, he was also able to observe that only when the developing curve of thought begins to overlap that of speech in a close reciprocal relationship does thought become verbal and speech rational (83). And, in his review of various comparative studies of primates and humans, he noted, as Polanyi does, that while primates display certain features of intelligence similar to that of humans and while their language includes features of human language like emotional expression and social meaningfulness, the important interfunctional relationship between nonverbal thought and pre-intellectual speech, appears to be absent.

Vygotsky's research, thus, suggests that although language and thought may issue from different "genetic roots," as their operational functions overlap, each assists the development of the other. He concludes that this relationship allows the human child to develop the "inner speech" of thought, "[branching] off

from the child's external speech simultaneously with the differentiation of the social and egocentric functions of speech . . . [becoming] the basic structures of his thinking" (94). Thus, Vygotsky claims, "Thought development is determined by language . . . by the linguistic tools of thought and the sociocultural experience of the child" (94). Thought, then, according to Vygotsky, may be regarded as the result of the "mediated" activity of human mental functioning within a socio-cultural context. As Polanyi also argues, once ignited, this important reciprocal relationship between the symbolic representation of experience and human thought continues, constituting this mediation, and remains capable of leading to novel thought.

In "The Origin of Speech," Charles F. Hockett identifies thirteen design features absent in animal communication systems, but characteristic of all human languages. Perhaps most important among these, *productivity* allowed pre-humans to use patterns of arrangement from old utterances to say things that had never been said before and yet *be understood* by other speakers, thus making language "productive" and allowing many possibilities for expression (90). Productivity, Hockett contends, preceded and then promoted *displacement*, the ability to talk about events remote in time and space allowing speakers to make connections to them outside their presence (94). They could, for example, communicate *to others* "survival" knowledge gained from what may have been at the time merely fortuitous circumstances such as the use of a sharp stick to kill a predator. This knowledge shared with others then may have led to the carrying

of sharp sticks against future encounters, insuring the human population a better rate of survival, thus reinforcing the social character of knowledge.

Another feature, *total feedback*, made it possible for humans to "internalize" what was being communicated. They nearly simultaneously *heard* as they *understood* what they were saying, reinforcing the "message" and allowing "learning" and the adjustment of future conduct. Ernst von Glasersfeld suggests that if such feedback is regarded as sufficient to lead to internal repetition or *thought* in cognizing organisms, this activity may be recognized as "inductive inference" constituting "the simplest and most general form of learning and knowledge" ("Signs" 469).

Words themselves, released from duty as signs of one-to-one correspondence to the events or situations they signified, thus, could become *symbols* of concepts humans could use to re-present their experiences to themselves, employing these symbols in purposive and intentional ways to modify their knowledge of the world. And so, language developed as a system of symbols that, according to Hockett, provided "certain patterns by which these elementary signifying units [could] be combined into larger sequences and conventions governing what sorts of meanings emerge from the arrangements" ("Signs" 473).

However, what is crucial for von Glasersfeld is not patterns or rules for stringing symbols together themselves, but that language developed a "syntactical dimension of meaning." Emerging from the effective use of various different combinations of the same words, this additional layer of potential

meaning-making allowed language to go beyond its initial flexibility to generate both more and different "combinatorial meanings," further opening up the language system and insuring its continuing productivity, making the potential for modifying knowledge of the world limitless (473). And, it did so in the fundamentally conservative way characteristic of evolution that allowed emerging human beings to reorganize themselves at higher levels of complexity while still holding on to their primarily traditional ways of life. The initial productivity and the syntactic patterning that provided for further flexibility and extension of human language systems figures prominently in von Glasersfeld's argument for the radically constructive nature of language and human knowledge. This approach to knowing and learning, based on von Glasersfeld's engagement with the work of Piaget, Vygotsky, and others, suggests that language organizes experience and helps to "build up" knowledge. Understood in this way, knowledge, then, cannot be "discovered" nor can it correspond to an already existing ontological reality. It is "built up" or "created."

Although Piaget was not the first to suggest that humans "construct" their concepts and thus their view of reality, he was the first to use a developmental approach to explore this notion. In *The Construction of Reality in the Child*, he presented a model of how the conceptual structure of objects, space, time, and causality is constructed, and he suggested that this "scaffolding" operates as a framework for building up a coherent "reality." But, he also noted that what is constructed is limited by the very concepts that established the scaffolding in the first place. In his view, epistemology is, thus, concerned both with the formation

of knowledge and its meaning or value and suggested that cognition is instrumental, a tool humans use to fit themselves into the world of their experience. Moreover, its value is a function of its process.

Following Piaget, von Glasersfeld argued for a radical rebuilding of the concepts "knowledge" comprises (knowing, truth, understanding, meaning, and communication) and for the "viability" of actions, concepts, and conceptual operations as they "fit" particular purposes and contexts as an indication of reality. In this approach "viability" in the domain of experience rather than "truth correspondence" is the criterion for "knowing," a concept von Glasersfeld refers to as "mental operating," and it is assisted by and dependent on the development of language.

The co-development of human linguistic communication systems and thought, then, supported and advanced other crucial evolutionary innovations like the increased capacity for more complex nervous systems and for the development of memory leading to a "central representation of space," the ability to recall what had been stored in memory and to reflect upon it---what some might call *consciousness* or *self-conscious reflection* (Riedl 76). Moreover, it also continued to provide the mechanisms for reinforcing whatever factors, genetic or cultural, had made that survival possible through "teaching" and "learning." Hockett speculates, for example, that remote ancestors of human beings may have lived in conditions "where a slightly more flexible communication system, the incipient carrying and shaping of tools, and a slight increase in the capacity for traditional transmission" converged to make it

possible for some change to occur (96). These fortuitous circumstances may have made just enough difference for human beings to survive in increasing numbers and to develop behaviors that mobilized new mental and social habits and practices.

Although other animals can distinguish and identify objects as well as act on memory, their "knowledge" may be more associative than representational, such as "knowing" that fire "burns" (by associating it with pain). The development of *representational* language meant that humans could re-present their experiences to themselves, recalling and synthesizing narratives of events, and reflexively recognize them as "experiences." They could know, for example, not only that fire burns (in an experiential and associative sense like other animals), but could also present fire and its characteristics to themselves outside of its presence. They could also recognize that they "knew" it would burn and state the grounds for that knowledge.

Moreover, being able to recall and re-present past experiences to themselves *and others* made possible the ability to *compare* one experience to another and note *differences* between them, suggest alternative possibilities, and make choices among them---"mental operations" characteristic of humans that allow them to organize and manage their experience. As Riedl points out, they could conduct "thought experiments" that transferred the risks of extinction from themselves to their hypotheses, a rather significant evolutionary advance (76). And, because processes of inference can operate through symbolic representation without reference to actual things, the purely theoretical, as in

mathematics for example, became possible. Thus, language, memory, and consciousness are deeply implicated in the operation of "creativity" and the generation of new knowledge. But, it is also important to recognize the socio-political character of that knowledge and the part language systems play in it.

The Significance of Learning to Classify

In "On the Conventional Character of Knowledge," sociologist Barry Barnes argues for the "constitutively social character" of knowledge by examining the linguistic act of classifying or learning to apply concepts. He assumes that people learn as they interact with information from the complex physical environments in which they live and that learning occurs within a social context, so "to learn to classify is to learn to employ the classifications of some community or culture" (305).

According to Barnes, classifying entails making judgments about degrees of similarity and difference. The tensions behind each term (animal, for example), representing a number of specific instances of it (dog, cat, cow, and so on) and connecting it to the physical environment, and the tying together of terms by generalizations, signaling expectations of experience, form a network of transmissions about similarity and difference. An assertion of similarity, that is, the application of a concept, confirms that similarities outweigh differences, a confirmation that, Barnes points out, does not issue from the "meaning" of a concept itself, but rather from the routine, socially-situated operation of agents' perceptions and cognition.

The formation and application of concepts is, thus, a social activity that derives from and develops the pattern of a particular category of classification, "The pattern does not account for the activity; rather the activity accounts for the pattern" (310). Usage, then, develops as a series of judgments adding particular instances to the "tension" of a term. So, as Barnes suggests, it would be incorrect "to assume that usage is determined in advance by meaning, rules, logic. . . . [Rather] agents develop usage in ways which at all times relate to their full complexity as social actors and biological organisms" (313). "Agreed upon" usage thus becomes "proper" usage, convention reinforced by cultural practice. The consensus from which proper usage arises, then, while a culture may regard it as the *discovery* of "real meaning," turns out to be merely *successful negotiation*.

Barnes claims that all "conventional" representations of the world, regardless of their differences with those of other cultures or subcultures, are "equally rationally held" in their relationship to the physical environment, "Reality confers no privilege upon our methods of classification; they have no special anthropological significance. And as for reality, so too for logic" (318). In all cultures, inductive inference and proper usage in the application of concepts exist as patterns of cultural practice that are "restricted." The linguistic routines within a culture, thus, tend to reinforce "shared theory," a commonly understood set of concepts and generalizations, a plane of reality. Such coherent, restricted communal cognitions become social, cultural, and political "institutions." These institutions, then, become invested in their own survival and always move toward

homeostasis sustained by their "authority" within the culture and its apparatus of control, "authorizing" what counts as knowledge.

I contend, then, that the way a culture may understand and recognize creativity and new or novel knowledge, then, is always contingent upon the system of goals and interests of those who dominate it and upon the consequent circulation of power. Barnes discusses, for example, the potential effect of attaching the XY chromosome to the concept of *male* in order to achieve the goal of successfully predicting it more frequently and further refining perception, a goal that on the surface may claim to be harmlessly "scientific." But, claiming that males are "really" XYs implies the inadequacy of the existing concept and, if adopted, can make life more difficult for those who hold to a less precise concept of male (and female). Thus, If a culture insists on using the XY chromosome as a "test" for inclusion in the classification *male*, in order to insure the selection of only "real" XY males for certain roles and to prevent those lacking the chromosome from being selected, the effect would likely be not only to limit opportunities for "different" others, but also to generally limit thought of what constitutes the category *male*. It is reasonable to suggest, then, as I do here, that the normalized application of the concept *creativity* in a culture could limit the thought of what constitutes the concept to serve particular interests.

Moreover, the effect of classification and concept application in a culture can be deadly. In *Fermat's Enigma*, Simon Singh tells the story of Hippasus, a young student of Pythagoras, the father of logic and mathematical method. In the process of attempting to find a rational number equivalent to the square root

of two, Hippasus came to realize that no such number existed and that the square root of two was, therefore, an "irrational" number. But, because Pythagoras defined the universe in terms of rational numbers, he refused to accept the logic of Hippasus' "discovery." It called into question the ideal that he had long cherished and threatened to change the world as he understood it. So rather than acknowledge this new category of numbers, he sentenced Hippasus to death by drowning. Singh suggests that, if the story is true, Pythagoras' reluctance to come to terms with irrational numbers was not only tragic for Hippasus, it was also tragic for the development of Greek mathematics because the matter of irrational numbers could not be taken up again until after the death of Pythagoras, thus delaying attention to this new resource.

Polanyi suggests that the Laws of Poverty and Consistency govern the operation of language and imply that, when humans use a word to refer to something, they "perform" and at the same time "authorize" their performance of the act of classification, and in so doing they anticipate its applicability to future experiences. Thus, in ordinary everyday practice as well as in the way the sciences develop theories relating to actual experiences, as long as the classifications work, these expectations shape theories of the universe implied as "true" in language (80). Polanyi notes, however, that it is also characteristic of humans to want to continually refine their terminology in the effort to get closer to the "reality" they observe---closer to the "truth." So, to extend what Polanyi is suggesting, each performance, in effect, "enacts" a sense of what is true (a "belief") at a particular time and in a particular context, and each subsequent

"authorization" or confirmation of an act of classification is subject to change, suggesting the significance of the continuously performative and, I maintain, creative nature of language.

However, attempts by dominant forces in a culture to bring language under strict control by fixing concepts, Polanyi argues, also closes down effective operation of the system and likely reduces the benefits derived from casting thought into language in the first place by interfering with its operational principles and constraining the ability to build up new knowledge. He notes that although modern systems of mathematics, science, and philosophy that have today replaced systems of magic and superstition, they are just as capable of leading to mistaken belief (although perhaps not as extreme). (Heisenberg noted, however, that scientists cannot escape the human limitations of knowing.) Polanyi's view, however, is that to the extent that humans benefit from the apparently limitless potential of using language, they must also commit themselves to the "risk of talking complete nonsense, if [they] are to say anything at all within such systems" (94), and he reminds us of the significant gains in mathematics, for example, that resulted from the speculative use of mathematical notation. Negative, imaginary, irrational, and transfinite numbers first regarded as meaningless (and, in some cases, threatening) were eventually accepted as important new concepts. This circumstance reinforces his observation that "the major fruitfulness of a formalism may be revealed in its entirely uncovenanted functions, precisely at points where the peril seems greatest of its drifting into absurdity" (94).

In the systems of science and mathematics as well as those of ordinary everyday experience, terms people learn to use imply generalizations signaling expectations of experience that in turn imply a theory of the universe dependent for its verification on "grammatical" rules in order to determine what constitutes meaningful sentences. But, Polanyi points out that if this theory of the universe proves to be true, "it will be found to anticipate, like other true theories, *much more knowledge* [my emphasis] than was possessed or even surmised by its originators" (94).

As Bakhtin does, Polanyi suggests that using language commits those who use it to an "irreducible indeterminacy" because it relies on adherence to recognized forms and the continuous re-consideration of those forms as they relate to the actual lived experience of human beings in different contexts. I agree with Polanyi's further argument that, "Just as owing to the ultimately tacit character of all knowledge, we remain unable to say all we know, so also in view of the tacit character of meaning, we can never quite know what is implied in what we say" (95) because language can only "get close" to describing what we know.

Every use of language to describe experience applies it to unique instances of differing contexts that can modify the meaning of a word and, conceivably, the conceptual framework in which it occurs. Such modifications are, in Polanyi's words, "heuristic" and "irreversible" and stand in contrast to "routine" and "reversible" operations that merely assimilate new instances into existing classifications, a distinction Piaget also makes. The difference between

the heuristic operations and ones that are routine or algorithmic may be analogous, for example, to the difference between constructing a new mathematical proof and merely demonstrating one that has already been established. Students who deduce the Pythagorean Theorem from Euclid's axioms, while they may demonstrate their understanding of knowledge that is "new" to them, do not demonstrate new knowledge; they merely retrace the steps of Pythagoras. Andrew Wiles's solving of Fermat's Theorem, on the other hand, demonstrated not only his understanding and use of deductive logic to arrive at a solution, but also the necessity of making unprecedented heuristic leaps onto new ground---going where no one else has gone. Both the student and Wiles followed the usual and expected logical steps, but constructing the new proof required an "intuitive" step (or series of them) that would be logically verified by others only later to gain the acceptance of the mathematical community.

Similarly, a piece of writing that is heuristic and that says something "fresh" and "new" differs from one that is algorithmic, follows a formula, and simply confirms or documents what has already been said. Phaedrus, Robert Pirsig's alter ego in *Zen and the Art of Motorcycle Maintenance*, observes, for example, that if students in a typical college freshman composition course read an essay or a story, discuss it, and then write an imitative little essay, their writing often gets worse. He concludes that students in this situation seldom achieve anything original or fresh as a result of what he calls "calculated mimicry" and that "the real evil that [has] to be broken before real writing [can] be taught [is] imitation" (156). The decision to try to imitate in writing *things they have already*

heard is not, in his view, something children do naturally, so he suggests that such behavior might be the result of school-based literacy (172). The dilemma for students in contending with school-based literacy is to come up with a way to repeat the content or gist of an essay or story *in another way* (rather than to articulate their own ideas and experiences in meaningful ways) and to do it with the finesse of the professional writer who is their model. They become paralyzed in their effort to satisfy these perceived requirements. In her ground-breaking analysis of the writing processes of twelfth graders, Janet Emig found, in fact, that "the major kind of essay too many students have been taught to write in American schools is algorithmic, or so mechanical that a computer could readily be programmed to produce it: When a student is hurried or anxious, he simply reverts or regresses to the only program he knows, as if inserting a card into his brain" (53).

Phaedrus' experience in teaching writing suggests to him that the bent toward "calculated mimicry" becomes so sophisticated that students attempt to imitate teachers in ways that convince them that they are not being imitated, producing an effect that captures the fundamental nature or formal aspects of instruction while at the same time appearing to go beyond it. This effect tends to earn the highest grades while, at the same time, work that does not conform to teachers' expectations or experience may go unrewarded even if it is "fresh" or "original." He confesses to feeling compelled by the "academic system" to force students to conform to artificial forms and rules that he believes destroy their creativity. But, he also notes that when students do go along with these rules,

they are often, paradoxically, "condemned for their inability to be creative . . . " (187). The situation Phaedrus describes, however, is likely the result of misunderstanding on the part of both students and teachers.

In *Plato, Derrida, and Writing* Jasper Neel points out that, when students come to writing (an activity that requires them to reproduce the "same"), they bring with them a culture that has built itself "largely on the repression of writing." To illustrate what he means, Neel refers to Plato's *Phaedrus* where Plato (who writes) compelled Socrates (who never wrote) to criticize writing as an invention that can only "remind the reader of what he already knows," thus characterizing writing as poor imitation. Socrates further points out that while writing may be an entertaining pastime, the path to true knowledge lies in words "written on the soul of the hearer," wisdom preferable to any written text or speech that "aims merely at creating belief, without any instruction by question and answer." Thus, for Plato writing is "bad" because its truth is both unreliable and vulnerable to manipulation by the reader. The view of writing Plato expressed became authoritative in Western thought.

But, then, Neel also juxtaposes Plato's view of writing with Derrida's to show that while Plato works to close down the possibilities of language (and thus control its power), Derrida opens them up endlessly in the free play of signification that brings students to the brink of the abyss. In *Of Grammatology*, Derrida says, "Writing designates not so much a field of discovery or self-discovery as 'the place of unease,' of the regulated incoherence within conceptuality" (237-240). According to Derrida, writing reveals that no pure

perception exists, "Indeed, anything that 'becomes' perceived, anything that appears before consciousness has been 'written down,' has become a signifier that operates, just as any written signifier must . . . with an endless, breaching deferral" (132). So, as Neel suggests, from a Derridean perspective, in attempting to write students find themselves in a situation where "presence is only and always promised but never fulfilled" (145). Thus, students and their teachers are left, with two possibilities for approaching writing: They can regard it as an opportunity to engage in the endless search for truth, a solution Neel suggests leads teachers to avoid teaching writing as much as possible and to teach literature as a "dialectical journey toward truth." Or, they can limit their teaching of writing to a process of control, leading teachers to focus on writing as a skill and students to produce papers just convincing enough to garner a good grade.

Neel argues, and I agree, that both positions often lead students to produce writing that simply refuses to participate and that may present itself instead as a well-formed essay that says something like the following: "I am not writing. I hold no position. I have nothing to do with discovery, communication, or persuasion. I care nothing about truth. What I *am* is an essay. I announce my beginning, my parts, my ending, and the links between them. I announce myself as sentences correctly punctuated and words correctly spelled" (85). This strategy may seem most prudent for students who sense a contradictory state of affairs and, thus, may feel paralyzed and claim to have nothing to say.

Indeed, in "Contemporary Composition: The Major Pedagogical Theories," James Berlin argues that "the dismay students display about writing is . . . at least occasionally the result of teachers unconsciously offering contradictory advice about composing---guidance grounded in assumptions that simply do not square with each other" (*Cross-Talk* 235). They are often ambivalent about their own experience and expectations. Moreover, Berlin also contends that the major pedagogical theories of or approaches to writing (Neo-Aristotelian, Current-Traditional, Expressivist, and New Rhetoric) are based on rhetorical theories that differ not, as some have suggested, simply in the emphasis given to each of the components (writer, audience, reality, language), but in the very way these components "are conceived"---both separately and in relationship to each other (234). So, in teaching writing, teachers, in effect, "are tacitly teaching a version of reality and the student's place and mode of operation in it" (235). I argue further that, in the effort to control the operation of language and the meanings made of it, a conflict has arisen between the culture's demand for "normalizing" or "formalizing" *the* writing process as a means of documenting or representing knowledge that exists (on the order of Plato's path to ideal knowledge) and writing's generative or productive capacity, relying on *multiple processes of writing* (and knowing) and capable of producing alternate knowledge. As Bakhtin observed in *Toward a Philosophy of the Act*, "We have conjured up the ghost of objective culture, and now we do not know how to lay it to rest" (55-56).

In an essay titled "How I Teach Writing: How to Teach Writing? To Teach Writing?" appearing in the journal *Pedagogy*, Susan Miller says that in writing

classes she has developed recently, her students first rehearse taking every possible position toward topics and problems and, afterward, only then take on what she regards as the most difficult work of writing, "discovering how to position any one of these attitudes in the ongoing conversation that constitutes any discourse, but especially academic exchange" (481). Her students do "imitate" formal models in the categories of "personal," "public," and "academic" writing, with an understanding based on "[envisioning] their participation, but not from within a generic method of formal argumentation" (482). Rather, they practice what it means to "position a side," rather to "take one," analyzing professional models not for their content, but for ways of beginning, arranging, and editing for style in order to "imitate" them and in order to discern, imagine, and practice "how they themselves might write consequential texts" (483). This kind of imitation provides a solid scaffolding from which students can launch their own writing and engage in a composing process that recognizes writing as "a nexus of cultural negotiation where convention, exigency, and individual meet" (483).

A recent film may shed some further light on problem of distinguishing between heuristic and algorithmic writing. In *Finding Forrester* (2000), officials of an elite Manhatten prep school recruit Jamal Wallace, a bright, black student-athlete from the Bronx on the basis of his high standardized test scores and his ability to help the school to a basketball championship. At about the same time, Jamal begins to develop a relationship with William Forrester, a reclusive author who had won the Pulitzer Prize for a novel written years before but had published

little since. On a dare, Jamal sneaked into Forrester's apartment, and when he got caught, in his hurry to escape he left behind his backpack containing personal journals that reveal to Forrester an emerging ability to think and write in powerful ways. When Forrester fully critiques the writing in the journals and returns them to Jamal, it is the first time anyone has looked at his writing in this way. Although Jamal does not yet know Forrester's identity, he senses that this man can help him develop his writing, a desire he has kept hidden in order to "fit in" in his Bronx environment.

Although the film explores several dilemmas that arise in the course of this relationship, the one that is most germane to the argument I am making here is Forrester's approach to helping Jamal develop his writing and what happens as a result. To begin, Forrester rolls a piece of paper into an old typewriter and starts typing, and he tells Jamal to start typing, too, on an adjacent typewriter. Perplexed and mentally blocked, Jamal can only stare at the blank paper. When he confesses that he is thinking, Forrester tells him, "No thinking. That comes later. The first key to writing is to write, not think," and he pulls out an old essay that he had written some years before and suggests that Jamal begin by typing it, saying, "Sometimes the simple rhythm of typing gets us from page one to page two. When you begin to feel your own words, start typing them." Jamal begins typing and after a paragraph or so does begin to "feel his own words," and he uses them to extend beyond what Forrester has written. He spends a great deal of time developing and revising this piece, and later, when Forrester critiques it, he tells him, "You've taken something which was mine and made it yours."

Thus, Jamal begins to see "what it's like" to write something (the way Forrester has) and gains confidence in his ability to produce his own words. I argue that this rather unorthodox kind of imitation is not that kind of imitation that stifles students' writing; rather it is an act of co-creativity that recognizes the re-combinative nature of language in the making of meaning. Thus, it can act as a "scaffold," in Vygotsky's sense, to support students' early struggles to "feel their own words" and to find the confidence to use them. It is a way for students to understand that words and ideas are always being extended and reconstituted to make new meanings and create new understandings, making language and writing "performative," the servant, as Bakhtin says, "of participative thinking and performed acts" (*Toward* 31). Thus, Jamal's relationship with Forrester is dialogical and co-creative occurring in the Vygotskian "zone of proximal development" where Forrester uses his expert's knowledge of writing to support Jamal's budding ability. Such relationships help students see what they do know rather than showing them what they do not know.

Jamal's writing improves so significantly, however, that it poses a problem that has political implications and demonstrates the point Berlin makes about teachers teaching particular versions of reality and the place of students in it. At his new school English professor Robert Crawford simply cannot believe that a black kid from the Bronx recruited to play basketball ("For God's sake!") is capable of the kind of writing he has been producing, and he begins to press Jamal for an explanation. Frustrated by Crawford's implied assumptions about him, Jamal is not free to explain because he has promised Forrester that he will

keep their relationship secret. Noting Crawford's own failure as a writer, Forrester points out, "A lot of writers know the rules, but don't know how to write." And, he cautions that bitterly disappointed teachers like Crawford can be "very effective or very dangerous." Jamal, nevertheless, challenges Crawford during class on a point of English language usage. Instead of using the opportunity to discuss language and the function of words in context, to learn from his student, or to admit that he sometimes makes mistakes, the autocratic Crawford is determined to show Jamal what he does not know (cannot know, given his background and experience). In the exchange, Crawford is humiliated by Jamal's acute display of knowledge at his expense and shocked, I suspect, by the obvious failure of the assumptions he has held about him.

As Forrester points out, "What people are most afraid of is what they don't understand, so they turn to their assumptions." Crawford does not understand how a black kid from the Bronx can write the way Jamal does. Indeed, the film demonstrates that on Crawford's plane of reality at the elite Maillor-Callow School, black students from the Bronx may be able to jump, but they cannot write (at least not as well as Jamal does), so to right a world turned upside-down, he lodges a charge of plagiarism against Jamal---the only way to explain his writing prowess and take back control of the situation. As might be expected, Jamal is vindicated in the end, but not before he denies those who run Maillor-Callow the commodity they appear to value most from his scholarship, his skill on the basketball court. He deliberately misses two free throws that would have given the school its coveted basketball championship (and Jamal a chance to attend

the school the following year), determined instead to win on his own terms---a happy Hollywood ending that occurs with much less regularity in "real" life where education more often reproduces rather than changes relations of power.

Language as Power

"Every theory, as the word itself suggests," Pierre Bourdieu says, is a programme of perception" (*Language* 128). And, he further contends, "Even the most strictly constative scientific description is always open to the possibility of functioning in a prescriptive way, capable of contributing to its own verification by exercising a theory effect through which it helps to bring about that which it declares" (134). He argues in several of his works (*Outline of a theory of Practice*, *The Logic of Practice*, *Language as Symbolic Power, Distinction*) that language is inextricably linked to socio-cultural institutions, authorizing proper or normal usage that in turn "authors" what may be thought, Barnes' sense of "restricted cognition" or shared theory. Central to Bourdieu's argument is the notion that linguistic interactions express relations of power and that every linguistic interaction carries "traces" of the social structures it both articulates and reproduces. Schooling, of course, plays a primary role in carrying out these imperatives.

Bourdieu regards linguistic interactions as forms of practice that are the product of the relationship between the *habitus*, a set of acquired tendencies that predispose individuals to act in certain ways, and the conditions of various socially conditioned "markets" or "fields." Habitus reflects the social conditions under which it is acquired, and Bourdieu finds it literally inscribed on individuals'

bodies (the bodily *hexis*), visible in the ways they walk, stand, gesture, and so on. He claims that the habitus is acquired through a gradual process of inculcation beginning in early childhood, generating practices, perceptions, and attitudes implicitly regarded as "normal." It is also "durable," remaining "embodied" over the course of individuals' lives and, so, not easy for individuals to reflect upon or change.

"Linguistic habitus" is a subset of these tendencies acquired in learning to use language. It governs linguistic practices and expectations of how they will be valued in various fields or markets of social interaction. According to Bourdieu, part of the practical competence of language users is to know "how" and "when" and then to be able to produce highly valued expressions in particular contexts, a skill not evenly distributed in a culture. Different speakers, thus, obtain different quantities of "linguistic capital" (like other forms of capital that define individuals within a society) reflecting socially-situated differences of accent, usage, and vocabulary, among other similar features of language use, differences Bourdieu claims Saussure and, later, Chomsky ignored. Their tendency, he argues, was to think of the social nature of language *in the abstract*, how it operates ideally, rather than acknowledging the concrete social and political conditions of language and its use in specific contexts and, thus, failing to see language as a complex practice shaped by forms of power and its unequal distribution in societies.

Bourdieu further contends that positing a particular set of linguistic practices as the "normative model" of correct usage creates the "illusion" of the

existence of a common language and establishes it as "legitimate" (a circumstance Bakhtin characterizes as the "phenomenology of the lie"), thereby subordinating or eliminating other languages or dialects and, presumably the alternative knowledge they may frame. He claims,

> "In emphasizing the linguistically pertinent constants at the expense of the sociologically significant variations in order to construct that artefact which is the 'common' language, the linguist proceeds as if the 'capacity to speak,' which is virtually universal, could be identified with *the socially conditioned way of realizing this natural capacity* . . . [however,] the competence adequate to produce sentences that are likely to be understood may be quite inadequate to produce sentences that are likely to be *listened to* . . . Speakers lacking the legitimate competence are de facto excluded from the social domains in which this competence is required, or are condemned to silence" (*Language* 55).

The more linguistic capital individuals accumulate within such a system, the more they are able to exploit the system of differences to their advantage in order to acquire power and the "profit of distinction." Highly valued linguistic forms obtain the most profit because the capacity to produce them is reciprocally "restricted" by social conditions. Further, individuals' own assessments of "market conditions" (made under the influence of the habitus) and their anticipation of how their language is likely to be valued (or not) in certain contexts may also operate as internal constraints to silence them.

"In this sense," Bourdieu suggests, "like the sociology of culture, the sociology of language is logically inseparable from a sociology of education. . . . the educational market is strictly dominated by the linguistic products of the dominant class and tends to sanction pre-existing differences in capital" (62). He discusses the particular example of working class children (as well as children of

the poor) who, because they are often not successful under the constraints of school-based literacy, routinely exclude themselves from educational systems earlier than middle and upper class children. They assume that their place in established social hierarchies is "fixed." In so doing, they reveal an unintentional complicity with systems that work against their interests, a phenomenon Bourdieu refers to as "symbolic power." He contends that because symbolic power is invisible, individuals fail to recognize it, and thus, also fail to see such hierarchical relations of power as *arbitrary* constructions serving the interests of some individuals within a culture to the detriment of others. And, because tendencies "durably inculcated" by social conditions "engender aspirations and practices objectively compatible with those objective requirements, the most improbable practices are excluded, totally without examination, as *unthinkable* . . ." (*Outline* 77). From this perspective, it is all the more remarkable for the fictional Jamal to think he could succeed at Maillor-Callow as a writer more than as a basketball player. Without the scaffolding William Forrester provided, I argue that he might not have been able to do so.

Symbolic power is, thus, rooted in shared belief, authorizing certain forms of cognition in ways that compel those who benefit least from it to participate in *their* own domination. And, it sustains the domination without overt force by developing systems and institutions that differently enable individuals to obtain different kinds and amounts of capital and that "fix" the value given to different products and instill belief in that value at the same time (51). Again, he points to educational systems as examples of how this process works. A kind of

"violence," he suggests, is an integral feature of such systems whereby formally defined "qualifications" or criteria become the means for both creating and sustaining inequalities (24). Jamal's Maillor-Callow classmates, the "two-comma kids " as he refers to them, thus, acquire symbolic power by virtue of the fact that they are the million-dollar babies of the dominant class (with all of the support features that circumstance suggests), and, to further insure their expected future success, they will graduate from one of the best prep schools in Manhatten.

Because the relationship between qualifications individuals may acquire and the cultural capital they inherit from their social circumstances is invisible, the system, in effect, sustains as well as justifies the established order. Acts of self-exclusion, thus, make individuals complicit with conditions that make the attainment of certain goals unlikely in the first place---"a *double negation* which inclines them to make a virtue of necessity; that is, to refuse what is anyway refused and to love the inevitable" (77). It continually re-establishes a doxic relationship to the world---a limiting and self-limiting scheme of reality embedded in beliefs/perceptions that activates mental and social habits and practices that have been conditioned and that functions as the only available possibility.

This scheme is based on the relationship between a socially conditioned system of cognitive and motivating structures and socially structured situations that "bring into play a whole body of wisdom, sayings, commonplaces, ethical precepts ('that's not for the likes of us') and, at a deeper level, the unconscious principles of *ethos* which, being the product of a learning process dominated by a determinate type of objective regularities, determines 'reasonable' and

'unreasonable' conduct for every agent subjected to those regularities" that represents the "improbable" as "unthinkable" (77). Thus, as Bourdieu contends, although the habitus possesses an infinite capacity "to engender products---thoughts, perceptions, expressions, actions, [its] limits are set by the historically and socially situated conditions of its production, the conditioned and conditional freedom it secures is as remote from a creation of unpredictable novelty as it is from a simple mechanical reproduction of the initial conditionings" (95).

Mikhail Bakhtin reasons that any discursive practice is "ideological" if it represents itself as "nature" rather than "culture" by concealing or denying its socially constructed character, if it attempts to represent itself as the only possible symbolic system, and if it presents itself as the objective reflection of reality in order to fix meaning. For him, a dialogically agitated and tension-filled environment of "alien words," each with its own values and accents, exists between words and objects and accounts for the ability of words to continually generate new meanings: If words can continually generate new meanings (and by extension novel thought), they cannot then be said to correspond in a one-to-one relationship with the external world. Words can neither be autonomous nor self-contained; rather, they can only be tentative links in an infinite "chain of meaning," the human attempt to get closer to the truth.

No such link can have meaning outside the chain, however. Each is the result of specific historical and social conditions. But because language and cognition are so closely allied, a word's relationship to reality may, nevertheless, lead individuals to regard their perceptions as self-evident and common-sensical.

So, dominant forces in a culture (who want to maintain their position of power) have a vested interest in *systematizing* language. They continually attempt to centralize and fix meaning, universalize the sign, and institutionalize "theory effect," as Bourdieu has described it, helping "to bring about that which it declares," dividing the system of language from those speaking it and refusing the creativity of social interaction. In effect, I argue, they attempt to control the acquisition and flow of "creative capital" to insure that only sanctioned acts of creativity are, quite literally, recognized. These forces of domination are "centripetal," working to unify and normalize the verbal-ideological world against the "centrifugal" heteroglossic forces of the languages that are "alive and developing," open and full of creative potential.

The figure of a spiral may serve here as an apt metaphor for these simultaneous forces acting within language. A spiral winds around a center, but paradoxically, it appears to both approach and recede from that center at the same time. Thus, the system of language and the culture it inscribes, the "authoritative word," represents itself as "the absolute word" and the one logic of thought that insists on having the "last word," the one that cannot be contested.

However, as Bakhtin further reasons, words can never exhaust their internal dialogism, "Every word is directed toward an answer and cannot escape the profound influence of the answering word it anticipates" (280). Thus, an apparently closed system of absolute meanings can always be agitated and forced to "spiral out" to potential new meanings that are themselves tentative, conditional, and context-full. Dependence on context means that at any moment

there exists an unrepeatable set of circumstances ensuring that a word spoken (or written) can mean something it will mean in no other circumstances so that "when a member of a speaking collective comes upon a word, it is not the neutral word of language . . . [her] own thought finds the word already inhabited" (*Problems* 202), anticipating an answering word.

Bakhtin contends that only dialogically through the interplay of unmerged voices and consciousnesses, the cacophony of polyphony, can individuals become aware of the location of their own thought within an overdetermined system of ideological practices. Individuals steer between the "authoritative" word and their own internally persuasive word, marking the ideological process of their coming to consciousness. Thus, "[internally persuasive discourse] is gradually and slowly wrought of others' words that have been acknowledged and assimilated. . . " (346n) and, I would add, extended. Jamal and Forrester share a dialogical relationship, each man "learning" from the other. Jamal finds his own words through Forrester's, and Forrester, after years of self-imposed isolation, leans on Jamal to learn to live in the world again. The relationship I share with those who have guided me in this work, with the other resources I have used, and with potential audiences is another example. As I write these words, anticipation of response they may receive is shaping them and conditioning the very words I am choosing. "Forming itself in the atmosphere of the already spoken," as Bakhtin says, "the word is at the same time determined by that which has not yet been said but which is needed and in fact anticipated by the

answering word" (280). Thus, no one ever gets the last word because every word is always already someone else's requiring yet another to complete it.

Creativity and Rhetoric as Tactics of an Antidiscipline

Building upon the work of both Bourdieu and Bakhtin, Michel de Certeau in *The Practice of Everyday Life* investigated the ways dominated people in a culture struggle with institutional structures by appearing to "comply" with them while at the same time subverting them to their own desires. He argues that their ways of *using* the products imposed by the dominant order (television, urban development, education, goods, and services, for example) can constitute a secondary kind of cultural production, an "art of consumption" that is hidden because "the steadily increasing expansion of these systems no longer leaves 'consumers' any *place* in which they can indicate what they *make* or *do* with the products of these systems" (xii). They are like the indigenous Indians colonized by the Spanish whose "success" in imposing their culture on them, as de Certeau notes, was subverted from within,

> Submissive, and even consenting to their subjection, the Indians nevertheless *made of* the rituals, representations, and laws . . . something quite different from what their conquerors had in mind; they subverted them not by rejecting or altering them, but by using them with respect to ends and references foreign to the system they had no choice but to accept. They were other within the very colonization that outwardly assimilated them; their use of the dominant social order deflected its power, which they lacked the means to challenge; they escaped it without leaving it (xiii).

Santeria, an Afro-Caribbean religion many practice today, for example, developed in response to the introduction of Christianity to African slaves brought to South and Central America by the Portuguese, Spanish, and

French. It blends African religious practice with some features of Christianity. In an effort to insure the survival of at least a part of their own culture, slaves depicted various African deities as Roman Catholic saints, a syncretistic act meant to comply with the demands of conquerors while at the same time turning them to their own uses.

De Certeau sees a similar irony in our societies in the *creative* uses people make of the cultural systems "disseminated and imposed by the 'elites' producing the language"---that is, attempting to "normalize" the use of language and the practices it sanctions. The unequal distribution of power and resources, however, tends to "manage" or constrain creative activity according to the interests of the dominant class within society. So, only authorized creativity (and authorized language) can emerge from the ordering codes of institutions whose currency is "cultural" or "symbolic" capital rather than "human" capital.

Standard psychological theories, such as those I discussed earlier in this work (Chapter Two), fail to account for this effect and tend to reinforce the social belief in creativity as "magic" and/or as the special gift of select people. "Unauthorized" creativity is, nevertheless, pervasive and continuous, occurring within the very institutions that produce the "mechanisms of discipline" that shape culture; it is *tactical* in character; and even if it is not officially recognized, it can affect the culture in significant ways.

De Certeau carefully distinguishes *tactic* from *strategy*. He describes a "strategy" as the "calculus of force-relationships which becomes possible when a subject of will and power . . . can be isolated from an environment." A strategy,

then, is mastery over space in the manner of Foucault's notion of panoptic practice and finds its "proper" place in institutions constructed according to dominant political, economic, and scientific principles. A tactic, on the other hand, "insinuates itself into the other's place" in fragmentary ways without taking it over completely. Having no "proper" place of its own, a tactic is a form of resistance that, like rhetoric as an art of productive knowledge, uses the residual resources of the system in order to escape it.

From 1920 to1990, for example, the women of Gee's Bend, Alabama, made quilts for sale in a local co-op that managed their work employing the usual designs that people want to buy---"wedding ring," "log cabin," "wild geese." These quilts could be duplicated through patterns and executed in colors and sizes to a customer's order (much like factory products). However, as intricately beautiful as these quilts were, they pale in comparison to the quilts these women created for their own families from leftover scraps from the co-op and outgrown family clothing. The process of producing the patterned quilts for sale was "routine" and "reversible" in Polanyi's sense, and they stand in contrast to the family quilts where the patterns rival the masterpieces of modernist abstract art in their originality and powerful representation. For this reason, they have recently been displayed in New York's Whitney Museum of American Art and will continue to be displayed in similar venues across the country for the next two years.

The family quilts, precisely not produced for sale, did not have to be constructed in such powerful ways in order to be warm (functional). I argue that the "tactical" and improvisational process by which they were produced is

"heuristic" and "irreversible" in Polanyi's sense. That is, once the "knowledge" they represent is "out there," it cannot be "taken back." Like the figure-ground prints of M. C. Escher that appear to violate the laws of physics and reason while at the same time obeying them, once the figure and ground separate (once birds are distinguished from fish, for example), a new level of "seeing" is attained, and there is no going back to "see" them in the old way. The steps cannot be retraced in order to "discover" again what the prints (and the quilts) know; that knowledge can only be confirmed in a routine, logical way. I further argue that the impulse or process that produced them is the same impulse or process that produces new knowledge in *any* discipline although scientists and mathematicians often refuse this idea, and its logic is different from inductive and deductive logic which, by themselves, are incapable of leading to new knowledge.[1]

According to de Certeau, the power-less often employ tactics in ordinary everyday practices like walking, talking, reading, sewing, and cooking (as well as other "ways of operating") in order to create their own trajectories and maintain some sense of possibility in lives lived in spaces where they find themselves always under someone else's control, "As unrecognized producers, poets of their own acts, silent discoverers of their own paths in a jungle of functionalist rationality, consumers produce through their own signifying practices . . . like the 'wandering lines' ('ligne d'erre') drawn by the autistic children studied by F. Deligny (17): 'indirect' or 'errant' trajectories obeying their own logic" (xviii). As such, their tactics may be only as slightly rebellious as straying off an "official"

sidewalk to create a new path or reading, a time during which readers make their own interpretations "[slipping] into the author's place," as de Certeau says, "poaching" upon an authorized place in order to make it "habitable like a rented apartment" (xxi). He notes further that, like an imposed rhyme scheme for a poet, "The ruling order [unwittingly] serves as a support for innumerable productive activities, while at the same time blinding its proprietors to this creativity (like those 'bosses' who simply *can't* see what is being created within their own enterprises)" (xxii).

La perruque, for example, as de Certeau describes it, is a tactic workers employ whereby they produce their own work under the guise of work for his or her employer. Although workers may be accused of stealing, what they "steal" is time, using scrap materials and/or machinery for their own ends to do "work that is free, creative, and precisely not directed toward profit. . . .[they take] pleasure in finding a way to create gratuitous products whose sole purpose is to signify [their] own capabilities through [their] work" (25), like the family quilts created by the women of Gee's Bend. I am also indulging in *la perruque* as I compose and store this work on my office computer, bringing it up periodically to work on it and think about it during "breaks" in my work day.

The "dispersed, tactical, and makeshift creativity of groups or individuals" that originates in these ordinary activities of everyday life, according to de Certeau, "compose the *network* [my emphasis] of an antidiscipline" capable of disrupting the logic of the "proper" (xv). Contingent, dependent on time, like rhetoric of productive knowledge, tactics seize opportunities "on the wing,"

transforming institutionalized structures into spaces "borrowed [only] for a moment," and then disappearing---or at least appearing to do so. They are "clever tricks, knowing how to get away with things, 'hunter's cunning,' maneuvers, polymorphic simulations, joyful discoveries, poetic as well as warlike" that allow the weak to win fleeting victories over the strong whether the strength of powerful people or the violence of things or of an imposed order. . . . The weak must continually turn to their own ends forces alien to them" (xix).

I argue further that creativity (although it may not be "officially" recognized) frequently marks the work of anonymous anti-heroes constituting this network in every discipline who continuously trouble both theory and practice by surreptitiously appropriating their "official" places in order to use them as spaces for unauthorized purposes. Graffiti artists, for example, engage in a discourse of rebellion that makes statements defying the authority of the "proper" in its own place, carving out of it a temporary space for their work. The works of these artists have long been "recognized" by those who live their lives in the margins of culture not only for the "messages" they convey, but also as significant works of art. And, sometimes the force of that recognition spills over, creating disequilibrium, a movement that compels the dominant order to recognize such works as well, thus making an unexpected impact on the culture.

The students who occupied Tiananmen Square in Beijing, China, in 1989, forced a similar confrontation between the official culture sanctioned by the Communist Party and the student-led democracy movement. The re-creation of Tiananmen Square had been a strategy of the communist regime meant to

relocate the site of power, bringing it out from behind the walls of the Forbidden City to the large open area in front of the gates and inferring that power in the newly established order would be more democratic and "out in the open." In a decidedly tactical maneuver, students briefly co-opted this ceremonial place, the public stage for current operations of the communist regime and the ritual focus of Chinese history, turning it into a space for political street theater, performing a discourse meant to challenge the government to live up to the promises it had made and to displace official discourse. In *The Future of Ritual*, Richard Schechner suggests that the struggle was not just between the rigid ritual characteristic of usual events in Tiananmen Square and chaotic, rebellious performance of "street theatre;" at stake was a matter of who would "author" (and "authorize") the script of China's future and how it would "play" out. Thus, the interplay of elements of theatre and ritual (both of which offer entertainment as well as social critique, according to Schechner) deteriorated into a show of military force when the official Chinese culture felt sufficiently threatened. The students had, in his words, "acted up a carnival . . . a mood of fun, comradeship, irony, and subversion . . . patterns as different as can be imagined from the rigid rectangles and precise lines of official gatherings" (58). Although the resistance was fleeting and although the communist regime regained control of the square (at a significant cost of human life), it suffered considerable humiliation and loss of face at home and abroad by having its principles called into question in such a public way. The "knowledge" revealed was irreversible despite the official culture's move to repress it. The photograph of a single anonymous individual

standing in the way of a column of tanks advancing on the crowd symbolized the students' discourse to a watching world. Schechner observes, "To allow people to assemble in the streets is always to flirt with the possibility of improvisation. . . Revolutions in their incipient period are carnivalesque, proposing "a free space to satisfy desires . . . to enact social relations more freely" (47).

Like the trangressive activities associated with carnival as Bakhtin described it in *Rabelais and his World* (the inversion of rank and privilege, the exchanging of gender roles, the uncrowning of mock kings, the substitution of urine and excrement for the wine and host of communion, and so on), such an assembly has the capacity to agitate and push a cultural "system" toward dis-equilibrium until it can no longer induce in the collective body of the people "fear that developed in man during thousands of years; fear of the sacred, of prohibitions, of the past, of power" (94). In the rhetoric of carnival, language is not only performative, enacting a belief in a different kind of future, but also transgressive, violating the sacrosanct in order to liberate human consciousness and enable the imagination of new possibilities *among people acting together*, perhaps uncovering knowledge unavailable to the isolated mind. Performance's subject, Schechner says, is "transformation: the startling ability of human beings to create themselves, to change, to become---for worse or better ---what they ordinarily are not" (1). I argue that, just as the disorderly conduct of Rabelais' heroes upset the order of medieval theological and philosophical systems, the disorderly conduct of the Chinese students disturbed the equilibrium

of Chinese culture and challenged the official word of the communist regime, piercing its logical circle and allowing people to think other-wise.

Julia Kristeva theorized a relationship between challenging linguistic codes and challenging the law of the "proper." The ambivalence and laughter of the carnivalesque is capable of turning old hierarchies upside-down and generating new potentialities by adhering to a logic different from "the logic of codified discourse [that] fully comes into being only in the margins of recognized culture" ("Word" 37). However, she argues that *only* by adopting a "dream logic," a logic that blurs and exceeds established boundaries (A and not-A, black and white, and me and not-me), a logic of possibility rather than probability, can the carnivalesque operate. In fact, this 'transgression' of linguistic, logical and social codes within the carnivalesque "only exists and succeeds, of course, because it accepts another law" (41). Following both Kristeva and Bakhtin, I contend that creativity operates in this same way, bifurcating the containment of linguistic and social "law" imposed by dominant cultural forces and the logical circle drawn to contain it. It operates instead through a logic of "crooked awareness," that is, "seeing crookedly" (my terminology for Aristotle's notion of rhetoric as productive knowledge and Hofstadter's notion of the slippability of concepts), making the familiar strange, seeing through the eyes of others, and, thus, allowing for the possibility of divergent, rather than convergent, knowledge.

Because its logic is different, poetry is trangressive in this same sense just as Plato feared when he banned it from his republic. Heterogeneous forces of language, in Kristeva's view, make it a *productive* and *transgressive* structure

rather than one that is simply representative, ". . . thus poetic language making free with the language code; music, dancing, painting, reordering the psychic drives which have not been harnessed by the dominant symbolization systems . . . all seek out and make use of this heterogeneity and the ensuing fracture of a symbolic code which can no longer 'hold' its (speaking) subjects" ("Word" 30). She suggests that any binary logical system based on a "0 - 1" continuum is unable to account for the operation of poetic language. In poetic language "1" (as God, law, definition, or Aristotle's logic) is not a limit. Rather, poetic language is "dialogic," at least double. That is, it makes use of "a logic of *distance* and *relationship* between the different units of the sentence . . . indicating a *becoming* . . . a logic of *analogy* and *non-exclusive opposition* . . . [and a logic] of the 'transfinite', a concept borrowed from Georg Cantor[2], which . . . introduces a second principle of formation: a poetic sequence is a 'next-larger' (not causally deduced) to all preceding sequences of the Aristotelian chain," (42) breaking the containment of binary logic, "overreaching" its boundaries to gain a new level of understanding, another Copernican Revolution.

At the spring 2002 conference of the Michigan Council of Teachers of English at Michigan State University, the poetry of the Citywide Poets, black teenagers from the schools of Detroit, demonstrated the both the performative quality of language that actualizes what has been imagined, dreamed, or dared to be thought and the particularly transgressive/transformational nature of poetic language Kristeva theorizes. Syntactically complex, clever, powerful, both the written and the live performance---although no description of this experience

could hope to reproduce it---"felt like jazz," as the title of one of their publications suggests, with its irreverence and its variations on the themes, contradictions, and rhythms of their lives. The poems invited response beyond the proper but enthusiastic applause, and in its absence, the poets responded to one another in a subtle game of one-upsmanship. Like riffs, the brief repeated musical phrases characteristic of jazz, the themes of these poems (death and dying, escape, entrapment, the perils of their lives, and the heroic power of language, particularly poetry) reverberated among the poems shared that day, often surfacing first as the figure (the main feature of the poem) and then as background, alternating in the continuous improvisation of the experiences they explicate. Some examples follow:

Nicolas Cage is Detroit in leather pants
In the drivers seat of a 95 Ford
Windsor toting around performance poet people
whining over spilled metaphors on soft cottonelle
toilet paper.
Nicolas Cage is Detroit on 3rd Ave. dancing to music
of the homeless man with gray eyes & sings
in the choir at New Baptist. *His hands shake when he*
claps. Nicolas Cage is Detroit singing spirituals on the people
mover, at COBO hall, he's volunteering at the soup kitchens,
paving broken roads, stabbing fools
with their own knives while stitching the bullet wounds
in their heads.
Nicolas Cage is Detroit hopped up on frooties & asthma
medicine. He burns the pictures of the prophet in all black that
keep turning up plastered on lamp posts. *Can you see his eyes?*
Dark brown, almost black, full of emptiness.
Nicolas Cage is Detroit. In blue
spandex & an I love New York shirt
He protects me from demons flying about
the four corners of the clock's watch.
he ate the Mafia, he bought the bullets, he fired them into your
little handbook. He saved me. He mended my wounds, he
sang me the songs that kept them away, he saved me, he,
is, Detroit. He is my pair of leather pants.

~"Leather Pants," Naidra Walls

Crying aloud in green ink on Sunday mornings
His soul found him, nails dipped in pink polish.
It's summer, 1957 when quality camshafts
became the thing of now
with Pachabel Cannon playing softly on the radio,
he sipped special reserve.
He had bare feet with veins bulging, electric blue toenails to
match the exterior paint of his '55 Chevrolet with the
tricked out doors and chrome plated wheels.
He was sexy. He was on fire speeding down highway 75
ignoring flashing lights and screaming children.
We can all see him, smell the Crown Royal on his breath
and we are screaming, crying for his life
lost in a smokeless hell
wondering whether or not he'll be able to crawl from
beneath the shards of glass
twisted metal and melting plastic. We are screaming at you
to help us drag the bright blue paint from the flames and breathe
for it. With our lips we press together and blow our life into his.
We don't though, we watch, our eyes flooding with thick navy
blood, and with our heads lowered, we march away singing in unison
with the shackles scraping our ankles, Singing our prayer
to the fallen prophet.

~"Poet's Teardrops," Naidra Walls

He's a choir boy
And she's the town's loose woman
Who has just walked
Down the aisle for altar call
Her mouth moves gospel
He feels as if his shirt is dirty
Soaked with the wetness
Was this sweat?
The flower in her hair begged him
This whiteness stuck
In brown-burned-straight naps
He could go on
For centuries in books
Lost in her ample bosom
Her hand movements
Almost touch him
There are stitches on her arms
Stretch marks
This beautiful lamenting rain gloried woman
Transfixed him
Brought him
To poetry.

~"Lamenting for Langston Hughes," Melissa Draughn

(-after Tyree Guyton's "Caged Brain")

Detroit is a city
of caged brains
of fogged eyes
that refuse to see
through a wall
where we want to go:
of singing mouths
that want to cry out
to the world about
the talents inside
our bodies, bodies
like wild horses
trying to be broken
of muscled arms
that want to wrap up entire libraries,
museums, & history.

Detroit is a city
of skilled fingers
that manipulate
our imaginations
like we're puppets
of rooted legs
that refuse to uproot
so we can climb
over hot iron walls
of hearts that pump
oxygen to those brains
so that if they get
big enough, maybe,
just maybe, we can
bust out of that cage
& grow to become
beautiful flowers.

~"Jailbreak," Quincy Vanderbilt

The effect is often stream of consciousness like Joyce's *Ulysses*, thoughts first started, then interrupted, then re-started, repeated, and teased out. The words are not new, but the poets' playfulness (the "Cage" that protects and fires "bullets" into "little handbooks" in one poem but "cages" (contains) brains and talent in another or "Pachabel Cannon" [sic]---the contrapuntal music of Pachelbel's Canon and the big gun---"playing softly"), and they suggest a different logic, like the unlabeled metaphors of schizophrenics. The phrasing and pace (and the lack of punctuation and the line breaks in the written form) create

increasingly complex levels of meaning, seemingly unrehearsed, as if created on the spot, through the vocal stress-alternating-with-release in the syncopated rhythms of sermon-poems meant to startle and provoke: Your plane of reality is not my plane of reality---welcome to my world. Naidra Walls, one of the poets, told me later, "I write poetry because it's more free and unrestricting than other types of writing. But, performing poetry is what gives me the rush. It's the meat of the business. It's all about being open to the world and watching them digest you." Tapping the performative nature of language in this instance, I argue, allows her to take off her mask, or, as Diane Brunner has suggested, to exist for a few moments in the liminal space "between the masks" she feels compelled to wear. For the audience, it is also about acquiescing to the pre-performance disclaimer of intent to offend, hearing the sermon-like emphasis and cadence of the words, and, then, seeing eyes flash and coy smiles after for the work they have done. Amen.

Indeed, Kristeva found both children and artists to be among the most transgressive individuals. Performance artists Coco Fusco and Guillermo Gomez Pena, for example, presented themselves in a "cage performance" on the streets of several major cities in Europe and the United States as "Two Undiscovered Amerindians." Fusco claims in *English Is Broken Here* that the intent of their "reverse ethnography" was to create a satirical discourse on Western notions of the exotic, primitive other by "performing" the identity of the other for primarily white audiences (37) and to study the responses their work invoked. She and Pena created their performance within the context of the

historical Western practice of putting on public display "aboriginal samples" of people from Africa, Asia, and the Americas for aesthetic, scientific, and entertainment purposes as "proof" of the natural superiority" of European civilization. They wanted to call these ideas into question, forcing contradictory knowledge into the open, and unsettle the white spectator as a "global consumer" of exotic cultures (53).

But, ironically, many people in their audience "misinterpreted" what they saw. They believed, instead, that Fusco and Pena actually *were* the exotic others they were "performing." Some people tried to feed them bananas while others castigated those "in charge" of the exhibit for treating them inhumanely. One of the "zoo guards" for the Chicago exhibit who knew intellectually that Fusco and Pena were just "performing" was so disturbed by his own cognitive dissonance that he had to leave the performance. In my recent correspondence with her, Coco Fusco expressed the hope that her work could, nevertheless, be considered rhetorical in the tactical, "productive" sense, for its transformation of institutional structures, appropriating them momentarily for "unauthorized" purposes, and then disappearing---blocking to some extent promoters' expectations of "profit." But, as she wryly observed, "In the current political climate it is difficult to find positive interpretations of the kind of cultural processes I engage in."[3]

De Certeau suggests, however, that what is important is "the transformation, and the invention of still unsuspected mechanisms that will allow us to multiply the transformations" (152). Through such practices, people can

manipulate and defy structuring codes and cultural institutions and, over time, displace them. Thomas Kuhn tells us in *The Copernican Revolution* that science itself is not immune to this process of transformation: It took more than a hundred and fifty years after his death for Gallileo's quiet assertion that, nevertheless, the earth moves to transform Western thought. Over that time, under the domination of the Catholic Church the common belief in an earth-centered universe was "transformed from an essential sign of sanity to an index, first, of inflexible conservatism, then of excessive parochialism, and finally of complete fanaticism" (227).

Plato had worried about rhetoric's tactical ability to play with and upon language, "turning" it in order to manipulate the divinely established order to alternative ends. Perhaps he was right to worry. Tropes, de Certeau notes, allow ordinary language to recover the "ruses, displacements, ellipses, etc., that scientific reason has attempted to eliminate from operational discourses in order to constitute 'proper' meanings" (24). For him, rhetoric provides models for the various types of tactics, maneuvers "related to the ways of changing (seducing, persuading, making use of) the will of another," and he particularly recognizes the sophists for the way "their theories inscribe tactics in a long tradition of reflection on the relationships between reason and particular actions and situations" (xx). Because the power of the dominant culture operates strategically, it is thus limited to its "proper" place and, so, is open to subversion through tactics that can occur anywhere.

Thus, I see language operating on a "continuum of productivity," so to speak, from simple flexibility of expression to complex combinative syntactical meanings to the rehearsal of constructed/performative stances to transgressive/transformational awareness (crooked awareness) that emerges as unprecedented knowledge. And, I argue that rhetoric, conceived as a "tactic" capable of breaking the hegemonic enclosure and as an art of productive knowledge---a rhetoric of creativity, can be the vehicle for moving language from one end of this operational continuum to the other, changing "the [ideologic] ritual of performance [that simply 'mouths' the 'party line']," as Diane Brunner suggests, "into a transformative ritual," (114), critique that is social, because it depends for its development on responses from others, and generative or creative---capable of producing knowledge that is novel and sustainable. The strategically deployed rhetoric of dominant cultural forces, on the other hand, attempts to arrest the natural fluidity of language as it operates on this continuum in order to control it and the meanings made of it.

Rhetoric as a Strategy of Power Relations

Rhetoric deployed in the service of reproducing a culture's regimes of truth, however, reflects a militaristic attitude that seeks to secure the "proper" and, thus, privilege space over time (containment over contingency). As such, I argue, rhetoric can be/has been "mis-placed" and stripped of its generative potential, forced to fit another logic and fulfill another purpose. Atwill notes that rhetoric's long-standing concern in the humanist tradition has been "the production of a particular 'kind' of subject," a properly disciplined "cultural hero"

deliberately separated from evolving social and political contexts in order to protect "specific lines of power and efface social and historical difference" (*Rhetoric* 40). Thus, rhetoric itself can be/has been "turned" from the productive (potentially creative but also potentially threatening) work of in(ter)vention and made-over, molded into the disciplinary tool of dominating forces interested in defending the "proper," ensuring the production of a normative subject who conforms to their values and expectations, represents a certain reality, and maintains the system through a law that inscribes itself on bodies.

Indeed, Antonio Gramsci makes the rather convincing argument in his *Prison Notebooks* that "willing consent" is every bit as important as any economic or political constraint in securing the lines of power over the long term. Hegemony depends on the ability of dominant elite to make its ideology appear to coincide with the interests of dominated individuals by exploiting the commonalities between them, thus making them think their interests are being served and garnering their consent. And, as Gramsci also noted, "Every relationship of 'hegemony' is an educational relationship" (350).

Plato, of course, used rhetoric in this way. In *Phaedrus* and *Gorgias* he distinguished his rhetoric as "true" and contrary to the "false" rhetoric practiced by his rivals the sophists. For him, true rhetoric was the use of the power of discourse to attain ideal truth, not merely to persuade others of "probable " truth in the manner of the sophists. Indeed, true rhetoric in Plato's view allowed the "virtuous" rhetor only two legitimate tasks: He could use "any available means" to impart truth he had already attained to an ignorant audience as long as he

kept their best interests in mind (a justifiable deception of others "for their own good"). Or, he could "work out" the truth by talking the matter through with his student, thereby correcting the student's (and presumably his own) mistaken beliefs.

The sophists, on the other hand, regarded truth as tentative, as a function of *kairos*, of time and of social and historical contexts, and as accessible *only* through discourse. For them, human perception was the only available source of knowledge in any discipline, and language the vehicle for articulating it. Indeed, some scholars consider sophistic thought crucial to the paradigm shift associated with the "Greek Enlightenment." However, Plato's denunciation of the rhetoric practiced by the sophists as "false" and as merely manipulative, according to Bizzell and Herzberg, became "authoritative" in Western thought and was a likely factor in the loss of sophistic texts (22).

The conflict between Plato and the sophists Protagoras and Isocrates, according to Atwill, may be traced to the differences in their views of knowledge, the knowing subject, and the attainment of excellence (virtue) (19). Despite what some have understood, Protagoras' claim that "man is the measure of all things" may not be the origin of the humanism's focus on man as the ultimate standard of knowledge and value. Atwill's research suggests that Protagoras was referring, instead, to man-in-particular and a subjectivity contingent on a great number of specific characteristics, including the nature of human perception itself (18). The sophists maintained that knowledge is limited by the physical and perceptual abilities of humans and by their particular social and historical

circumstances. Thus, a human being's perception of the world is *necessarily* human---absolute truth in any form is, in their view, simply unavailable. Bizzell and Herzberg note that *Dissoi Logoi*, a short, anonymously written sophistic treatise on cultural relativism, "does *not* argue that there is no difference in meaning between *good* and *bad*, *seemly* and *disgraceful*, *just* and *unjust*, or other value pairs. Rather, [it agues that] the assignment of a particular value depends on social and historical circumstances. . . [The sophists] saw the possibilities of communities uniting on grounds not of a common humanity but a common recognition that humanity could express itself in many different ways, not subject to ranking by an absolute standard that could mark some human expressions or customs for annihilation" (23).

According to Susan Jarratt, the sophists may be credited with the invention of teaching as a profession (82). They linked education with philosophy by preparing men, not for the contemplative life Plato claimed to be necessary for the attainment of ideal knowledge, but for an active life in the affairs of the polis, learning to make wise decisions recognizing *the limits of what is possible for humans to know*, thus reflecting the more "democratic" nature of the society they imagined. Isocrates, for example, claimed to teach philosophy, but, unlike Plato, he never claimed to impart wisdom to his students. He maintained that only knowledge that took advantage of kairos, "overreaching" and "seizing the advantage" to enable acts of social and political intervention, was worthy of the title "philosophy." Bizzell and Herzberg suggest that, in effect, his argument was

that "the public business won't wait while the philosopher pursues his abstruse studies" (25).

Additionally, the instruction of Isocrates and his predecessor Protagoras did not link knowledge to excellence as Plato did. As Atwill notes, they regarded knowledge as neither "neutral" nor tied to a specific political or ethical ideal, and although it was concerned with the production of character, its *ethos* was "not guided by a single model of the subject or judged by a single model of virtue" (21). Isocrates purposefully aimed to teach the rhetoric of productive knowledge, honing the ability to "overreach" received knowledge and "seize the advantage." He wanted his students to learn to see in a particular moment of discourse "a point of indeterminacy, [where they could] overreach a boundary, and intervene in systems of classification and standards of value. . . " (45). Atwill further notes, "The lines of order that Plato's arête secures are the very boundaries that productive knowledge will transgress" (44).

By the first century B. C. E., the Romans had completed a "standardization" of education based on rhetoric for the children of privileged classes, but they also embraced the productive nature of rhetoric as *imaginatio*, stressing the importance of rhetorical invention. And, as a repository for the classical sense of creative "potential," invention remained one of five canons of rhetoric until the Renaissance. But, in the turbulent and dangerous times in which he lived, as a matter of prudence, Quintilian began to question rhetoric's status as a productive art, preferring survival instead, and to focus on character, developing "the good man" and training him "to speak well." Increasingly,

rhetoric was regarded as a "neutral tool" for the management of ethics, politics, and philosophy, and teachers instructed students in its proper or normal use. The handbook tradition arose from Quintilian's efforts and continues to this day (6). Rhetoric as an art of productive knowledge disappeared or, at the very least, went underground. And, in the medieval period that followed, classical learning as it had evolved from Quintilian's educational project came to suit the mission of scholasticism, and rhetoric was thus bound in service to Christian revelation where adherence to the Law is of primary importance.

Renaissance humanism, however, was primarily responsible for transforming rhetoric "from an art of social and political intervention into the curricular content of a humanist education . . . acceptable," Atwill suggests, "only if one dismisses . . . alternative rhetorical traditions and overlooks the context in which Quintilian's art was formulated" (32). Emphasizing the quality of individual performance instead, humanism viewed individuals as making history by developing their particular talents within the constraints of their historical contexts. Thus, as Bizzell and Herzberg observe, "individuality" was "both historically constituted and an act of will. . . . [a] notion of self as performance [giving] an aesthetic cast to humanist scholarship that attracted the interest of aristocrats " (468).

At the same time, rhetoric began to struggle with deductive logic for recognition as the standard of intellectual inquiry. Peter Ramus attacked the classical rhetoric of Aristotle, Cicero, and Quintilian and stripped it entirely of its creative potential by identifying the canons of invention and arrangement as the

rightful concerns of logic, separating them from rhetoric, and limiting rhetoric to the consideration of style and delivery alone. With the rise of modern science, however, inductive reason would supplant deductive logic as the new standard of inquiry and overturn the Ramist doctrines. All five classical canons were then restored to rhetoric in the seventeenth and eighteenth centuries, but it never fully recovered its generative epistemological sense. Enlightenment rhetorics such as Blair's *Lectures on Rhetoric and Belles Lettres* further conflated rhetoric with matters of style and delivery taking as their interest literary criticism, ornate stylistic features, and matters of correctness and taste.

Against this artistic/literary sense of rhetoric, the emerging positivistic discourse of science shifted the generation of knowledge from rhetorical invention to empirical research. Science rejected rhetoric as being concerned with mere appearances and with artistic genres in which truth was "not crucial." Under assault from the Royal Society of London (established in 1660), rhetoric's "legitimate" concern became the transparent articulation of "proven" truth written down in a plain, unambiguous style, more demonstrative than productive. Thus, I suggest, the creative, generative role of rhetoric in intellectual processes was allowed to atrophy. Rhetoric was devalued as a "mere skill," a method no longer valued in intellectual inquiry, meant only to convey the truth of hypotheses already proven, like the practice mentioned earlier of having mathematics students work out proofs that have already been solved. The shaping power of language apparent in both popular and academic discourse was condemned, and the role of rhetor once vital in the political life of the polis was reduced to that

of a "technician" whose only concerns were clarity and correctness. The pedagogical assumption that rhetoric is a mere skill and that disputes its creative power continues today in many institutions.

Various scholars have linked the earlier disappearance of rhetoric as an art of productive knowledge and the rejection of classical rhetoric in general to the rise of modern science, the emergence of the middle class and market economies, and the appearance of new rhetorical theories like empiricism in science and notions of taste and aesthetics in philosophy. Under these conditions, resistance to the idea of rhetoric as a generative political, social, and communal act grew, reinforced by the doubt that humans could be persuaded to act through interaction with each other. This doubt grew more powerful as the humanistic and bourgeois subjectivity of the autonomous, rational individual who knows itself through reason became entrenched in Western thought.

Bizzell and Herzberg suggest that the rise of science made culture-bound knowledge seem "second rate." Individuals "performed" by conforming to social conventions, but these performances were merely "a façade that would allow one to live comfortably or even profitably in a society in which conventions happened to hold current. . . . Behind the façade of one's performance, one remained alone with one's private thoughts, to test them for the presence of any knowledge that could be scientifically established . . . [a] moral climate [that] produced public men who were consummate stylists but whose intellectual life seemed quite divorced from their political functions" (478). Education, thus, became a matter of teaching "general rules" within the humanist curriculum where a rhetoric of

productive knowledge could have little currency. Atwill notes that the "depoliticization" of rhetoric made it a far more effective instrument of social, political, and economic control, "As long as the rhetorical paideia [of humanistic education] promised to produce the normative subject, that subject would both embody and reproduce existing lines of power. More philosophical traditions would produce normative bodies of knowledge and normative descriptions of social realities equally effective at naturalizing contingent social relations and universalizing specific class values" (41). But, as Bourdieu argues it is precisely at this point that "politics begins." The perceived stability of the social order depends on its imposition of "schemes of classification," underlying a fundamental adherence to the established order. But, I argue that a rhetoric of productive knowledge---of creativity---is capable of intervening in the systems of classification and standards of value protected by various socio-cultural institutions, bringing them into "objective crisis," and leading to "the denunciation of this tacit contract of adherence to the established order which defines the original doxa; in other words, political subversion presupposes cognitive subversion, a conversion of the vision of the world" (*Language* 127-128).

Notes

[1] Writing about scientific method in *Induction and Intuition*, Peter Medawar contends that it is unlikely that mathematical theorems are "discovered" merely by using deductive reasoning. Most of them required something like "intuition" or "inspiration" and were only later justified by logical derivation in "a rite of discovery and a ritual of proof" (42). Medawar suggests, however, that mathematicians and scientists have been loathe to admit that they rely on such vague processes, "Deductivism in mathematical literature and inductivism in scientific papers are simply the postures we choose to be seen in when the curtain goes up and the public sees us. The theatrical illusion is shattered if we ask what goes on behind the scenes. In real life discovery and justification are almost always different processes . . . (26).

[2] In set theory, Cantor determined that if a set is infinite, the corresponding cardinal number cannot be one of the finite cardinal numbers, so he called it a "transfinite" (or infinite) cardinal number. He also showed that infinity plus any division of it is also infinity and that infinity also comes in an endless number of different levels. He found, for example, that the same number of points existed in an inch as in an infinite line---from each point in infinite space a line could be drawn to a unique point on a one-inch line.

[3] As "difficult" as Fusco finds the current political climate, however, the political climate in schools for teachers and students has always been challenging. Schooling is the instrument the dominant culture uses to insure

maintenance of the status quo and reproduce its relations of power, so conformity and the production of "proper" language is valued over participative or performative language that may challenge cherished notions. As such, then, critical projects of schooling that attempt to tap the performative nature of language and transgress the boundaries of conventional behavior and language use are possible, but not without significant risk and sacrifice. Deviating from expected "normal" school behavior may be regarded as a threat to power and may be punished.

CHAPTER FOUR

The Difference Difference Makes

I was of three minds,
Like a tree
In which there are three blackbirds.

The act of classification or applying concepts, as Chapter Three suggested, is an important and pervasive feature of human thought, one that has proved crucial to human survival and evolution. The neocortex of the brain constantly "filters" and "chunks" the unwieldy amounts of sense data individuals take in, making it manageable. So, as Gestalt psychologists have demonstrated, individuals see "circles" where the figures are actually incomplete. Instead of laboriously processing each point on a figure separately, the human brain notes the presence of certain features and "perceives" a circle. Thus, by being able to quickly "decode" and classify phenomena (mentally completing the circle) humans are able to function more efficiently in ways that serve their survival and development. So, it is an important function. But, completing such "circles" does not occur without the risk of error. As Barnes argued (Chapter Three), concepts are *learned* from authoritative sources within particular physical and social environments, but the validity of a particular concept is only partial at best because, both naturally and as a result of conditioning (enculturation and formal education), perception filters out certain aspects and channels the rest into a single conceptual category. Language itself is an example *par excellence* of classification---words and the categories to which they refer simplify and

generalize the complex amounts of perceptual data human beings take in and tend to make them see the categories as actual bodies of knowledge rather than as the human constructions they are.

In the preface to *The Order of Things*, Michel Foucault refers to a particular passage from Jorge Luis Borges. He claims to cite from "a certain Chinese encyclopaedia" a taxonomy of animals from a different system of thought that contrasts with his own, one that upsets and threatens to collapse the "age-old distinction between the Same and the Other," and that, by stark comparison, also suggests a limitation of Western thought (xv). The Chinese encyclopaedia carefully distinguishes between the "real" animals ("stray dogs," "suckling pigs," and "those that from a long way off look like flies") and those that are imaginary. But what most amuses Foucault is the juxtaposition and the "narrowness" of distance separating the real animals from the imaginary ones, marked only by a simple alphabetical series linking each category to the others, *in the same system of classification*. A series can, by definition, proliferate, and proliferation is always a threat to established order. Nevertheless, this startling juxtaposition suggests to him "we shall never succeed in defining a stable relation of contained to container between each of them and that which includes them all" (xvii). This notion is repeated in mathematical set theory where defining one subset of a given set implicitly defines another subset of the same set (the part that is not included in the first subset), exhibiting a similar instability.

Georg Cantor defined sets (including words) as collections or distinct objects of human cognition. Each member of Cantor's "crisp" sets either belongs

to a particular set or does not. Sets may be represented as circles that form spheres of reference (like a Venn diagram) or, as Cantor suggested, universes of discourse contained in particular contexts and separated from what does not belong. But Cantor's theory of crisp sets is troubled by paradoxes, like "the paradox of the heap," called "sorites" (McNeill and Freiberger 26). This paradox asks when a heap of sand is no longer a "heap." After removing one grain? Two? Ten? Cantor's theory resolves this problem by simply deciding on an arbitrary dividing point---a certain number of grains make a heap, and that number minus one is not a heap. For some thinkers, the vagueness of the boundaries of the heap (and other similar paradoxes) make the assumptions of Cantor's sets problematic and call into question the "crisp" applications of all concepts because they involve making *contingent* and *revisable* judgments that similarities outweigh differences, a conviction that arises not from the concepts themselves, but from operation of perception and cognition in human agents.

Foucault contends that the primary codes in every culture that govern "its language, its schemas of perception, its exchanges, its techniques, its values, the hierarchy of its practices" establish for every person the proper order of things (*The Order* xx). But, between these "ordering codes" and philosophical interpretations of them, he searches for the "pure experience" of order itself, "the inner law, the hidden network" that can connect a wide range of contradictory taxonomies, observations, and interpretations. He detects that this underlying invisible network establishes the conditions for the possibility of alternative knowledge capable of calling all the codes of language, perception, practice, and

theory into question. In the "non-space of language," Foucault writes, unstated *relationships* create a network of irreducible alterity, and "in the blank spaces of this grid . . . order manifests itself in depth as though already there, waiting in silence for the moment of its expression" (xx).

In *Metamagical Themas*, Douglas Hofstadter explores the internal structure of concepts and how they form multiple "conceptual molecules" by breaking down into sub-concepts, bonding with other concepts and sub-concepts, and "spinning out" variations. Thus, concepts, in his view, have a way of "slipping into" one another---any concept, "any static, frozen perception," is surrounded by an "'implicit sphere of hypothetical variations'" (247). Moreover, differing contexts provide different angles from which to consider concepts and, thus, contribute an element of the unexpected to the potential for variation. Hofstadter contends that the "crux of creativity resides in the ability to manufacture variations on a theme" (249), in proliferation. And, he deflects the protest that such variations are somehow trivial compared to the "invention of the theme itself" and that the cognitive acts of "geniuses" like Einstein and others transcend those of ordinary individuals by pointing out that every idea in the history of science has been built upon thousands of related ideas, thus echoing Bateson's contention that it is the network that "thinks"---the network that surfaces creativity through human agents.

Hofstadter points out, for example, that Einstein did not begin with the idea of simultaneity being non-absolute, but when he had to confront that possibility, he was willing to let it "slip." This "fluidity of mind," guided by certainty about

other concepts he considered "unslippable," gave rise to the theory of special relativity, shattering previous conceptions of how the universe works. Hofstadter argues that creativity resulting in "new" knowledge depends on this "*nondeliberate yet nonaccidental slippage [that] permeates our mental processes, and is the very crux of fluid thought. . . .* spinning out variations is what comes naturally to the human mind" (259) and what codification, formalization, and the in-scribed order of things Foucault examines wants to rule out . The fluidity of mind Hofstadter believes is a key feature of creativity is driven by what I have come to refer to as "crooked awareness" (a term borrowed from a poetry lesson developed by my colleague Tonya Perry). I define "crooked awareness" as the readiness to see what appears to be the "same" differently, to see "sideways," to rethink old codes, and to map from one set of entities to another (think metaphorically). For Hofstadter, that ideas both extend and create other ideas, that mapping from one to another is possible, and that compelling mappings are perceptible to beings willing to look for them is enough to insure that it will happen as the following narrative demonstrates.

Proving Fermat's Last Theorem

Seventeenth century mathematician Pierre de Fermat wrote a note in the margin of one of his books stating that he had discovered "a truly marvelous proof" for a particular proposition---a variation on the Pythagorean theorem. Most people above the age of ten are familiar with this theorem: In a right-angled triangle the square on the hypotenuse is equal to the sum of the squares on the other two sides. Simon Singh notes in *Fermat's Enigma*, however, that Fermat

claimed to have a proof that the same equation could not be solved for any exponent larger than two, but he left no record of it, only the tantalizing note in the margin of one of his books that the margin was too small to contain it. Thus, the theorem became known as Fermat's Last Theorem and passed into mathematical lore.

As a young boy in the mid twentieth century, Andrew Wiles came upon this problem in a book from his local library. It captured his imagination because it was familiar, because it looked simple, even to a ten-year-old, and because lack of a proof for this theorem had become somewhat of a *cause celebre* in the field of mathematics. Singh reports that, in his early teens, Wiles had first tried to attack the problem as Fermat might have done so, figuring that he probably knew as much math as Fermat would have known at that time. Then, he tried again later in college using methods developed during the eighteenth and nineteenth centuries, but to no avail. When he entered graduate school, he was forced to temporarily abandon this challenge because, as he observed, "The problem with working on Fermat was that you could spend years getting nowhere. It's fine to work on any problem, so long as it generates interesting mathematics along the way---even if you don't solve it at the end of the day. The definition of a good mathematical problem is the mathematics it generates rather than the problem itself" (Singh 163). Serious mathematicians rarely risk wasting effort on a problem that, beyond the challenge, is unlikely to lead to meaningful mathematics. So, in 1975, in the interest of doing "meaningful research" in the field of mathematics, he temporarily gave up on Fermat, and his advisor helped

him find a new challenge in the study of elliptic curves, a prophetic move, it turns out.

Wiles started thinking about Fermat again eleven years later when he learned through casual conversation that a colleague had proved a link between the Taniyama-Shimura conjecture (an idea respected in the field of mathematics at that time but unproven) and Fermat's Theorem. At that moment, he knew that to prove Fermat, he had to prove this conjecture, and because proving Taniyama-Shimura constituted a modern mathematics problem, he considered it worthy of his attention.

Taniyama had discovered a relationship between modular forms and elliptic equations, a finding that led to a revolution in number theory. (Further evidence for this relationship had been compiled by Shimura after Taniyama's tragic suicide, but it, nevertheless, had remained unproven.) Singh notes that this finding was profound because it suggested to Wiles an important relationship between objects that were distant from each other in the field of mathematics. As Singh points out, it hinted at an underlying "truth" that promised to enrich both studies just as scientists originally studied electricity and magnetism as two completely separate phenomena until they realized that electric currents generated magnetic fields and that magnetic fields could generate electricity in wires near them. These findings led to the creation of dynamos and electric motors and also to the understanding that light itself results from the harmonic oscillation of magnetic and electric fields (184). In the same way, Taniyama-Shimura suggested a potential connection between two completely different

mathematical worlds, allowing them to "speak" to one another, in the words of mathematician Barry Mazur, allowing "simple intuitions in the modular world [to] translate into deep truths in the elliptic world, and conversely" (191).

Although this task required seven years, Wiles did develop the proof and claimed the prize attached to it in 1994. The details of it are far beyond my mathematical understanding and the scope of this paper, but there are several points that can be drawn from Wiles' achievement that supports the view of creativity I have been developing. First, difference makes a difference---re-seeing concepts with "crooked awareness," with a readiness to make the familiar strange and cast off usual ways of thinking, has the potential for surfacing alternate knowledge and other possible worlds. Wiles tried to find patterns and tried to do calculations that explained a little piece here and there and that fit in with his previous conceptual understandings of some part of mathematics that would clarify the problem, but ultimately he had to make an intuitive heuristic leap onto new ground and, as Polanyi suggested, "risk talking complete nonsense." In Wiles' own words reported in an online interview with *Nova*, "Sometimes [the work] would involve . . . looking it up in a book to see how it's done there. Sometimes it was a question of modifying things a bit, doing a little extra calculation. And, sometimes I realized that nothing that had ever been done before was any use at all. Then I just had to find something completely new" (4). In other words, Wiles had to be "crookedly" aware---to see sideways, and to be willing to let some concepts "slip" even as he was certain about others.

Second, although Wiles made a significant contribution and worked relentlessly and mostly in isolation to develop the proof, the completed proof was actually the work of many people over 350 years as Singh's history of the problem suggests. Helen G. Grundman, associate professor of mathematics at Bryn Mawr College, in an "Ask the Experts" segment of *Scientific American*, put it this way, "The proof we now know required the development of an entire field of mathematics that was unknown in Fermat's time. The theorem itself is very easy to state and so may seem deceptively simple; [while] you do not need to know a lot of mathematics to understand the problem . . . you do need to know a lot of mathematics in order to solve it. It is still an open question whether there may be a proof of Fermat's Last Theorem that involves only mathematics and methods that were known in Fermat's time" (1). So, although Wiles was the agent who pulled together all of the work that had been done, his success in developing the proof depended heavily on that previous work---the network of connections among the best mathematical minds spanning three centuries: Euler, Gauss, Germain, Lame, Lebesque, Fourier, Kummer, Dedekind, Taniyama, Shimura, Weil, Mazur, Frey, Ribet---to name just a few. Nevertheless, I also wonder if constructing the proof would have taken seven years had Wiles not chosen to work in isolation although he makes it clear that secrecy about such matters is common practice in the field of mathematics.

Third, according to Singh, in unifying the elliptic and modular world through the Taniyama-Shimura conjecture, Wiles provided mathematics with a shortcut to many other proofs as well, "Classic unsolved elliptical problems dating

all the way back to the ancient Greeks could now be reexamined using all the available modular tools and techniques" (282). His proof also stimulated others to prove other conjectures bridging other areas of mathematical thought. In effect, it transformed mathematics. Ken Ribet, the mathematician who made the initial breakthrough on Taniyama-Shimura, said it this way, "There's an important psychological repercussion which is that people now are able to forge ahead on other problems that they were too timid to work on before. The landscape is different . . . " (282). The opening Wiles' proof provided made new dialogues possible, changed the context, and created potential for further developments---encouraging the willingness to let concepts "slip" and a readiness to re-see things "crookedly" and to produce variations on other themes.

Potential as Hofstadter speaks of it is also central to Bakhtin's thinking. Bakhtin believed that the "potential" for going beyond or extending given knowledge makes life "unfinalizable." Through the co-creativity and innovation that occurs in the encounter with otherness and difference, something results that would not have occurred otherwise, "Something that never existed before, something absolutely new and unrepeatable . . . [that] always has some relation to value (the true, the good, the beautiful, and so forth) . . . is always created out of something given (language, an observed phenomenon of reality, an experienced feeling, the speaking subject himself, something finalized in his own world, and so forth). What is given is completely transformed in what is created" (*Speech* 119-120). Consisting of at least three components---two people and the *relationship* between them, the dialogical encounter, thus, implies a different

logic---not either/or, but both/and---interaction and relational thinking that results not in the "containment" of meaning in synthesis as in Hegel's dialectic, but in something "different," a whole that is more than the sum of its parts and accounts for the relationships among them as well. The idea of word as a "two-sided act" suggests that, over time, one conceptual viewpoint (or word) leads to another in an infinite chain. In response to each other, the environment in which they find themselves, and the resulting interrelational framework that develops, people engage in constantly changing interactions and relationships that make possible the creation of new complexities (as well as new identities). What Bakhtin refers to as the "surplus of humanness," inherent in the interrelationship between and among people dialogically engaged with each other, makes these complexities "real". The very nature of creativity, then, would seem to be dialogical. As Bakhtin wrote in *Problems of Dostoevsky's Poetics*, "[Nothing] conclusive has yet taken place in the world, the ultimate word of the world and about the world has not yet been spoken, the world is open and free, everything is still in the future and will always be in the future" (166).

Matisse Picasso

This notion was aptly demonstrated for me in a recent exhibition at the Museum of Modern Art (alternate location in Queens, New York) of the works of Henri Matisse shown in apposition with those of Pablo Picasso. Although Matisse was several years older than Picasso, they were friends and rivals for almost fifty years. The two men were reportedly very different: Matisse was aloof and proper while Picasso was difficult and led a rather unconventional life.

According to the exhibit program, as a consequence, art historians have more often considered their work in opposition rather than in apposition. Matisse is regarded as a colorist---the eye is drawn to the vibrant colors and color combinations he used, and he created harmonious compositions. Picasso, on the other hand, is regarded as more conceptual in expression, interested more in form than color and more in tension than harmony.

Although I have long appreciated the works of both artists, until I experienced this exhibit I did not understand how Matisse's work informed and influenced Picasso's and vice versa. I am, of course, aware that artists in certain periods, schools, and movements of art exhibit similar characteristics, and they likely shared ideas and influenced each other, but beyond this understanding I have imagined that artists, like mathematicians, work alone, producing work that is "original" in the sense of the meaning it projects---that is, in the sense of what it knows---and in the way that meaning is represented. Seeing the works of Matisse and Picasso together, one responding and relating to the other while yet producing "something else," further reinforced for me the dialogic nature of meaning and what human beings can know if they are willing to attend closely and with care to an-other. As Picasso said of Matisse, "No one has ever looked at Matisse's painting more carefully than I; and no one has looked at mine more carefully than he" (*Matisse Picasso*).

One of my favorite pairings of paintings by the two artists is Matisse's *Goldfish and Palette* beside Picasso's *Harlequin*. Both paintings are Cubist conceptions and include in their content representations of the artists as artists,

the palette, easel, and painting in the context of the studio. Matisse's painting is composed of large, bold geometric shapes in blue, black, and shaded white with, as its focal point, a carefully rendered still life---an orange with two goldfish in a bowl---a painting within the painting in process on the easel. Matisse's thumb is clearly visible in the pallet in the painting and a faint outline of his arm extends back from it into space outside the painting itself where I imagine him standing.

Picasso's painting is also composed of simple large geometric shapes in black, brown, gray, and shades of tan. The exhibit program notes that a year earlier Picasso had begun to add flat pieces of newspaper and other materials to his compositions, giving them a sculptural dimension in the manner of a collage. The only detailed part of the painting is the red and green geometry of the costumed harlequin figure whose black, one-eyed head is flattened like an Egyptian hieroglyph and barely visible against the black background. It has no other distinguishing feature save what looks like a waggling tongue. It occupies the space on the easel, another painting within a painting, and appears to be holding onto the palette, a rather interesting self-referential statement: Who is the "trickster" here? I had the distinct feeling that Picasso himself was also there in the painting dressed all in black (I have seen many photographs of him dressed this way), but invisible against the black background perhaps engaged in a tug-of-war over the palette with the harlequin figure he was in the process of painting.

According to the program, Matisse saw Picasso's *Harlequin* in the gallery of Leonce Rosenberg, thought that it was one of the best works he had produced and playfully observed, as Rosenberg reported, "that 'his goldfish' had led

Picasso to the harlequin" (*Matisse Picasso*). But, as the program also noted, Matisse's *Goldfish and Palette* itself had already been influenced by Picasso. Its flat geometric shapes mimicked the collage elements Picasso had begun to add to his paintings a year earlier. Matisse's decision to make use of this effect also foreshadowed the "cut out" works he would produce near the end of his life.

The paintings I have described above are just one example of the apparent rapport that existed between the works of these artists. Matisse is reported to have said to Picasso, "We must talk to each other as much as we can. When one of us dies, there will be some things that the other will never be able to talk of with anyone else" (Matisse Picasso). Indeed, when Matisse died in 1954, leaving Picasso his odalisques (paintings of Arab dancers), within two months he began to paint a series of paintings depicting them in a harem---variations on a painting by Delacroix both artists had admired. The exhibit program notes that late in their lives they had often spoken of how the "great chain" of artists continued when another artist kept a predecessor alive in his work. Clearly, in Bakhtin's sense of the two-sided act, each artist responded to and extended the work of the other to produce something new in his own work without, nevertheless, sacrificing his own point of view. Bakhtin wrote of this act of "aesthetic love" or "aesthetic seeing" in *Toward a Philosophy of the Act*,

> In my emotional-volitional consciousness the other is in his *own* place, insofar as I love him as *another*, and not as myself. The other's love of me sounds emotionally in an entirely different way to me . . . than the same love of me sounds to him, and it obligates him and me to entirely different things (46). . . . The valued manifoldness of Being as human . . . can present itself only to a loving contemplation. Only love is capable of holding and making fast all this multiformity and diversity, without losing and dissipating

> it. . . . Only un-self-interested love . . . only lovingly interested attention, is capable of generating a sufficiently intent power to encompass and retain the concrete manifoldness of Being, without impoverishing and schematizing it (64).

Aesthetic love, then, is born of respect for another and entails taking the time to attend closely to the concrete particulars of his or her life, that is, "knowing" or re-cognizing others, although and because they are different, as always already a part of oneself and thereby avoiding fixing or finalizing (and essentializing) them in the "difference between"---in the binary opposition of self/other and closing down the potential for something new. In his examination of trust in dialogical communities, John Shotter cites Vico and John Dewey in support of Bakhtin to suggest that rather than acting "out of" any individual plans of their own, people so engaged act "into" each other and their surroundings, and they act because they sense the activity being "called out" of them or "required of them" by the relational nature of the circumstance, as if it were itself a "living agency" (3). Bakhtin calls this obligation to engage with the other "answerability" (*Toward* 42), and he further says, "The most important acts constituting self-consciousness are determined by a relationship toward another consciousness (toward a *thou*). . . . Not that which takes place within, but that which takes place on the *boundary* between one's own and someone else's consciousness, on the *threshold*. . . . The very being of man (both external and internal) is the *deepest communion*. *To be* means to communicate . . . *To be* means to be for another, and through the other, for oneself" (*Problems* 287). But, because humans have been conditioned to simplify and categorize (to essentialize), to apply concepts and reduce people and ideas to a fixed order, they tend to close down the operation

of their own curiosity, the opportunity to "know" difference and to allow it to make a difference in the surfacing of new knowledge,

> Monologism, at its extreme, denies the existence outside itself of another consciousness with equal rights and equal responsibilities, another I with equal rights (thou) . . . another person remains wholly and merely an object of consciousness, not another consciousness. No response is expected from it that could change anything in the world of my consciousness. . . . Monologue manages without the other, and therefore to some degree materializes all reality. . . . It closes down the represented world and represented persons (*The Dialogical* 293).

Normative conceptual systems produce a kind of truth (Foucault calls such systems "regimes of truth"), that separates the "normal" from the "different" and encourages the fear and repression of difference. Further, it discourages healthy curiosity about people who are perceived as different and about what they know from their experience and location in culture. Laura Mulvey, whom Diane Brunner cites in *Between the Masks*, distinguishes between *curiosity* as the transgressive desire to know difference and *fetishism* which she says is "born out of the refusal to see, a refusal to know, and a refusal to accept . . . difference" (10). The threat of difference, of being forced to consider alternatives to the established order imposed by the "deep regimes of discourse and practice" Foucault examined, challenges social, economic, and political identities and can be profoundly disturbing because it opens up space for countless other alternatives and disrupts the relative comfort humans find in "certain" knowledge.

The Play of Difference

Jacques Derrida's neologism *differance* suggests that the principle of difference underlies language and the way language constructs the "real" world

and the proper place of individuals in it by determining what can be perceived (or not) and what counts as meaning (or not). Thus, as the discussion in chapter three suggests, language is at the center of the interplay between individuals and the word, the law that says, "Give me your body, and I will give you meaning and a word in my discourse" (de Certeau 139). Language, as de Certeau suggests, wants to continually transform individuals into units of meaning "eager to have or be a name," eager to "tell the code" (148-149). Much of the bizarre behavior of individuals common today and reported in other eras as well may be the result of the desire of people to escape being objects of generalization, to escape the lie embedded in the subject-object structure of language where each word is a separate conceptual category that forces people, in the very act of perceiving, to separate themselves, to draw distinctions between themselves and others (us/them), and to "measure up." As Heisenberg noted, however, the very act of measuring (or measuring up) always alters that which is measured.

Derrida saw within the familiar philosophical oppositions "a violent hierarchy," an act of perception in which one of the two terms wants to control the other. Derrida believed that it is "not enough simply to neutralize" them. To deconstruct is to "fight violence with violence" by first reversing the presiding hierarchy and then displacing it, overthrowing it, as Gayatri Spivak writes in the translator's preface to *Of Grammatology*, "in order to reconstitute what is already inscribed" in another way (lxxvi). I think here again of Escher's figure-ground drawings where birds and fish merge and alternately become background for each other. In order to see the birds we must, it seems, block out the fish and

privilege the birds and vice versa. Douglas Hofstadter suggested that, indeed, the humans might be conditioned in a way that makes it difficult for them to hold concepts in mind that appear to cancel each other out. What they may come to perceive, however, if they look long enough, is a "shifting" (tessellation) back and forth continuously between birds and fish that privileges neither. Once a hierarchy is overturned neither perception is "in control." Each may be continually subject to displacement and to an "irreducible alterity" that cannot be essentialized.

Gayatri Spivak situates deconstruction in the context of Derrida's suggestion that what motivates it may actually be the "desire to reappropriate [a] text" and "to show [a] text what it 'does not know,'" and to forget that, beneath any re-reading of a text (itself subject to "erasure"), an earlier, imperfectly erased reading/interpretation (a trace) remains. At the same time, by opening up a text indefinitely, "placing it in the abyss" ("*mettre en abime*"), permitting it to fall freely, deconstruction tries to help us find "a way out of the closure of knowledge" by disrupting the notion that it is bounded and "out there." In Spivak's words, our desire is aroused as we become "intoxicated with the prospect of never hitting bottom . . . [as] a further deconstruction deconstructs deconstruction" (lxxvii). Paradoxically, then, humans search for a stable "foundation" in the order of the same while simultaneously desiring difference---the free fall of the abyss. Desire is, thus, the tool for any deconstruction, Spivak says, because it is "itself a deconstructive . . . structure that forever differs from (we only desire what is not ourselves) and defers (desire is never fulfilled) the text of ourselves . . . We must

do a thing and its opposite, and indeed we [desire] to do both, and so on indefinitely. . . [It is] a perpetually self-deconstructing movement that is inhabited by *differance*" (lxxviii) and, according to Derrida, it is an inevitable operation of all acts of language.

Differance, thus, is always unstable and beyond control in a way that is at once tantalizing and maddening (which may explain why people sometimes react with such rage to the vague uneasiness it produces). It is always one step removed, just beyond the fingertips. It is meaning never found in the presence of a single term, but always only in *relationship* to terms not present, and it finds the absent term always *in play*, even if it is never mentioned. The absent term is still necessary within the system to establish meaning. Thus, meaning is always deferred or put off because it relies on what is absent. It always points to another, not present but, nevertheless, needed to establish its claim. As Derrida puts it, "one is only the other deferred, the one differing from other." Although he argues that neither the word *speech* nor the word *writing* is adequate to describe the play of difference (in that the play of difference inhabits both), in his work writing becomes a metaphor for *differance*, an attempt to represent without "naming" what in language has no name (*differance* is not an "official" word in the French lexicon). In describing *differance* as writing, he is able to reveal the systematic nature of language that relies on other elements within itself to represent itself while, at the same time, it "differs from" what it is supposed to represent and continually "defers" its meaning. As he wrote, "In the play of representation . . . there are things like reflecting pools and images and infinite

references from one to the other, but no longer a source, or spring." Writing, in Derrida's view, is unconstrained, play-full, and a powerful metaphor for his argument that all concepts are subject to deconstruction, leaving the writer of this work wary of answering questions that ask "what is . . . " and accounting for the "slipperiness" of an answer to the question of what creativity is.

Thought as Difference

Why, indeed, does it happen that human thought channels a set of independent elements into a single concept? At the beginning of the *Discourse on Method*, Descartes wrote, "Good sense is the most evenly distributed thing in the world . . . the power of judging well and of distinguishing the true from the false (which is, properly speaking, what people call 'common sense' or 'reason,' is naturally equal in all men . . . " (1). Like Plato before him, Descartes believed that thought was naturally inclined toward ideal truth. Writing in *Difference and Repetition,* Gilles Deleuze refers to this notion as the "image of thought," defining "what it means to be and to think" (130). He believes that thought itself is covered over by "the image of thought" constituted by claims that distort both the origin and operation of representation,

> The 'sameness' of the Platonic Idea which serves as the model and is guaranteed by the Good gives way to the identity of the originary concept grounded in the thinking subject. The thinking subject brings to the concept its subjective concomitants: memory, recognition, and self-consciousness. . . . When difference is subordinated by the thinking subject to the identity of the concept . . . difference in thought disappears. . . . what disappears is that difference that thinking makes in thought, that genitality of thinking, that profound fracture of the I . . . (265-266).

He suggests that the idea that "what everybody knows, and no one can deny" (common knowledge) has, thus, become the image of thought, tacitly taking the form of representation and lodging in its discourse. In his view, this traditional Western philosophical image has "crushed" thought itself under an image of "the Same and Similar in representation" and betrayed "what it means to think" by failing to deal with the true nature of difference and repetition (167). Deleuze's aim is to open up the possibility of difference being accepted as its own concept rather than being understood in reference to the same which makes difference a "difference between," a negative "not-this." Instead, he argues that difference "unfolds" within the Idea as pure horizontal movement (rather than vertical or hierarchical) and creates a dynamic time and space that corresponds to the Idea (23). Difference, in other words, forces thought to see "sideways" or, as Bakhtin put it, "spread out on a plane . . . as an eternal harmony of unmerged voices or their unceasing and irreconcilable quarrel" (*Problems* 30). Similarly, Deleuze sees the horizontal movement of thought-as-difference as a single substance expressed in multiple ways---"a single voice [raising] the clamour of being" (*Difference* 35).

Following Nietzsche, Deleuze suggests that thought, then, does not relate to truth at all, but is a *creative act* (*Nietzsche* xiv), an act of force on other forces, while truth, rather than the natural disposition Plato and Descartes supposed, is a part of the regimes of force and a matter of value to be assessed and judged (*Difference* 108). As he says, "Beneath the platitude of the negative lies the world of 'disparateness'" (267). Deleuze argues, then, that difference is not

reducible to a difference between concepts---it is "one of a kind" existing between the conservative order of representation Foucault examines in *The Order of Things*---the consensus---what everybody knows---and "creative disorder or inspired chaos that can only ever coincide with a historical moment but never be confused with it" (54). Thus, he repudiates Hegel's dialectic, insisting that, "History progresses not by negation . . . but by deciding problems and affirming differences" (268).

Deleuze argues for thought "sensed" as an encounter with otherness, as "something in the world [that] forces us to think" (139). This sensed encounter "perplexes" and forces us to pose a problem . . . to enter into a "discordant play" (140). He points out that in the *Republic* Plato defined this encounter ("that which is essentially encountered") as "the object of a 'contradictory perception'" (141), and as such, this "recognition" measures and limits otherness by subsuming it under something else and interrupting its "becoming." Deleuze argues that the source of this "illusion" is the process of dialectical interrogation where the questioner tries to lead the respondent into contradiction, "which within the framework of a community, dismembers problems and questions, and reconstitutes them in accordance with the propositions of the common empirical consciousness---in other words, according to the probable truths of a simple *doxa* [that which is assumed and for which there is no apparent alternative] (157)---Bakhtin described this effect as a misuse of Socratic dialogue, a catechism for training neophytes (Chapter One). Deleuze points out that Aristotle, "in the grip of the philosophical illusion . . . made the truth of problems

depend on the common places---in other words, upon the logical possibility of finding a solution . . . " (160), the common-sense convergence of thought. He suggests that we are thus led to believe that "thinking," the path to truth, begins with the search for solutions to problems rather than for the problems (differences) themselves. But, in his view, learning refigured could be "the true transcendental structure which [could unite] difference to difference, dissimilarity to dissimilarity, *without mediating between them* [my emphasis]. . . " (167). Learning occurring in relationship to an encounter with otherness and difference thus brings into play the necessity for thought to improvise---to create.

Trained Incapacities

That human thought has been conditioned (some might say "high-jacked") by the traditional Western philosophical image of thought and, thus, rendered unable to think difference (that is, to allow difference as a pure concept to unfold within it as Deleuze suggests) may amount to what Kenneth Burke refers to in *Permanence and Change* as a "trained incapacity," a phrase he borrows from Thorstein Veblen that is remarkably similar to Bourdieu's notion of *habitus*. Veblen suggested that past education (training and enculturation) can guide humans to respond to information (difference) in a way that defeats their interests---"whereby one's very abilities can function as blindnesses" (14). That is, "orientations", those implicit judgments that govern the application of concepts, can go wrong. "Seeing," Burke points out, "is also a way of not seeing . . . " (70). Perhaps, it may be too simplistic or too obvious, but, following Bourdieu, Deleuze, and now Burke, one could argue that just as thought and

"seeing " has been disabled, so has creativity. It has become a "trained incapacity."

If, as Burke contends, the purpose of acts of language is to produce "practical simplifications" of "reality" that are further acted upon in daily practices and embodied in socio-cultural structures, actively determining the selection and organization of sense data that constitutes them, then, "Not only does the nature of our terms effect the nature of our observations . . . many of the 'observations' are but implications of the particular terminology in terms of which the observations are made---so that much of what we presume to be observations about the world may be no more than the spinning out of possibilities implicit in our particular choice of terms" (52). He suggests further that the impulse to extend the application of concepts to "different" experiences may result in extensions or linguistic inventions not sanctioned by "common sense," forcing an "over-simplication" that reflects the interest of a particular regime of truth and the reduction of thought to a common denominator. I argue, and I think Burke would agree, that creativity (productive knowledge) surfaces not in the convergence with common sense, but "complexly" in intersections among diverse knowledges where it is possible to "see" things from wholly different perspectives and, thus, co-construct and extend theory by taking what has been learned in one and applying it in the other---that is, by making it "more complex" rather than simplifying. Burke's thought, thus, prefigures Thomas Kuhn's observations in *The Structure of Scientific Revolutions* (as well as Deleuze's notion of how thought itself has been conditioned) that methods and patterns of inquiry often

shape both the questions that get asked, that is, the problems that are posed, and, in advance, their answers, thus controlling what is allowed to surface. As Polanyi has suggested (Chapter One), "seeing" or finding a problem worth considering in any discipline may constitute irreversible heuristic act that surfaces creativity (*Personal* 120).

Indeed, Gregory Bateson in *Steps to an Ecology of Mind* argues that much of what humans believe and their knowledge of how the world works is mistaken. Nevertheless, they get along just fine, carrying on traditional ways of being and doing in the face of change, until the inadequacy of their perception pushes them to the brink of destruction. Because it powerfully influences thinking, language perpetuates the basic errors in their habits of mind making them difficult to overturn and reinforcing them through the mechanism of total feedback until the error of thought become so automatic that people fail to question them. And, failing to question them, because they do not recognize them as errors, can lead to more serious errors in action, especially in an increasingly technological world. Moreover, the more complex the world becomes, the more people want to turn over their thinking (and, thus, their responsibility) to scientists, politicians, priests, and philosophers.

To overcome the limitations of "trained incapacity," Burke proposes that we make our way of "not seeing" into a way of "seeing" using "perspective by incongruity," a practice derived from Nietzche's use of metaphor (his constant juxtaposition of incongruous words) enabling "a kind of vision got by seeing one order in terms of another" (*Counter-Statement* 216) thereby creating counter-

intuitive possibilities, a process similar to the constant reordering of categories occurring in Shakespeare's metaphors (*Permanence* 136). Burke points out that, although Nietzsche's work demonstrated this technique stylistically, Bergson came nearest to making incongruity a system by deliberately cultivating contradictory concepts (125). Bergson's system works by creating a "deliberate misfit" and by "exemplifying relationships between objects which our customary rational vocabulary has ignored" (119), going so far as to combine ostensibly antithetical words like "space-time" or "mind-body" that have evolved into common use in the postmodern era.

Deliberate training for perspective by incongruity as way of seeing something in terms of another or one order in terms of another could begin to refigure thought as "attention to difference" and generate ecological thinking. In thinking ecologically, attention to difference marks the point of departure as it operates "with and upon differences" and consists of the "pathways along which differences and transforms of differences shall be transmitted" (Bateson 482). The whole, then, is much more than the sum of its parts---it is the sums of its parts *plus the relational framework* that connects them.

What keeps us from adopting different thought processes like perspective by incongruity, as Burke has suggested, or ecological thinking is that we are so conditioned to *waiting to see* what the universe tells us instead of questioning it that "we have psychotically made the corresponding readjustment of assuming that the universe itself will abide by our rules of discussion and give us revelations in a cogent matter. Our notion of causality as a succession of pushes

from behind is thus a disguised way of insisting that experience abide by the conventions of a good argument" (*Permanence*131) or by its theoretical inscription.

In *Toward a Philosophy of the Act*, Bakhtin writes against this tendency and attacks the disciplines for splitting themselves from life (and from each other), inhabiting the abstract realm of theory that *generalizes* a whole by isolating the elements of life into discrete categories. They treat the categories they have created as if they are concrete and material entities, encouraging individuals to turn over their thinking (and thus their answerability) to them. However, Bakhtin argues that in this process they omit the most important aspect of human activity---its "eventness"---which is always distinct and unable to be reduced to an essence. Thus, as Bakhtin writes, "The validity of theoretical positing . . . does not go beyond the bounds of the theoretical world, and it possesses sense and validity only within that world . . ." (10). . . . Once-occurrent uniqueness or singularity [thus] cannot be thought of, it can only be participatively experienced or lived through. " (13). It is in acting that individuals may transcend knowledge that is given, "from the performed act (and not from the theoretical transcription of it) is there a way out into meaningful content" (12). Bakhtin's tentative, meaningful architectonic whole (the sum of its parts plus the *relationships* among them) defies generalization and reduction and operates and finds validation only "in the contraposition of I and the other" (74).

Burke, Bateson, and Bakhtin suggest, and I agree, that we need to disrupt the habitual logic of what it currently means to think and know, by engaging

dialogically, adopting the logic of perspective by incongruity, and thinking ecologically so that "a given classification [can] cut across other classifications on the bias, and each new mode of classification [can] produce new alignments incongruous with the alignments flowing from other modes of classification" (135). Just as Polanyi and Hofstadter note, Burke observes that such classifications can be heuristic, suggesting new conceptual groupings, "hence new discoveries" (136). But, if the operation of creativity has been closed down by the image of thought and by its theoretical inscription, then it needs to be re-opened by attending to the multitude of possibilities marked by difference. Unfortunately, difference, like creativity, is both revered and feared because it consciously disrupts the established boundaries with which people become comfortable.

The Effect of Schooling

For over thirty years, I have harbored the nagging suspicion that the conventional practices of schooling inhibit the natural curiosity and creativity of children who then grow into adults whose ability to think productively, instead of re-productively, and thus whose creativity, has been incapacitated. They come to believe that creativity is an innate characteristic of only the few "greats" who have been identified as such (without noticing that this identification is made only after the fact) and doubt their own capacity. Generative research has shown, for example, that fourth-graders can, on average, routinely come up with six times more uses for a common object than high school seniors or adults. Citing the work of Osborn (1963), Parnes (1967), and Parnes, Noller, and Biondi (1977), E.

Paul Torrance in *The Search for Satori and Creativity* points out that, indeed, the more alternatives people produce and consider, the more viable and "original" the alternatives will be, and the more successful people will be in both seeing and solving problems (24 and 45). Moreover, Torrance argues that "no creative thinking . . . is likely to occur until there is a recognition or awareness of a problem [a recognition of difference] . . . some definition of [it] and commitment to deal with it" (13). However, in school students' perceived need to conform to pre-existing conceptions and rules meant to "manage" their behavior more often than not constrains their ability to consider multiple alternatives, keeps them oriented toward producing solutions rather than posing problems, and trains their incapacity for developing different ways of "seeing."

Education in a system of discipline is the means by which socio-cultural orders reproduce themselves and make function the particular deep discourse structures of the regimes of truth Foucault examines. Its purpose is to insure conformity with the recognized standard. Thus, making individuals "both objects and instruments of the exercise of power" (*Discipline* 170), locations from which to manage moral instruction, classification, division, and hierarchization. As power becomes more invisible and functional, those on whom it is exercised become more strongly "individualized." Rewarding as well as punishing, it works on those who violate its dictates from the "inside," by uniting the forces of the "normal" against the "abnormal." Thus, schooling "selects and sorts" and measures and groups students as a way of "institutionalizing" norms, separating the "normal" from the "deviant" and "disciplining the body;" it functions like a

machine to produce power which in turn produces willing bodies, "reality," "domains of objects," and "rituals of truth" (194), and it intervenes and regulates severely any departure from the norm. Any reward or punishment then occurs within its parameters, thus strictly controlling the possibility of creative agency. Aldous Huxley wondered aloud in a 1963 interview why "so many boys and girls leave school with blunted perceptions and a closed mind?" No wonder. And, Einstein speaking of his own formal education noted, "This coercion had such a deterring effect that, after I had passed the final examination, I found consideration of any scientific problems distasteful to me for an entire year . . . It is in fact nothing short of a miracle that the modern methods of instruction have not entirely strangled the holy curiosity of inquiry. . . ." And, more recently, in *Jefferson's Children*, Leon Botstein observed, "If curiosity is a natural state in children, then as they grow up and go on to school they lose it. We seem to depress the love of learning or fail to nurture it . . . " (41).

Foucault has pointed out that each society has "a regime of truth, its 'general politics' of truth: that is, the types of discourse which it accepts and *makes function as true* [my emphasis]; the mechanisms and instances which enable one to distinguish true and false statements, the means by which each is sanctioned; the techniques and procedures accorded value in the acquisition of truth; the status of those who are charged with saying what counts as true" (*Power* 131). So, dominant forces are more interested in the convergence of that truth in "common" knowledge than in encouraging "un-common" knowledge and training the incapacity for divergent knowledge and creative agency. Jacob

Bronowski noted in *The Ascent of Man* that the convergence of knowledge in certainty ends inquiry, and it disguises the need for problematizing the tensions among differing views of the same phenomena. In its desire for certainty, our society discourages playful curiosity and experimentation and insists on the existence of THE right answer, denying the importance of risk-taking, chance, and play in learning. Indeed, Torrance observes, "Children sometimes so accustomed to the one correct or best answer are reluctant to think of other possibilities or even build a pool of ideas for later evaluation" (48).

The difference between the performance of the fourth graders and the high school seniors I mentioned earlier may turn out to be that "play" (the kind of thinking it generates) becomes in the later years of schooling a "ritualized" performance, a way of doing things without really paying attention so prescribed that it short-circuits thinking and makes it mind-less. Thus, for example, writing which begins among young children as a "playful" performance of sketching and drafting not answerable to conventional rules becomes an algorithmic, ritualized performance almost entirely dependent on rules and on students' being able to recall what has already been said or written rather than seeing anew for themselves.

Play and Rituals of Performance

In her interpretation of Victor Turner's insistence that play breaks with ritualized behavior, Diane Brunner suggests, however, that play that "can disrupt the ritualized performances of schooling as well as the essentialized methodologies that tend to guide 'common sense' understandings of identity"

(*Between* 113) and, thus, "can change the ritual of performance into transformative ritual" (114) creating new habits of mind. If, then, we think of the standardized version of the writing process (which habitually separates the creative and imaginative from commonplace forms of writing) as ritualized performance, the challenge may be, as Peggy Phelan suggests in *Unmarked*, "to discover a way for performative utterances, rather than constative utterances . . . to remark again the performative possibilities of writing itself" (148)---making language once again, as Bakhtin suggested, "the servant of participative thinking and performed acts" (*Toward* 31), more about performance and presentation (as the occasion for "enacting" something new) than representation.

In *Homo Ludens*, Johan Huizinga defines play as "a voluntary activity . . . executed within certain fixed limits of time and place, according to rules freely accepted, but absolutely binding, having its aim in itself and accompanied by a feeling of tension, joy and the consciousness that it is 'different' from 'ordinary' life" (28). He further points out that a child at play makes an image "of *something different* [my emphasis], something more beautiful, or more sublime, more dangerous than what he usually is. . . . The child is usually quite literally 'beside himself' with delight . . .His [sic] representation is not so much a sham-reality, as a realization in appearance: 'imagination' in the original sense of the word" (13). Victor Turner contends that ritual and play are interconnected, both including elements of learning, exploration, communication, memory, negotiation of time-space, and creative behavior. Huizinga suggests that ritual is actually a form of

play (19). Both would agree that they are, at the very least, corresponding practices.

For Turner, play occurring in ritual contexts is more akin to performance: It is "freewheeling" and "out of mesh with the serious . . . can be everywhere and nowhere, imitate anything, yet be identified with nothing . . . the supreme *bricoleur* of frail transient constructions. . . composed of a potpourri of apparently incongruous elements. . . . Passages of seemingly wholly rational thought jostle in a Joycean or surrealist manner with passages filleted of all syntactical connectedness" ("Body" 233-4). Thus, it opens the way to imagine other possible worlds and, so, is the transformative component of ritual.

Turner defines ritual itself as "the declaration of form over indeterminacy" (*From Ritual* 75), the "prescribed formal behavior for occasions not given over to technical routine, having reference to belief in invisible beings or powers regarded as the first and final causes of all effects" (79), and he believes it is part of a society's code for communicating messages, a *symbolic* use of bodily movement and gesture to express and articulate meaning. And, it has the capacity to maintain the structure of society as well as subvert it. It is this feature of ritual that most interests Turner.

His interest can be traced to Arnold van Gennep's notion of the *liminal* (from the Latin *limen*, meaning *threshold*) to describe the changes people go through in performing rituals in tribal societies. Van Gennep noted that participants emerged from rituals transformed after participating in a period of liminal activity, going beyond the *threshold* of traditional/conventional behavior

embodied in the normative social structure before being re-integrated into it. In liminality, participants are allowed to "'play' with the elements of the familiar and defamiliarize them" (27), recombining them in unprecedented ways.

Turner, however, extends van Gennep's notion of liminality to distinguish between it and the "liminoid" activity that emerged after the industrial revolution as a result of the separation of work and play. He describes it as a less ritualized performative practice, communally more voluntary than obligatory and more playful, from which novelty and innovation can emerge. From his work with liminal/liminoid activity within ritual, Turner was able to pose two models for human interrelationships that exist in alternating tension with one another: *structure* and *antistructure*. The former term refers to a differentiated, hierarchical socio-cultural system, "structuring" and "norming" human behavior institutionally. The later refers to the dissolution of normative social structures with its concommitant subjectivities, rules, and the formation of "communitas," a feeling of solidarity shared by equals (a "communion" of individuals more than a community). Turner's contention is that societies require both structure and antistructure. The liminal/liminoid activities associated with antistructure produce a realm of "pure possibility" generated by play with difference or otherness that makes possible some change and the surfacing of creativity while structure conserves vital cultural knowledge (deep "inslippable" concepts).

Brian Sutton-Smith's findings in his experimental studies of child and adult games in tribal as well as industrial societies supports Turner's notion of antistructure as a condition important for the survival and growth of cultural

knowledge. "The normative structure," he writes, "represents the working equilibrium, the 'antistructure' represents the latent system of potential alternatives from which novelties will arise when contingencies of the normative system require it. We might call this second system the *protostructural* system because it is the purcursor of innovative normative forms. It is the source of new culture" (cited in *From Ritual* 28). Thus, as Turner argues, ritual is not entirely a mechanism for maintaining the static in a culture; it is also dynamic, filled with potential for surfacing creativity. Antistructural activities push the "working equilibrium" of structural system toward disequilibrium (the chaos and disorder of the unknown), a state where learning and reorganization is more likely to occur. Again, it is worth noting how analogous this ritual activity is to Prigogine's dissipative structures, how more complex structures arise from simpler ones. Indeed, Sutton-Smith suggests that "we may be disorderly in games [ritual and play] either because we have an overdose of order, and want to let off steam, or we have something to *learn* from being disorderly" (28).

Turner found in Sutton-Smith's view of antistructure support for the understanding of liminal/liminoid situations as the "seedbeds of cultural creativity" from which new symbols and constructions can feed back into the structural system, "free or 'ludic' recombination in any and every possible pattern" making more likely the creation of new goals, aspirations, and structural models (28). On the other hand, structure encroaches on antistructure. Turner notes that children's games and play, for example, are permitted a degree of freedom from the norming process only up to a point because, until then, they appear to "not

matter." However, when children enter school, their "free play" is gradually curtailed and their behavior is comes under stricter control. Their games are no longer "pediarchic," in the service of growth and development, but become "pedagogic," limiting divergent behavior and expecting conformity and inscribing certain subjectivities (29). At about the fourth grade, this situation becomes more pronounced as opportunities for "play-full," potentially transformative performance decrease in favor of a more regimented, ritual of performance.

Vygotsky notes in *Mind in Society* that young children develop by performing, learning language and other social skills by imitating the others around them, in his words, "perform[ing] a head taller than they are" (102) to reach beyond their current stage of development. Thus, they appropriate the conceptual understandings of their culture, as they must. But, the "freewheeling" activity of play is an important feature of being able to imagine (to "see") other possible worlds that also ought to be encouraged beyond the onset of adolescence. Just as human survival depends on the transmission of certain "unslippable" concepts---on equilibrium, so it also depends on risking the chaos of disequilibrium by letting concepts slip (by "playing" with them) in order to evolve. Difference is the primary resource for this development and a mechanism for "correcting" epistemological error.

Because poetic language is, as Kristeva argues, metaphoric and dialogic it can exceed the limits of linear logic, making use of the logic of distance (a component of difference) to overreach established boundaries in order to see "something else," as the performance of the Detroit Citywide Poets aptly

demonstrates (Chapter Three). And, art, particularly the avant-garde, Schechner points out, exhibits "the twin tendency to make something new that is also in opposition to prevailing thought" (*The Future* 7). When Coco Fusco and Guillermo Gomez Pena presented their "cage performance," for example, their purpose was to examine both Western history and its discourse of the exotic, primitive other as well as the history of art in order "to excavate and to play with the symptomatic absences and stereotypes, creating a counter history of negative images and teasing out hidden stories" (33).

Writing in *English Is Broken Here*, Fusco suggests, as does de Certeau, that syncretistic acts that take elements of the regimes of truth imposed by a culture and "throw them back with a different set of meanings" are not only the tactics of guerilla warfare; "the tactics of reversal, recycling, and subversive montage are aesthetics that form the basis of many twentieth century avant-gardes," enable "different forms of belief or practice [of] disempowered groups to maintain their outlawed or marginalized traditions," and paves the way for "old icons to be infused with new meanings," and provides a critical space for symbolic action in which the politically disenfranchised can define themselves (34). She cites Henry Louis Gates analyses of African American *signifyin'* that found in this practice a "creative defense" of slaves against their masters and one of the many ways "oppressed people have developed to take their identity back" (35). Her cage performance with Gomez Pena invited their audiences to step into the role of colonizers, "only to find themselves uncomfortable with the

implications of the game," leaving many of them with an uneasy understanding and wondering who was really "caged."

The play of difference and the chaos/complexity it produces upsets the "natural" order of things and makes people feel uncomfortable. As multiple perceptions perturb the consciousness of individuals, they apprehend "otherness" or difference, but if nothing in the perception of experience disturbs the way they "see" things, they remain unaware. Consciousness, however, notices difference as new information---information capable of disturbing the order they desire and interrupting its repetition. Difference, then, threatens the foundation of "essential" or "core" truths undergirding their desire for certainty, a hedge against the unknown. In the words of the poet Yeats, "Things fall apart the center cannot hold/ Mere chaos is loosed upon the world."

In older, mechanical models of the universe, chaos and disequilibrium meant trouble, entropy---the beginning of decay and death. But, Prigogine's dissipative structures do not respond to the disorder difference triggers by decaying and dying; rather, they reorganize themselves at a higher level of complexity. Their activity demonstrates that, far from being harmful, chaos can be the source of regeneration and new life. Organisms learn from difference. Thus, the potential for humans to continue to survive and create new knowledge likely lies within their willingness to resist reducing difference to the same. As Burke writes, "In [the] staggering disproportion between man and no-man, there is no place for purely human boasts of grandeur, or for forgetting that men build

their cultures by huddling together, nervously loquatious, at the edge of the abyss" (*Permanence* 351).

CHAPTER FIVE

Toward a Rhetoric and Ecology of Creativity

The river is moving
The blackbird must be flying.

The mythology that supports the theory of creativity as an innate characteristic of only a few exemplars is powerful: Coleridge wrote "Kubla Khan" one afternoon after dreaming it up in an opium-altered state of consciousness. Kekule discovered the structure of the benzene ring in a dream of a snake biting its tail. Galois worked out his mathematical group theory the night before he was killed in a duel. Newton came up with the notion of gravity when an apple fell on his head. And, the familiar legend valorized in the film *Amadeus*, Mozart composed musical masterpieces perfectly in the first draft, making no corrections, additions, or deletions. Many other examples contribute to the lore.

Closer examination of these remarkable reports, however, reveals that they have little relation to the truth. What the mythology does not reveal is that, while Mozart, for example, was a child prodigy whose adult accomplishments were regarded as "creative," factors other than "innate creativity" may explain his achievements. In his response to a 1998 article in the journal *Behavior and Brain Sciences* by Michael J. Howe, Jane W. Davidson, and John A. Sloboda (titled "Innate Talents: Reality or Myth?"), Robert W. Weisberg notes that not only did Mozart benefit from years of extensive training under the tutelage of his father, his first seven works as a composer of concerti for piano and orchestra were not works by Mozart at all, but rather arrangements of works by several other

composers and, thus, "visible manifestations" of both the positive effect of practice and, I would argue, of learning through scaffolding in Vygotsky's sense of the term. Moreover, Weisberg points out that of the concerti directly attributable to Mozart alone, it was not until No. 9 (K. 271) that his work was acknowledged as a masterwork. By that time Mozart was twenty-one, had been immersed in music for at least sixteen years, and had worked in this particular genre for ten (430). Weisberg concludes, then, "In Mozart's case, the preparation years were filled with learning from practice, in the sense of immersion in the works of others, rather than the simple outflowing of innate talent" (430). The mythology that surrounds the acknowledged creativity of many exemplars covers over their extensive preparation, makes their "gifts" seem magical or more unusual than they are, and diminishes the confidence most people have in the possibilities of their own creative agency.

Weisberg's conclusions were among those supporting Howe et al in their contention that empirical evidence does not support idea that achievements regarded as creative (the so-called "talent account") are the consequence of possessing unique innate "gifts" or "talent." The available evidence suggested to them, instead, that such achievements are more likely the result of opportunity, support and encouragement, training, motivation, and practice---in short, social and cultural conditioning as it intersects with the willing agency of an individual. Moreover, the evidence further suggests that attempts to predict who will likely achieve at high levels or not and to make policy decisions based on predictions that categorize "some children as innately talented is discriminatory . . . unfair

and wasteful, preventing young people from pursuing a goal because of the unjustified conviction of teachers or parents that certain children would not benefit from the superior opportunities given to those who are deemed to be talented" (405). Their findings counter the widespread belief that only special people possessing innate potential can reach such heights of achievement. Howe et al also point out that the discourse supporting this notion of creative achievement are often wholly circular: She plays the violin well because she has a talent. How do we know? Because she plays so well. Or, as Howard Gardner suggested in his assessment of the exceptional music performance attained by children trained in the Suzuki method, since the talent did not manifest itself before the training and since the fact that they perform so well demonstrates they must have talent, then the talent must have *potentially* existed (*Frames* 368). Such arguments enforce a particular regime of truth and appeal to conventional wisdom. However, the view that acknowledges "talented" or "creative" individuals as exemplars who have "something special" might be even more convincing if researchers were able to examine this hypothesis *before* rather than after the creativity had been acknowledged, but there is no satisfactory way to do so.

Csikszentmihalyi's response to the same article by Howe et al is worth noting in this regard. While he agrees that they are right in arguing that "talent" is essentially "a social construction (that we label as such performances that at some historical moment we happen to value)," he wants to claim that talent may, nevertheless, manifest itself in *some* children's ability to learn more, *given equal*

opportunities to do so. However, opportunities are only rarely equal. In his view, the evidence does not support either the "talent" or "no-talent" account, but he also admits that there is currently no conceivable way to know if innate talent is a factor, in his words, "It would be quite a challenge to design an experiment that would resolve this issue once and for all. In fact, given the interactive nature of the phenomenon. I am not sure one could even imagine in principle how such an experiment should be designed, let alone carried out" (411). Nevertheless, while we wait for a resolution to this conundrum, Csikzentmihalyi suggests that it makes more sense, "given limited resources . . . to provide training opportunities *first to those children who, for whatever reason, show interest and ability in a given domain* [my emphasis]" (411). It is an old argument. I contend that it is just this kind of pervasive scarcity mentality that produces the rhetoric that justifies the "select and sort" mechanisms employed in schools and diminishes the possibility of creative agency in a variety of domains for the vast majority of people.

Thus, while admitting that acknowledged creativity is the consequence of the interplay of interactive ecological factors, this rhetoric, nevertheless, appeals to the "common-sense" impracticality of distributing limited resources that, in Csikszentmihalyi's words, "the Lord knows there always are" (411). Under this "logic," those whose social conditions may already provide the opportunities and resources of a favorable ecology for creativity, thus, receive additional available resources. Moreover, this thinking completely discounts the available evidence that Howe et al present of latent human development and the influence of

learning. The children of parents who can provide them with Suzuki violins in graduated sizes as they grow up, ballet lessons, coaches, and extra-curricular opportunities to develop various interests (or of those who have political clout) get "tagged" for the "honors" and "gifted and talented" programs in schools because "common sense" suggests there are not enough resources to offer them to everyone. And, in both public and private schools, they get the best teachers who use the most innovative methods in well-equipped classrooms, thereby increasing the gap. I have observed the operation of this system in my own community and wondered why the same methods are not extended to every child. It is a machine, a closed system with a long history.

School in the U. S.

In *Discipline and Punish*, Foucault analyzed the school as a function of the larger project to gain knowledge of and control over populations in the 17th and 18th centuries. Fundamental to this system was the development of the examination, a mechanism that Foucault suggests linked the exercise of power to knowledge. Combining "the technique of an observing hierarchy and those of a normalizing judgment," he noted that the examination placed individuals "in a field of surveillance" and situated them "in a network of writing," records containing information about their aptitudes and abilities and the uses that might be made of them. It acted as

> a normalizing gaze, a surveillance that made it possible to qualify, to classify, and to punish. It establishes over individuals a visibility through which one differentiates them and judges them . . . why, in all the mechanisms of discipline, the examination is highly ritualized . . . [combining] the ceremony of power and the form of the

> experiment, the deployment of force and the establishment of truth (184-185).

Informed by the work of Foucault, Bourdieu, and Gramsci, James Collins' study of the historical development of public education and the related ideologies of literacy, notes that this process extended into the development of mass schooling and the entrenchment of the test paradigm in England and the U. S. in the nineteenth century. While Collins main concern is the development of standards of literacy, his study suggests that the shaping of literacy was integral to the development of "elite-controlled" mass education and the preparation of workers for the new industrial order, tracing a progression from no formalized schooling, perceived as "social disorder," to formal schooling, meant to be "the inculcation of moral order as well as the transmitter of useful, *controllable* knowledge [my emphasis]" (231). His work reveals the ways discursive practice has shaped education as a method of social control and how standardized practices have led to the limitation of educational opportunities for lower class students. Collins also cites Raymond Williams who noted that the very naming of language" as 'standard,' with the implication no longer of a common but of a *model language* [my emphasis] represents the full coming to consciousness of a new concept of class speech: now no longer merely the functional convenience of a metropolitan class, but the means and emphasis of social distinction" (249n).

Further, as Collins points out, while the examination as it has evolved may have arisen from a fundamental desire for a scientific, objective method of evaluation, increased interest in test development has tended to coincide historically with certain changes (the success of the Civil Rights Movement of the 1960s, for example, or the current demographics of public school populations).

These changes threatened to upset the status quo, and their coincidence with increased interest in test development suggest a baser desire to manipulate and exclude newly mobile populations. It appears that the bar on tests is raised whenever disenfranchised groups become more competent, a case of putting a new sorting mechanism in place to prevent formerly disenfranchised populations from competing for the "scarce" better jobs and admissions to elite colleges and universities.

Since the early 1980s in this country, some particularly powerful voices have been attacking the public schools. Never mind that just a few years before the publication of *A Nation at Risk* the same people were debating the predicament of the "overeducated" American. So, how over-education became a "rising tide of mediocrity" is particularly puzzling. Having been a teacher for over thirty years, however, I argue that the current crisis in public schools requiring the more "effective" parceling out of scarce resources, like those to which Csikszentmihalyi referred, has actually been invited by budget cuts over at least the last three decades, instructional materials inadequate to the task of educating students in an increasingly complex society, general neglect, and the attempt to divert more resources to those who are already privileged.

The cynic in me suspects that the real motives for school reform may have more to do with advancing the political and economic goals of the conservative agenda than changing schools to "leave no child behind." The scarcity mentality, the fear that there are not enough resources for everyone to be successful or creative, reflected in the discourse of "experts" like Csikszentmihalyi, drives the

desire of dominant forces to give their own children a "leg up" and invokes a fear of losing ground in the middle class where school has always been regarded as key to a better life. The reforms---the litany of vouchers, charter schools, achievement tests---thus mask the real attempt to "select and sort" and work in favor of those who are likely to succeed anyway, leaving the others to "serve" (work minimum wage jobs) and limiting the possibilities for their creative agency. I suspect that the real motivation for current reforms may be the corporate need for new outcomes for education: graduates whose education prepares them for the narrow needs of a society in the throes of late capitalism, those who can be "team" players, their bodies both "inscribed by the code" and "collaborating" with it, and who can adjust to lower wages, routine tasks, and frequent job changes in a volatile economy. The corporate tendency has been to reduce people to the lowest common denominator, train them, and finalize their identities as "good workers" for the economic machine, complying with the Law that says, "Give me your body, and I will give you meaning and a word in my discourse" (de Certeau 139). And, finally, it convinces them that meaningful creative agency is beyond their capabilities, as Bourdieu's studies suggest.

In a 1987 essay appearing in *PRE/TEXT*, James Berlin noted that a rhetoric can serve, in Althusser's terms, as "an important ideological state apparatus." Berlin wrote,

> The ability to read, write, and speak in accordance with the code sanctioned by a culture's ruling class is the main work of education, and this is true whether we are discussing ancient Athens or modern Detroit. These rules are of course inscribed in a rhetoric, a systematic designation of who can speak, when and where they can speak, and how they can and must speak. Educational

> institutions inculcate these rules, determining who is fit to learn them and who has finally done so---in other words, who is authorized to be heard. A rhetoric codifies these rules for the members of a society. . . . It designates who may have access to power and who may not, doing so in a way even more effective than legal sanctions with all of their punitive devices. . . . It affirms economic, social, political, and cultural arrangements, doing so in the name of passing on to the young the 'natural' rules that govern discursive and, more important, non-discursive practices (52).

Berlin's discussion of the role of a rhetoric bears out the earlier conclusions drawn from Foucault, Barnes, and Bourdieu that the linguistic routines of a culture tend to reinforce "shared theory," the common-sense understandings developed from a set of "negotiated" concepts and generalizations, denoting a certain plane of reality. These coherent, restricted communal cognitions are lodged within the social, cultural, and political institutions that authorize what counts as knowledge and by extension what counts as creativity. But, in the same essay, Berlin also contends, "There are always competing rhetorics at any historical moment because there are always competing ideologies. . . ," and these conflicts are what he believes ought to be taught in schools---"our only hope in not being able to know everything . . . is to know as many versions of the whole as we can, as many conceptual systems in their concrete application as possible" (59), the thrust of his later work *Rhetorics, Poetics, and Cultures*. I agree that there will always be competing rhetorics, and I also argue that a rhetoric capable of surfacing creativity ought to be as much a linguistic routine of school as a rhetoric of reproduction.

A Dynamic Pattern

The tension or dynamic between competing rhetorics that Berlin believes ought to be taught in schools seems to me the same tension that exists between Aristotle's rhetoric as it was classically "reconstructed," according to Janet Atwill, to serve philosophy and to function as a medium of reproduction and her reclamation of it as an art of productive knowledge, as an alternative order of knowledge capable of affecting who people are engaging in the world, of intervening in "what is," and of inventing "what could be." As a medium of reproduction, rhetoric reflects what Robert Pirsig refers to as the "static patterns of value" embodied in the stabilizing institutions of a culture. As an art of productive knowledge, it reflects what he refers to as the "dynamic patterns of value" associated with uncertainty, the transgression of official boundaries or limits, the disruption of given knowledge, the creation of new subjectivities, and the production of new possibilities. The rhetoric of productive knowledge, that is, points toward "a desire for 'more' that challenges or redefines relations of power" (Atwill 7) rather than the desire to maintain the status quo.

In *Lila*, Pirsig extends the discussion of the "metaphysics of quality" he had begun in *Zen and the Art of Motorcycle Maintenance* to take up the question of why, if "quality" or "value" is a constant, people's opinions about it vary so much, a question related to the nature of creativity as well. He argues that "quality" or value exists in two kinds: dynamic (continuous and always on the cutting edge) and static (memories, customs, patterns

of nature, and so on). The static patterns of value are different for every person because each one of them has a different static pattern of life history (related to Bourdieu's notion of habitus and Bakhtin's notion of humans as "value centers"). Everyone's judgment, then, is affected by *both* static patterns of value *and* those that are dynamic. Thus, people agree sometimes, and sometimes they do not. Pirsig's metaphysics of quality suggest, then, there can be many competing truths out there, but it is the sense of value, influenced by accumulated static patterns including language, that decides among them. Following Pirsig and Turner, I argue that both dynamic and static patterns of value, antistructural and structural activities, are necessary. The former makes productive change possible while the latter conserves vital cultural knowledge. The problem is that static patterns compose the deep discourse structures of the regimes of truth that are entrenched, strategic, resistant to the dynamic patterns characteristic of creativity, and bent on protecting the "proper" at the expense of productive knowledge.

Creativity, it seems to me, is analogous to both Atwill's "productive knowledge" and Pirsig's "dynamic quality." As dynamic quality, productive knowledge or creativity is not "valued" consistently by everyone, accounting for the varied acknowledgement of creative products and behaviors. Dynamic patterns of value surface when the mind (composed of individuals plus their environment), that is, the network is "fluid." Thus, as Douglas Hofstadter explained, Einstein arrived at his theory of relativity

through a "fluidity of mind" that made him willing to let certain concepts "slip" while at the same time he was guided by other concepts he considered "unslippable." That is, the surfacing of creativity depends on what Hofstadter refers to as "nondeliberate yet nonaccidental slippage" that permeates the mind (and here I think of Bateson's notion of mind as "a necessary, an inevitable function of the appropriate complexity, wherever that complexity occurs"), what I have referred to as "crooked awareness," the willingness to look "sideways" and to be influenced by dynamic patterns of value.

An Ecological Effect

Much of the research over the last hundred years has tried to study creativity as if it were a closed system, its cause-and-effect processes traceable to initial conditions. Creativity operates, however, as an effect of systems that are complex and adaptive, open and ecological, contingent upon an indeterminate number of variables: It surfaces in the interaction of multiple realities and identities, out of "playful" and experimental combinations, and out of the recognition of differences and contradictions. It unfolds or emerges over the course of time, it is unpredictable, and the "dissipation" of its energy is generative rather than degenerative. Wiles' solving of Fermat's Last Theorem, described in Chapter Four, for example, required him to link ideas from the Pythagorean foundation of mathematics to the most complex mathematical ideas of the twentieth century, drew heavily upon the work of other mathematicians, and eventually led to a new openness and optimism in the field of mathematics,

making yet other new dialogues and solutions possible. So, although Wiles was an agent of creativity, the creativity was not "innate" in him. Rather, it manifests as a radically distributed "ecological" effect that emerges from the interactions of individuals in particular social and environmental contexts against a backdrop of existing knowledge.

Failure to understand creativity in these terms, however, is tied to a rhetoric that wants to perceive it as the purview of the select few or those whose products/behaviors it privileges. If, as Aristotle conceived of it, rhetoric is "an ability, in each case *to see* the available means of persuasion" and thus located in it the ability to imagine other possibilities, then rhetorics of reproduction have been blinding. Rhetoric as an art of productive knowledge---of creativity---requires a different architecture for seeing. However, the "seeing" that would make productive knowledge of "the available means" is always to some extent bound by what has already been conceptualized and is thus "available," as the following account demonstrates.

Stephen Jay Gould in "Darwin's Middle Way" (a chapter of *The Panda's Thumb*) discusses the contradiction between Charles Darwin's autobiographical account of how he arrived at his theory of evolution and a series of his notebooks found after the centennial of *The Origin of Species* in 1959. According to Darwin's own account, which Gould says was written as a lesson in morality for his children and not for publication and which misled historians of his work for many years, he claimed to work within "true Baconian principles" and "without any theory collected facts on a wholesale scale" (61). The pervasive influence of

inductive logic in the practice of science evidently compelled Darwin to describe his accomplishment in its terms, thus covering over the nature of his creative agency.

Darwin's account focuses on the five years he spent aboard the *Beagle* and how his understanding grew as he saw in succession the bones of giant South American mammal fossils, the turtles and finches of the Galapagos, and the marsupial fauna of Australia. Thus, he claimed to arrive at his theory of evolution and natural selection gradually "as he sifted facts in a sieve of utter objectivity" (61). In fact, however, according to Gould, the notebooks reveal that, although he found the finches, he didn't recognize them as variants of a common stock or even record the island of their discovery. He evidently "reconstructed" the discovery according to inductive principles only after he returned to London and was able to consult with an ornithologist of the British Museum.

Gould acknowledges that Darwin's voyage on the *Beagle* was pivotal because it gave him the opportunity, freedom, and endless time to think independently, that is, a favorable ecology, and he also notes that the things he saw provoked in him "the crucial attitude of doubt" which Gould refers to as the "midwife of all creativity." However, he also points out that, despite popular lore, Darwin returned to England without a theory of evolution.

The notebooks also reveal that in the next two years Darwin tested and rejected many theories, and in the meantime, read philosophers, poets, and economists. Gould says that he arrived at his theory of natural selection after

reading Malthus, not through induction, nor as a blinding flash of insight triggered by his subconscious.

Gould's reading of two biographies, one by Howard E. Gruber and the other by Silvan S. Schweber, led him to observe that Darwin's theory "emerged instead as a result of a conscious and productive search, proceeding in a ramifying but ordered manner, and utilizing both the facts of natural history and an astonishingly broad range of insights from disparate disciplines far from his own" (65). Perhaps most remarkable, Gould found a surprising lack of influence on the theory from Darwin's own field of biology and concluded that the sheer breadth of his interests and his ability to construct productive analogies between fields were responsible for its eventual formulation. He characterized the theory of natural selection as "a creative transfer to biology of Adam Smith's basic argument for a rational economy . . . " (67), and further concluded that such creativity "demands breadth," that "analogy is a profound source of insight," and that "great thinkers cannot be divorced from their social background." He argued finally that "Darwin was lucky to be born rich, lucky to be on the *Beagle*, lucky to live amidst the ideas of his age, lucky to trip over Parson Malthus---essentially little more than a man in the right place at the right time" (68). He hastened to add, however, that Darwin's struggle to arrive at understanding does seem to affirm Pasteur's suggestion that "chance favors the prepared mind." I would argue further that the "prepared mind" requires a rhetoric that is capable of generating ways of thinking that resist systematic efforts to normalize and contain knowledge as well as an ecology in which it can occur.

A New Architecture for "Seeing"

Two hundred years ago the Romantic poet William Blake wrote, "May God keep us from single vision and Newton's sleep!" He rejected Isaac Newton's mechanistic view of the universe and the way it carried over into every aspect of life, and he spent his life creating art that denied this single vision, the realization of Descartes' dream of the world as a machine. The Newtonian view of the universe, however, was very seductive. People took comfort in its regularity and predictability. It allowed them to think about things they could not previously have imagined. Enlightened, they broke with nature and embraced Newton's vision, no longer needing the Catholic Church to tell them how the world functioned. They saw the universe in the metaphor of a great clock ticking on predictably, creating a sense of solidity and safety and a strong sense of autonomous individual identity. They saw a world in which every event was determined by initial conditions, in which chance played no role, where time was reversible (processes could be traced back to initial conditions), and where all of the pieces fit precisely together.

The metaphor of the world as a machine was easy to visualize, and once visualized, embedded in language, and stored in the collective consciousness, it permeated everything. Newton's "new science," concerned as it was with closed circuits and linear relationships where an action introduced at any point would have a predictable effect, reduced plants, animals, and humans to objects of study, collections of "cogs," "wheels," "levers," and "gears" to be taken apart, analyzed, and understood. In other words, it reduced complexly determined

matters to simple deterministic expressions. Thus, what had begun as a theoretical model then passed into conventional wisdom. The rise of science, the industrial revolution, the age of machines, and the birth of the factory (for work and for school) would affirm the rightness of this model, despite an undercurrent of criticism. Indeed, as Gregoire Nicolis and Ilya Prigogine note, "There were moments when the program of classical science seemed near completion: a fundamental level, which would be the carrier of deterministic and reversible laws, seemed in sight. However, at each such moment something invariably did not work out as anticipated" (2).

The founding of thermodynamics early in the nineteenth century, however, challenged the notion of the universe as a machine and introduced doubt. The Second Law of Thermodynamics suggested that if the world was a machine, then it was losing energy, becoming disorderly, and running down toward "heat death" and out of time. It suggested that time is unidirectional: No one moment can be like the last; events cannot "replay" themselves nor is it possible to travel back in time (except in fiction and films). And, as the revelations of the Second Law became more evident, it took the "blame" for disintegrating societies, economic decay, the perceived breakdown of civility (Glieck 308). It suggested that decadence is "natural" and, thus, unaffected by human in(ter)vention. Then, Einstein's revelations in the early twentieth century about the role of the observer, the nature of simultaneity, and relativity dealt the machine model another significant blow. Nevertheless, as often happens with cherished notions, the idea of the universe as a machine has hung around in language and

in conventional wisdom because, as Prigogine and Stengers point out, this paradigm does hold up for the relatively few parts of the universe that operate like machines.

Most of the universe, however, is composed of complex adaptive systems that are open, dynamically interacting with their environment, and are, thus, ecological. Both biological and social systems are ecological, affected by an indeterminate number of variables. The patterns such systems reveal, because they occur over time and on such a large scale, are difficult to apprehend because they move in and out of different states over time: sometimes orderly and repetitious, sometimes disorderly and chaotic, and sometimes completely new---"jumping up" to more complex order. To try to understand systems that are ecological in terms of closed mechanical systems is futile. Ecological systems are constantly in process of becoming, and the occurrence of their various states in such systems is unpredictable. In biology, for example, evolution proceeds from simple to more complex forms of life and from undifferentiated to differentiated organisms, but this progression is only noticeable in hindsight and the reasons for it so complexly determined as to be indecipherable.

Prigogine and Stengers argue that the continual fluctuation characteristic of open systems makes them sensitive to "singular moments" or "bifurcation points," revolutionary moments impossible to predict, when "positive feedback," like the surfacing of productive knowledge or dynamic patterns of value, breaks through so powerfully that it shatters the pre-existing organization. Einstein's

theory of relativity had this effect: It transformed the collective intellectual imagination and allowed people to see the world differently---it changed everything. At these moments, ecological systems either disintegrate or leap to a higher, more differentiated, and more complex order. But, in these far-from-equilibrium, non-linear, self-organizing systems, order and organization can emerge from the seeming disorder and chaos, and very small changes in fluctuations can make very big differences. That is, as I argued in the last chapter, difference makes a difference. It is the new information that establishes enough of an opening in the system to interrupt the rhythm of order and repetition and bring the system into the "crisis," making way for the new, more complex order. It is this increasing complexity open systems achieve that allows them to generate new order out of chaos and disorder. The more heavily structured and rule-governed such systems are, however, the more vulnerable they are to failure because they cannot readily adapt to changing conditions. Ecological systems always exist on the boundary between order and chaos, displaying characteristics of both. Thus, "complexity theory" as it deals with the "revolutionary" events that occur on the "edge," on this boundary between order and chaos, in the relationships between and among both open and closed systems, provides a better model for understanding the operation of creativity.

An Ecology of Creativity

If creativity is an effect of complex adaptive systems, as I have suggested, an open intellectual ecology among the disciplines whose distinct languages afford only partial views, could evoke different perspectives of reality that would

"complement" one another dialogically, "filling out" a picture of reality by "mutually supplying each other's lack" (*Merriam Webster Online*). Engaging dialogically, adopting the logic of perspective by incongruity, developing "crooked awareness" and, thus, thinking ecologically would allow "a given classification [to] cut across other classifications on the bias," as Burke suggested, producing "new alignments incongruous with alignments flowing from other modes of classification" (*Permanence* 135) and an opening for productive knowledge. A formal attempt to develop such an ecology occurred in 1995.

An international interdisciplinary conference titled "Einstein Meets Magritte" convened that year to explore just such a possibility although the stated mission went much further. Over a five-day period, scientists, academicians, and artists delivered a variety of works in sessions ranging from theoretical physics to poetry, dance, and music in order to see whether any basis for a unified view of the world might exist. Later, the proceedings of the conference were published in eight volumes named after the colors of the rainbow and white, a synthesis of them all. The purpose of the conference was to merge the attitudes, methods, and understandings of science and the humanities, as represented by the works of Albert Einstein and Rene Magritte, and to open the way for dialogue. Some have argued that this proposed integration should actually have been regarded as an attempt to re-integrate what had once been whole---what disciplinarity, "the fragmentation of knowledge," had divided (Wilson 48). In any case, I argue that is was an attempt to invite "consilience," Whewell's notion of "the jumping together of knowledge as a result of the linking of facts and fact-based theory

across disciplines to create a common groundwork of explanation," mentioned in Chapter One. The current common phrase to describe this endeavor is the "integration of knowledge bases," an idea embodied in the operation of the Internet and the conception of the "Semantic Web." Thus, in the same way that Darwin's observations coupled with his reading across various disciplines outside his own led to his theory of natural selection, the integration of knowledge bases helps create a favorable ecology for surfacing creativity. The idea of complementarity (an extension of Heisenberg's notion of uncertainty), then, can be extended beyond a lesson in quantum physics where it begins and may prove productive for understanding the nature of creativity.

Complementarity in physics refers to the possible ways of describing an atomic electron. One way describes precisely the energy of an electron and applies the concepts of conservation of energy to it while another description involves a space-time account of the motion of the electron inside the atom, performs a measurement of position, and excludes the previous energy conservation description. Both descriptions are possible, but not at the same time, so, the two descriptions are regarded as "complementary." It is not possible, then, to speak of a quantum object as existing independently. In fact, no single description in classical terms can exhaust all of the knowable features of quantum phenomena because they demonstrate a richness and complexity beyond the ability of language to describe it. Thus, as Prigogine and Stengers suggested, the "real" lesson to be learned from complementarity is that "reality" (or truth) is not reducible to a single perspective. It renders impossible "a divine

point of view from which the whole of reality is visible. . . . Each language can express only part of reality" (225). The suggestion that different, seemingly incompatible or contradictory descriptions can *all* be correct runs counter to traditions in Western thought that suggest a single, unambiguous description of "reality" or "truth" is possible. Thus, a quantum loophole exists that is analogous to Bakhtin's "word with a sideward glance," a paradox that retains "the possibility for altering the ultimate, final meaning of one's own words. . . . This potential other meaning, that is, the loophole left open, accompanies the word like a shadow" (*Problems* 233), *complementing* it.

I extend the idea of complementarity to the operation of an intellectual ecology I have imagined as forming among the disciplines to support the surfacing of creativity. I argue that such an ecology would resist the conceptual habits that enforce limits on in(ter)vention and imagination, not necessarily by unifying their diverse epistemologies or seeking consensus or synthesis as the mission of the conference suggested, but rather, by re-integrating them side-by-side in *apposition*, a rhetorical structure in which one parallel word or word group placed beside another "complements" it, modifying and extending it without replacing it. Apposition, thus, could preserve differences but also connect them in "a plurality of independent and unmerged voices and consciousnesses, a genuine polyphony. . . spread out on a plane as an eternal harmony . . . or unceasing irreconcilable quarrel," Bakhtin's notion of "one great communal performance" (160). It would encourage the examination of alternative perceptions of the same phenomena and the tentative construction of knowledge

and invite transformation, employing the logic embedded in the notions of re-turning, re-seeing, re-interpreting, and re-constructing otherwise. Thus, such an ecology make way for the productive "bifurcation" and the imagination of "what could be" rather than simply calling "what is" into question or replacing one conception of reality with another. In his paper "Subjects, Objects, Data and Variables, presented at the conference I mention above, Robert Pirsig notes, "Science and art are just two complementary ways of looking at the same thing. In the largest sense it is really unnecessary to create a meeting of the arts and sciences because in actual practice, at the most immediate level they have never been separated. They have always been different aspects of the same human purpose" (18). As he explains further, "Science explores the Conceptually Unknown in order to develop a theory that will cover measurable patterns emerging from the unknown. The arts explore the Conceptually Unknown in other ways to create patterns such as music, literature, painting, that reveal the Dynamic Quality that produced them" (18). I argue that the dynamic quality he speaks of is creativity.

Examined in this light, Rudolf Arnheim's plea in his essay "A Plea for Visual Thinking" may be regarded a plea for a different architecture for seeing in schools. He notes that in the long history of Western thought, perception and reasoning---opposite sides of the same cognitive coin---have been separated. Reason has been privileged over mere perception. Nevertheless, he argues, productive thought, the ability to structure and re-structure experience, as he defines it, depends on "visualization," a technique that belongs primarily to the

perceptual domain (although he readily admits that some problems can be solved in entirely non-visual ways). He points out that trees in nature, for example, appear to be a jumble of branches and foliage, a kind of chaos. But, by "visualizing" their structure a child can "see" the fundamental order produced by the vertical trunk and the branches protruding from it at clear angles to form the base for the leaves. Such intelligent perceiving, Arnheim suggests, is "the child's principal way of finding order in a bewildering world" (144).

Arnheim's argument for more emphasis on the development of perception in all learning and a central role for studio art in the school and university curriculum that cuts across disciplinary borders is rooted in the observation that perception is 'not a mechanical recording of the stimuli imposed by the physical world upon the receptor organs of man . . . but the eminently active and creative grasping of structure. . . . Together, intuition [cognition through perceptual field processes] and the intellect [reason] produce thinking, which is inseparable from perception in the sciences as well as in the arts" (x-xi). "Seeing" the "available means" to surface productive knowledge, then, may depend as much on perceptual intuition as it does on reason, as art already knows and can help the other disciplines to "see."

Implications

E. Paul Torrance and David Perkins both agree that human agency for creativity depends on very ordinary human thought processes like problem-finding and problem-solving, noticing difference, persisting, reasoning critically, considering alternatives (divergent thinking), recognizing analogies, and thinking

metaphorically. While Perkins does not believe that "creativity" can be taught per se, he does believe that deliberately enhancing the habits of mind mentioned above creates a favorable climate for the *process* of surfacing creativity and that this process is accessible to all *under the right conditions*. Torrance, on the other hand, is convinced that skills linked to creative agency, like problem-finding and persistence, *can* be taught although, perhaps to no one's surprise, he has found little support for this contention in the U. S. The widespread belief is that people either possess these "skills" or they do not and that there is little the education process can do about developing them. Nevertheless, he presents a program for enhancing each of them because he believes that they ought to be as "basic" as reading, writing, and arithmetic and that our survival as a species may depend on it. I argue further that it depends on engaging as many people as possible in the process both to tap into the diverse knowledges they possess and to enhance the potential for creative agency.

If humans construct their knowledge, as Von Glasersfeld and others have argued, if the experiential world acts as a testing ground for ideas, then they need to encourage a rhetoric of creativity that examines both knowledge as theory and knowledge as practice, resonating against them to challenge static disciplinary models, hold off closure and habituation, and create an awareness of other possibilities. And, the charge to those who teach ought to be to help students become active, critical inquirers, so that when they fail to find the meanings they seek, they are not discouraged and do not give up hope, but realize instead that, as Paul Watzlawick suggests, "They have not yet looked in

the right place . . . [and] there are "an infinite number of 'right' places" (*The Invented* 326). That inquiry itself may be a matter of "seeing" crookedly, looking sideways to get another "complementary" view in order to adjust for "fit," supports both a constructivist and a Bakhtinian view of creative potential.

I argue further that teachers need to encourage students to question the hidden and often dangerous assumptions supporting systems of belief that may keep them from becoming knowing subjects in the world, coaching them in the process of knowledge construction to become aware, deliberate, and responsible participants. They need to help students develop a comfort with uncertainty in order for them to thrive and not merely survive in a world where the only certainty is change. What may be most difficult for students to understand, I think, given our culture's desire for certainty, is that knowledge is not the end of inquiry, found in its convergence with conventional wisdom and common sense, but rather the beginning: a process of divergence, of noticing critical differences, and of learning from the knowledge others possess that at its best results in un-conventional wisdom and un-common sense that is the nature of creativity.

A rhetoric that encourages an appositional stance, rather than one that is oppositional, that develops "crooked awareness," the willingness to make the familiar strange and to look "sideways" to see what else may be re-turns to rhetoric its "poetic" operation, the "making" impulse that looks for openings, motivates what in normalized language alludes us, and extends the perception of reality. Such a rhetoric is capable of surfacing creativity, the productive

knowledge of social imagination that seeks ethical alternatives in relationship to and in interaction with others and "sees" a world otherwise.

It was evening all afternoon.
It was snowing
And it was going to snow.
The blackbird sat
In the cedar limbs.

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