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LOGIC: THE FIRST TERM
REVISITED

A Thesis
Presented to the
Faculty of
California State University,
San Bernardino

In Partial Fulfillment
of the Requirements for the Degree
Master of Arts
in
English Composition

by
Alan S. Pierpoint

March 1995

LOGIC: THE FIRST TERM

REVISITED

A Thesis
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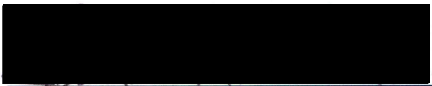
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March 1995


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January 26, 1995

Date

Abstract

Logic, as a discipline, a tool for making knowledge, and a way of thinking, has been intimately connected to composition since the dawn of literacy. This paper surveys the definition and etymology of logic, briefly traces the history of its relation to composition, and examines how logic, both formal and informal, has been incorporated into the teaching of composition in American colleges. Cultural and intellectual forces that impact the relationship between composition and logic are discussed, providing a context for recommendations regarding the place of logic in the curriculum.

Logic and rhetoric were taught together in ancient Greece and Rome and in Christian Europe for over twenty centuries. Since the middle of the 19th Century, the discipline of formal logic has grown exponentially, and today's students learn little or none of it. Meanwhile, the three-year rhetoric course common in American colleges a century ago has been condensed into less than a year. The discipline of informal logic arose to fill the vacuum by applying logical principles to the creation and analysis of discourse. Modern composition textbooks include material on writing logically and avoiding logical fallacy. But many presentations of logic in composition textbooks are faulty,

and other practices, such as auto-biographical writing, are competing successfully with the traditional, logic-based pedagogy for instructional time and interest. This is occurring at a time when logic is increasingly suspect within the university, and in the context of a popular youth culture that is strongly anti-rational. As a result, and in spite of various reform movements, the ability of students to think critically and write logically has continued to slip.

This paper's findings are that the position of logic in the curriculum needs to be strengthened to enable students to make sense of what they are asked to learn and participate in the discourse community of their chosen field; that one or two courses taken as freshmen are insufficient for this purpose; and that instruction in logical principles needs to begin early and be presented coherently. Some recommendations for curriculum are advanced. A philosophical defense of logic is offered against "anti-foundationalism."

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Several years ago (has it really taken this long to get to the introduction of my thesis? Alas, it has), Dr. Haviland, director of the Writing Center at CSUSB, referred to me a student, "Carlos," whose writing showed deficiency in logic. His opinion paper was laced with professorial comments that he found irritating: "Not a valid inference," "Be specific," "What is your authority for this?" and so on, and it had a failing grade. Carlos was frustrated. He was also determined to succeed, on his own terms if possible, on the instructor's terms if necessary. He did not share his instructor's low opinion of his paper, but was willing to change it, especially if given reasons more meaningful than the coercion of grades and graduation credit. He wanted reasons why his own reasoning had been judged insufficient. In essence, Carlos was challenging American higher education to explain and justify some of its basic premises. Dr. Haviland assigned him to me because I was rumored to possess a logical mind.

Energized by Dr. Haviland's confidence and determined to help Carlos succeed (lest it be discovered that I **didn't** have a logical mind), I met with Carlos several times that quarter. He had the sort of inquiring mind that makes teaching interesting, and maddening. His questions and comments were to the point. What's a valid inference? What does he mean, be specific? I **am** specific! This is an

opinion paper; why do I need an authority? It was soon evident that Carlos had an aptitude for logic at least as high as his tutor's, and I became convinced that the faulty reasoning evident in his writing did not reflect a want of ability. Of that, he had plenty. Of formal training in reasoning skills, he had had little, but he was getting it now in college, and he had that faculty of intuitive reasoning that Aristotle identified as the source of knowledge-making (naus, as the Greeks called it). More experience in persuasive writing would doubtless have made this assignment easier; at the point at which I joined his education, he needed help quickly, and I was at a loss as to where to begin. He had missed so much, it seemed. As I tried to set priorities on what to teach him, I came to see that one quarter of instruction was not enough time to learn the language of academia. But we muddled through, and with a change of attitude and a lot of effort, he managed to pass the course.

What I tried to do was to make him use the reasoning skills he already employed without hesitation to question authority whenever the opportunity to do so presented itself. The epiphany, as I recall it, came during one of our verbal fencing matches about course requirements. Why, he wanted to know, was it necessary in an opinion paper to use rigorously correct reasoning, when he knew how he felt

about the issue, the instructor already had his opinion, and all opinions are respected in the academy? Good question, although alert freshmen soon learn that the third premise isn't true, nor should it be. The exchange that followed, cleaned up a bit to make me appear a better tutor than I was, went something like this:

Me: Good question. (Pause) Am I right in saying that you feel entitled to a reasonable explanation for the requirement that your paper employ sound reasoning?

Carlos: Yes.

Me: That in the absence of a reasonable explanation, you would be less inclined to accept this requirement?

Carlos: That's right.

Me: Would you say that your classmates, and people generally, share your feeling that reasons should be advanced to justify what they are asked to do?

Carlos: Sure. Everybody feels that way.

Me: Would you then deny to your readers an entitlement that you claim for yourself?

Carlos: [Puzzled look, followed by a dawn of recognition, a barely suppressed grin, and much better writing.]

I wish things really were so easy.

The community of composition teachers has long bemoaned the difficulty students like Carlos have with developing and sustaining logical arguments. Evidence for this lies in the

exasperated sighs one hears in faculty meetings and grading sessions and in the prevalence of chapters on logical development, or at least on logical fallacies, that appear in most composition textbooks. The widespread perception that entering freshmen, more so than previous generations, have trouble writing logically, has had an impact on composition pedagogy. Starting in the 1970's, a critical thinking movement has led to the insertion of required courses in critical thinking for undergraduates; this movement has percolated down into secondary education as part of the reforms of the 1980's. But the problem has not been solved. The exposure that high school students get to logic, reasoning skills or critical thinking varies widely in content and coherence. A lucky few may have access to a course in logic or general philosophy; but in none of the half-dozen school districts in which I have taught or observed, nor in the private school where I now teach, does a high school diploma signify mastery of basic logic. If Carlos comes to us knowing what a valid inference is, it is because a good teacher somewhere thought he ought to know it. When we consider that Carlos' popular culture is profoundly anti-intellectual, and that logic itself is suspect in some educational circles, it should not surprise us that he should have trouble negotiating the persuasive essay assignments that some composition teachers still

require of college freshmen.

Our classes are well-stocked with Carloses, it seems to me. Smart and engaging, they often see themselves as more creative than logical, prefer writing journals or poems to essays, and write "I feel" in situations where convention would call for "I think." They are more comfortable with narrative or reactive writing than with analytical or persuasive writing, and as Applebee has noted in the context of high school, they often fall back on "embedding long stretches of narrative within a global analytic frame"--switching modes inappropriately--to help them through a difficult assignment (185). Applebee reports that high school students are nevertheless "efficient language learners" (186) who develop coping strategies to see them through new or difficult writing situations, and voices the belief that if they lack skill in certain writing situations, it is probably because they have not been sufficiently challenged. I think they've been trained, by their high school teachers and by other subtle but powerful cultural influences, to feel more comfortable with expressing their feelings than with defending their opinions. In other words, in spite of the critical thinking movement and the sporadic waves of "reform" that have swept over the public schools in California and elsewhere, the ability of our youth to "think straight," at least as

manifested in their writing, has continued to slip.

I hope that our tutorial sessions were helpful to Carlos; they were a boon to me. His questions, and the questions they led to, forced me to re-examine the whole idea of logic. What is it, really, and what relation does it have to writing? Is the study of logic an answer to the writing problems of our students? Is logic a method for the discovery of truth, as Aristotle thought, or is it a window-dressing for argument, as Carlos suspected? If the latter, isn't our insistence on it in a sense hypocritical? Do we have time to teach logic as part of freshmen composition, and if so, what part of it do we teach? Carlos got me thinking, and in the process gave me a thesis topic; who can put a value on that?

This paper will look at logic from the standpoint not of a logician, but of a student and teacher of composition. The first section will briefly define logic and survey the fascinating etymology of the term. Section II will trace, also briefly, the history of logic as a discipline and comment on its relationship to composition. Section III will examine ways in which authors of composition textbooks in recent years have attempted to incorporate logical principles into the teaching of composition. A fourth section will examine cultural and intellectual currents that impact the teaching of composition in the 1990's. A

concluding section will look at logic and composition prescriptively, with particular reference to the teaching of freshmen composition.

I

The definition of logic offered in 1910 by Walter Skeat in his Dictionary of the English Language, "the science of reasoning correctly," while adequate as a starting point, does not begin to cover contemporary usages, and belongs therefore to a simpler age. The Oxford English Dictionary gives six definitions, documenting occurrences of the word as far back as Chaucer (1386) and beyond. Random House gives pretty much the same six, starting with "The science that investigates the principles governing correct or reliable inference." As a primary definition, this one will serve our purposes. Though it lacks the august simplicity of Skeat's, a century of intense philosophical give and take is embedded in the terms "reliable" and "inference," and in the implied difference between "reliable" and "correct." Since I shall argue that our students need to engage this give and take in order to make sense of higher education, let alone master its written language, it seems fit to choose a definition that gives a nod to the advances of our age. The nod is more than a passing one. To say not merely

"the science," but "the science that investigates the principles governing," is to add a few removes between the knower and that which is known. The word investigates especially implies a process, a search for something that may or may not be found. "Science," by itself, has a more static sound to it and seems to suggest a settled system which, if followed, ensures conclusions that are verifiably correct. We have grown to be wary of such conclusions.

Random House continues with "a particular method of reasoning or argumentation." It is not surprising, in our age of relativism, that a word once associated with first principles has taken on such a markedly relativistic denotation, or that this denotation has worked its way up to the number two slot in a major dictionary of the language. By this definition there can be several, perhaps competing logics. The principles or methods subsumed by logic can now vary with the situation, or the logician, or both. It also allows logic to mean the opposite of "correct or reliable inference," as in the sentence: "You may think you're right, but your logic sucks." One hears this usage on campus these days. The relativistic definition might be expanded to include not just "methods," which implies thinking about reasoning, but also the relational patterns, unconsciously arrived at, that often inform or underlie all manner of human constructs. Thus Mina Shaughnessy: "...a

teacher who would work with BW students might well begin by trying to understand the logic of their mistakes ..." (13). Logic in such usages is not only relativistic, but heavily subjective, leading us to ask whether all logic might be, to a degree, subjective. The modern answer is, to a degree, yes. The subjectivity of logic is an academic debate that cuts across the disciplines. Psychology and sociology tell us that, as individuals and members of groups, we vary quite a bit on what premises we think important and what methods we use to proceed from them to form conclusions. These considerations have important practical consequences. "Logic" told George Bush that Iraq wouldn't dare invade Kuwait; a different "logic" told Saddam Hussein that he could get away with it. Logic that doesn't account for subjectivity is of limited use in human affairs.

The third definition offered by Random House, "The system or principles applicable to any branch of knowledge or study, "acknowledges the futility of one of Aristotle's fondest hopes--that there was a universal system of inquiry that applied to all disciplines and united all knowledge-seeking activity. This is what Aristotle meant by logic, and he thought he had discovered it. The definition before us counterbalances the possibility of a single science of correct reasoning (definition #1) with the idea that each discipline, each science, each art (Webster's New World

Dictionary adds art to the list) has its own logic. Two and a half millennia of Western scholarship have gradually institutionalized logic's relativity. Gradually; but our century has seen a great acceleration of this process, in spite of attempts, such as Bertrand Russell's with logic and mathematics and the Vienna Circle's with logical positivism, to find new grounds for unity. As academia comes to reflect more the world's cultural diversity, it is predictable that those advocating pluralism will find the idea of a unifying logic increasingly suspect.

Returning briefly to art, logic is suspect there, too. We dichotomize creativity and logic, just as we do right brain and left, even when the careers of such dual-brained geniuses as Charles Dodgson (Lewis Carroll) ought to caution us against easy generalization. But critics are surprisingly fond of the word. To cite two examples from the same page of a recent New Yorker: Film critic Terrence Rafferty refers to the "clear, simple thriller logic" of In the Line of Fire; his colleague Michael Sragow finds that "(screenwriter Sydney) Pollack and his team do come up with a more logical line of action" for The Firm than was present in John Grisham's "vacuous" book. A narrative may create its own premises, but if they are flawed, or if the story proceeds along lines that reveal internal inconsistencies, or that contradict the stable assumptions of the critic, a

work of art may be assailed as illogical.

Definition #4, "Reason or sound judgment, as in utterances or actions," is a colloquial offshoot of #1. It is to informal logic what #1 is to formal logic; more on these terms later. Moving along, "Convincing forcefulness; inexorable truth or persuasiveness," number 5 in Random House, seems confusing at first reading. Which is it, truth or persuasiveness? On reflection, we see that it captures the rhetorical function of logic. If a conclusion follows, or seems to follow, from logical principles, it will be more persuasive than if it does not. Conversely, the perception of logical fallacy, whether the perception is fair or not, will cast doubt on a conclusion that might in fact be true. The "Carlos" I described above latched quickly onto the idea that logic is not something we use to reach our conclusions, but rather a process that we apply after the fact to convince others of their truth. In this idea he has much historical backing, from the Sophists to modern scholars of repute, such as Will Durant, who thought logic too deadly dull for general readership. Logic and rhetoric are sometimes thought of as opposites, but in concept and in practice their relationship is complex, and almost surely predates written language. Rhetoric is a function of logic; logic is a part of rhetoric; whether one can be taught apart from the other is a question that gets to the heart of this

paper.

Definition number six in both RH and the OED relates to the machine I'm staring at now; Webster's expresses it as "the systemized interconnection of digital switching functions ...". This may be a metaphor for what goes on in the brain when we attempt to be logical. Logic is hard; the possibility that computers may take it over is tantalizing. But with computers as with the syllogism, the major impediment to logical discovery is not the abstract method, but its application to the real world. Too, the logic of computers depends on the logic of the human beings who design and program them. He who would design the chess program to beat Kasparov must figure out how to beat Kasparov. Viewed in this way, one function of the computer is to capture for the use of the rest of us, more efficiently than writing ever could for Aristotle, the advances in logic made by the anonymous geniuses at Microsoft.

We ought to pause for a moment on this point. Plato, in The Phaedrus, shows Socrates objecting to the new technology of writing on grounds that fail to convince us moderns, as they obviously failed to convince Plato--that reliance on the written word sacrifices the transactional power of oral communication to assure, or increase the likelihood of, accurate transmission of ideas, and leads to

intellectual laziness. No doubt, literacy has had its costs. Few, perhaps none of today's learned Ph.D.'s could take on Socrates in oral debate on basic questions, or so I suspect. But writing enabled Newton to stand on the shoulders of giants, as well as preserving the logic of Aristotle, and writing has at least this advantage over computers: In order to access the wisdom that writing preserves, one has to understand what is written. Computers threaten to do it all for us. I read recently of a programmer who taught his machine to write a romance novel. After this dubious achievement, it won't be long until harried undergraduates will be able to punch in a subject and a point of view, push the print button, and have in hand an opinion paper of the kind Carlos was struggling with, perfectly edited, or with just enough logical fallacy and sentence error programmed in to deflect suspicion. It's coming. The insidious thing about computers is that it puts power in the user's hands without requiring a modicum of understanding of the bits and bytes that make the technology work, much less of its mighty logic, the product of a million hours of mental labor, retrieved in a micro-second. Literacy makes readers of the many and authors of the few; will computers make reasoners of the few, and something else, something sub-human, out of the rest of us?

Webster's traces logic to the Indo-European base leg meaning to gather, from whence derives the Latin verb legere, to collect. It would be fascinating to know the precise steps by which gathering became associated linguistically with reasoning. We may speculate that the act of gathering implies discriminating or sorting according to pre-established categories--green vs ripe, edible vs non-edible, ferrous vs non-ferrous. So during argument, we gather and sort our data according to whether they contribute to the point we are making. To an emerging civilization at the dawn of literacy, teaching itself the art of reasoned debate, the association between gathering and reasoning would seem, well, logical. In any event, leg became the Greek logos, moved to Latin as logica (reasoning), to French as logique, and thence to Middle English as logike (Chaucer's word).

Logos is a big, big word in ancient Greek texts. Its translation appears to be problematic. Webster's gives "a word, reckoning, thought," but this range doesn't begin to cover the ground for modern translators of the classics. Terence Irwin, translating The Gorgias, renders the word as "speech," "argument," "account", "rational account," "discussion" and "statements," according to Plato's shifting context (Irwin, p. 16, 17, 24, 33, 33, and 42, respectively). Thus in one word did the Greeks unify

speech, thought, reasoning and argument. Logos has also journeyed intact, through philosophy and theology, to arrive in the present as an English noun meaning both "reason, thought of as ... the controlling principle of the universe and as being manifested by speech," and "the Word, or ultimate reality; esp., the creative and sustaining spirit of God as revealed in Jesus: John I" (Webster's). The heavy and varied freight that Logos has borne over the ages has made it a convenient vehicle for certain contemporary thinkers, such as some academic feminists, who use the word to denote the dominant way of knowing that is logical, linear, abstract, principled and masculine, and contrast those qualities with the emotional, recursive, sensual, practical and feminine. As a prefix, logo- relates to words or speech, as in logorrhea: "excessive talkativeness, esp. when incoherent and uncontrollable," a malady that afflicts many of us from time to time (Webster's). The suffix -logy also derives from logos. Thus, the root logos contains within it the concepts of human speech, reasoned argument, the origin of the universe, a unifying method of inquiry, the distinctive methodology of each science, a large part of rhetoric, Jesus Christ, gender differences, and the inner workings of computers. We may generalize that logos and its descendants form one of the primary sets of phonemes by which Western languages have expressed the search for order

to hold at bay the chaos that presses in upon human life; in the etymology of logic are inscribed many of the problems that such a search entails.

II

"Aristotle created the science of logic: this is simple historical fact" (Ferguson 31). This statement is surely over-simplified, but it holds up when logic is understood to mean a formal written system of rules for correct reasoning, and when proper allowances are made for the fact that the Organon, as his logical treatises came to be called, did not arise in a vacuum. He had help. It would be useful here to consider the nature of that help. The circumstances surrounding Aristotle's invention of formal logic have relevance for composition studies.

The cross-fertilization between Greece and Egypt is the subject of much contemporary scholarship that may someday make Ferguson's claim for Aristotle less simple. No Egyptian logical text has been found that would refute the claim, but Greece and Egypt had traditions of informal logic and oral debate that pre-dated Aristotle by several centuries, at least. Zeno, writing a century before Aristotle, had used his famous paradoxes to ridicule the reliance on logic that he observed in his contemporaries.

The Sophists had taught the use of informal logic to serve rhetorical ends; the Socrates of Plato's dialogues took them to task, in The Phaedrus and elsewhere, for specious reasoning. By the time Aristotle arrived in Athens to study with Plato, the claims and limitations of informal logic--the application of reasoning skills to practical problems of life--had been debated and written about in depth.

Developments in religion and politics worked in Aristotle's favor. The gradual decay of the old religion, a cause for anguished debate and social unrest, meant that new explanations had to be found for natural phenomena, opening the door for science. Scientific advances in their turn further discredited the old religion, but not without resistance, so that scientists and philosophers had to argue their positions constantly, not only among themselves, but vis-a-vis a threatened lay public. The limited democracy practiced by citizens of the Greek polis put a premium on rhetorical skills. Logic is a large part of persuasion, becoming ever larger as a discourse community becomes more sophisticated, more attentive to fallacy and more demanding of proof. In the political climate of 4th century B.C. Athens, logic **mattered**. Of course, logic in the service of rhetoric is a malleable thing. In such a situation, people inevitably would be interested in a formalized logic that

could inform rhetoric and guard against its abuses. The demand for formal logic surely predated its existence. The table was set for Aristotle.

To the influences of informal logic, religion (or, its decline), politics, philosophy and science as it then existed, we must certainly add mathematics. In an important sense, the Greeks invented mathematics, too. In retrospect, this shouldn't surprise us. The relationship between logic and mathematics has been speculated upon by many philosophers throughout history, and finally demonstrated in this century by Russell and Whitehead. Of course, numbers and counting and basic arithmetic existed before the Greeks in many places, including Egypt and Mesopotamia. But as the Britannica expresses it, "... what was distinctive of the Greeks' contribution to mathematics--and what in effect made them the creators of 'mathematics' as the term is usually understood--was its development as a theoretical discipline. This means two things: mathematical statements are general, and they are confirmed by proof" (vol. 23, p. 607). These are both attributes of Aristotelian logic, and the influence of mathematics on Aristotle was certainly considerable. Plato was his teacher; Plato's friend Theaetetus was one of the first to gaze through the shrinking interstices that separate integers and fractions, and glimpse the vast Pacific of irrational numbers. More to Aristotle's direct

benefit was the use of variables to replace numbers in geometric formulae and other math applications. Aristotle adapted this practice to formal logic. The use of letters to represent terms and propositions is a quantum leap whose simplicity should not obscure its importance, for it enabled logic to free itself of specific questions and become "general." Of course, this freeing of logic from specific questions makes problematic the application of the general or formal system back to the real world. It is the problem of application that has drawn the most criticism to formal logic. But suspending such criticism for the moment, the use of symbols to replace specific terms or propositions, and the operations to be conducted among them, was as integral to the development of formal logic as variables were to theoretical math. Aristotle was aiming for reliability. The system he sought was one in which arguments were to proceed reliably from premises to conclusion, so that if the premises were true, the conclusion would have to be true. Math was the model for his logic, and the use of symbols, in addition to being convenient, was part of the conceptual framework.

In no other known society did conditions so conducive to the invention of formal logic come together in so happy a fashion. But cruder attempts did originate independently elsewhere. Chinese scholar Wing-Tsit Chan identifies the

"Neo-Moists," named after philosopher Mo Tsu and the school he founded, as having established a "utilitarian humanism" with a basis in logic in the 4th and 3rd centuries B.C. This school produced a rudimentary formal logic with seven methods of argumentation and other advances, but never progressed "beyond the stage of preliminaries, which was reached in Greece by the Sophists ..." (Britannica, vol. 23 p. 242), and yielded to the anti-intellectual movement of Chuang Tsu and the Yin-Yang school. The Neo-Moists had been rivals of Confucianism, suggesting that the antipathy between the influence of China's greatest philosopher and the cause of formal logic made the emergence of the latter unlikely in China, even had Chinese philosophy, with its emphasis on ethics and the solution of human problems, been more disposed to accept it. In any event, as Chan expresses it, "It is unfortunate that this logical movement died almost in its infancy, and thus deprived China of a disinterested, analytical, and scientific system of logic..." (Chan, 47).

In India, logic started later and progressed further, spanning a tradition of twenty centuries according to historian Sarvepalli Radhakrishnan. The Aristotle of India was perhaps Gautama, whose sutras may date as early as the 3rd century B.C. Before Gautama, a tradition of formal debate tournaments existed among educated elite in India

that corresponded roughly to the dialectics of the Sophists. From this tradition evolved several schools of logic, most notable the Nyaya. Logic flourished in the first few centuries A.D., becoming one of five subjects that made up a "pentivium" of classical Hindu education: Kavya (literature), Nataka (drama), Alamkara (rhetoric), Tarka (logic), and Vyakarana (grammar) (Radhakrishnan 32). Not all of the ancient Hindu texts have been translated into Western languages, but as far as we know, the formal logic that developed independently in India didn't progress much further than the Chinese version. "Compared with the logic of the ancient Greeks, Indian logic is not very impressive" (Britannica, vol. 23, 241).

It's possible, maybe, that at some time and place, formal logic occurred in a pre-literate society and died before it could be written down, but it seems doubtful. Reason itself is a universal human attribute, but a formal logic approaching in complexity even a single book of Aristotle's must be read, in depth and at some leisure, to be assimilated; and written down, I suppose, in order to be composed in the first place. I'm generalizing from my own inadequacy here. There probably are geniuses somewhere in the world who could keep it all in their heads, just as there are grand masters who conduct simultaneous blindfold exhibitions in chess. But who, without a board and pieces,

could invent chess entirely in his imagination? And with whom would he play? Plainly put, formal logic is hard. Aristotle's main contribution to it, the syllogism, is said to comprise only a corner of the expanding terrain of formal logic, but it quickly becomes complex. It starts with the four combinations of two dualities, universal-particular and positive-negative; constructs from them syllogisms each consisting of two premises and a conclusion; and further distinguishes three "figures" that vary according to the order of the terms. Each figure has sixteen possible pairings of premises, making a total of 64 if the fourth figure, omitted by Aristotle, is included. This is the number of squares on the chessboard, and chess does not exceed in complexity the possible variations of the syllogism, especially when the enthymeme (a syllogism with one of the premises made contingent, rather than taken as true), is introduced. It would seem impossible to negotiate one's way through this maze without writing down each step. Not that scholars haven't tried to commit the thing to memory. A 13th century wit named Peter the Spaniard "devised a barbaric mnemonic in doggerel Latin displaying all of the moods" [combinations of the dualities] that form valid patterns, starting with BARBARA, which caught on, so that BARBARA became the name of the first mood. (Ferguson 37) (The A's represent the universal positive term, i.e.,

all cats are mammals). But BARBARA depended upon written symbols keyed to a written text. Giving all the respect that is due the memory capacity of pre-literate bards, scops and holy men, it's hard to imagine formal logic existing without writing. The Greek phonetic alphabet, in existence for perhaps six centuries before Aristotle, was a logical tool of huge importance. Ayer, in a radio debate with Father Copleston about logical positivism, suggested that "the belief of Western philosophers in substance was very much bound up with the subject-predicate form of most sentences in Western languages" (Ayer, Meaning, 35). The belief in substance, one might add, gave Western philosophers the confidence in sensory perception to assert first principles upon which science, or logic, could build. The question of whether language creates the world view of a culture or merely reflects it is peripheral to this paper, but either way, the structure of the Greek language, including its written alphabet, gave Aristotle an edge over Mo Tsu and his followers in China.

All of this suggests to me that the relationship between logic and composition is less one-sided than I was used to thinking, before researching this paper. The importance of logic to writing has generally been taken as given, although there has been much disagreement as to the degree and nature of that importance. Most contemporary

critics of logic-based pedagogy don't claim that logic has no value, or advocate that writing not be logical. Rather, they may propose with Miter, that instructors give more emphasis to autobiographical writing, or with Acevedo, that professors pay more heed to the affective side of their students, not to oppose logic per se but to correct perceived imbalances in the pedagogy, or in the way it's delivered. The assumption, inherited from antiquity and the Middle Ages and held by many educators up to recent times, that the study of formal logic sharpens the mind and leads to better writing, is no longer widely held, judging from current educational practices; but informal logic, supposedly schooled by formal logic but adapted to the "real world," is still an integral part of the writing curriculum. Logic is important to writing. Our emphasis on thesis statements, paragraph organization, transitional statements, supporting evidence, etc., proclaims our belief that this is true. Conversely, writing is important to logic, not in the abstract sense, but certainly in the practical. If the idea of formal logic is valid, its validity doesn't depend on human expression, written or otherwise. But for logic to exist, in a form accessible to humans, it must be written down. It requires a sophisticated literacy to be understood and built upon. It requires composition. The relationship between logic and composition is thus a kind of symbiosis.

Formal logic needs composition in order to exist in the world; composition requires formal logic, or at least principles derived from it, in order to achieve coherence, not to mention persuasiveness in most rhetorical situations. It would be hard to teach one without teaching some elements of the other.

Aristotelian logic barely survived antiquity, and advanced but little through the Middle Ages and the Renaissance. Most or all of Aristotle's work was translated into Latin, but only a part of it survived the collapse of Rome and passed directly into Christian Europe. The logical texts fared better than most. Several of them in Greek were available to Boethius as he awaited his execution in 524. While in prison he translated them to Latin and added his own commentary, in the process making "a powerful contribution to the creation of a Latin vocabulary of logical terms" (Copleston 54). Apparently perceiving a relationship between logic and composition theory such as it then existed, "he transmitted to the medievals the distinction, attributed by Porphyry to the Peripatetics, between written, spoken and mental discourse ..." (54). Deprived of most of the Aristotle corpus, the Christian scholars of the Middle Ages knew Aristotle primarily as a logician. Boethius' pupil Cassiodorus divided up the seven liberal arts (compiled earlier by the pagan scholar

Martianus Capella) into the Trivium (grammar, rhetoric, and logic, or dialectic) and the Quadrivium (arithmetic, geometry, music and astronomy). These two courses of study "formed the basis of medieval education" (56) for young scholars who aspired to the higher calling of theology.

Theology had an anesthetizing effect on philosophical speculation during the first Christian millennium. Christianity purports to explain the creation of the universe, stipulates ethical conduct, and answers all questions about the purpose of life (the soul's salvation). It's effect on logic was not so drastic as we might expect, given the modern tendency to see reason and faith as contrary impulses. In a theocratic society, reason must be subordinated to revealed truth, so logic as a means of discovering truth is out. Logic may serve as a handmaiden to theology, though--and it did. The handmaiden role was a familiar one for logic. Organon means a tool or implement, and logic had been conceived as a tool by Aristotle. No intellectual tool was ever worked harder than logic during the Middle Ages. Doctrine supplied for Christian Europe a new set of first principles, some of which (Virgin Birth, Resurrection, transubstantiation of sacramental bread and wine) departed radically from ordinary human experience. A logic that could make plausible such apparently fanciful phenomena would be useful indeed to the Church. Of course,

a logic that proceeded from first principles derived not from doctrine but from tangible reality would be intolerably threatening to institutionalized religion. Theology encouraged logic as a subordinate discipline while keeping a wary eye on its subversive possibilities.

What Christian who ever doubted has not turned at one time or another to reason to prove the existence of God, or to explain the presence of evil in a world created by a God who so loved the world that he ...? Medieval proofs of God's existence became increasingly popular and arcane, and not just among doubters. A believer who takes Christian doctrine as beyond doubt but still possesses intellectual curiosity, and there seem to have been many such, might wish to investigate the nature of his faith, and employ logic as a tool in that enterprise. Copleston chronicles the attempts of a diverse succession of medieval theologians to do just that, starting with Anselm and Abelard in the 11th century. Some wrote in the Platonic tradition, which in 12th century Chartres, for example, meant deriving their cosmology from Plato's Timaeus, and (referring to William of Conches) "[identifying] the world-soul of the Timaeus with the Holy Spirit" (88). Others, such as John of Salisbury, used Aristotelian logic as a touchstone. Whatever their orientation or methods, these writers sought to reconcile faith and reason. By this enterprise, they sought

simultaneously to reconcile Christian doctrine with the wisdom of antiquity and to fend off challenges to their faith from the outside.

Islam in particular was a persistent and formidable challenge to Christianity, and the medieval theologians were spurred on by competition with their Moslem counterparts, and by the evangelical imperative of their faith. To rely upon Christian doctrine was an idle exercise in the face of Islam's own revealed truth, but if Christianity could be shown to have the stronger logical base, conversion might be possible. Copleston cites the De arte fidei catholicae, a 12th century work probably by Alan of Lille (but perhaps by Nicolas of Amiens), as an example of an attempt to rationalize Christianity. Alan's approach was to "exhibit theology as a deductive science, based on self-evident principles" (103). In doing so he was being self-consciously Aristotelian. Ironically, Islam played the same ace. Aristotle had a mighty influence on Islamic philosophy of the same period. His works had been translated from Greek into Syrian at schools in Mesopotamia, Persia and Syria around the time of Boethius, and into Arabic in the 8th century. Thus Aristotle was available to Islamic thinkers from Mohammed's time onward. At least two major works by Plotinus and Proclus were erroneously attributed to Aristotle by the Arab translators, giving a curious

Neo-Platonic flavor to the "Aristotle" studied in Arabia. Nevertheless, for several centuries, "... scientific studies flourished in the Islamic world at a time when such studies in the Christian West were in a much more rudimentary state" (107). Spanish-born Ibn-Rushd (1126?-1198?), known as Averroes to the Christian world, "looked on Aristotle's genius as the culmination of human intellectual activity" (118). Jewish philosophy of the period was influenced by the Greeks as well, with Aristotle gradually eclipsing Plato as the strongest light. Copleston identifies Maimonides (1135-1204) as the foremost Jewish philosopher of the Middle Ages. Born in the same city (Cordoba) as Averroes at about the same time, Maimonides, in proving the existence of God, used Aristotelian arguments. Christian, Islamic and Jewish philosophers worked, of course, from different premises, but shared their approach of borrowing from logic to prove religious truths. Logic did not die during the Middle Ages; it shuffled through the period as the servant of theology.

Aristotle's stature continued to grow as more of his literary corpus became known through Moslem sources; he was now The Philosopher. Aristotelian logic in Christian Europe expanded to accommodate those books of the Organon that were not available to Boethius. Roger Bacon in England and Ramon Lull in Spain represent two directions within the Franciscan order as the "new" logic was digested. The former became

interested in empirical approaches to science and advocated experimental confirmation of scientific truth reached through reason. Lull, devoting his long life to the conversion of Moslems, made advances in logic that were obscured over the years by the fact that he wrote mostly in Arabic and Catalan. He used letters to represent terms and concepts, and described "mechanical devices, with concentric and rotating circles or discs, which would enable people to see the various possible combinations of the basic [logical] concepts" (174). This sounds like the circle diagrams of modern logic texts. Copleston goes on to chronicle the contributions of Aquinas, Duns Scotus and William of Ockham, among others, but from the perspective of today, medieval philosophers added little to pure logical theory, although the use they made of what they had inherited could often be dazzling.

Why mention medieval logic at all? One answer is implicit in Copleston's description of Duns Scotus, whom he clearly admires. It concerns particularly the idea of scholasticism. As Copleston notes, we tend to think of the medievals as "dealing with arid abstractions and developing closely reasoned but involved logical arguments, subtle no doubt but pedantic ... redolent of the academic world of classrooms and formal disputations" (213). In a way, this image of monks quarreling over pin-dancing angels does for

us, by accident, what Zeno was trying to do for his contemporaries a century before Aristotle. It debunks reason. It ridicules logic. It works against the acceptance of logic by today's secular society. The proportion of people who hold Christian beliefs as revealed first principles has dwindled to a small percentage in the nominally Christian countries of the West, including the United States. Not sharing the first premises of theology, we find naive or irrelevant the conclusions to which logic directed the medievals, and therefore suspect the process that got them there. Science is the primary model of our world view. We trust science, even when we don't understand it, as the medievals did God. We don't trust logic, especially the formal Aristotelian kind. It has a heavy, antiquarian feel to it. Alternatively, it's a game like chess, fun perhaps for those who have the patience for it, but not relevant to our lives. To many, formal logic seems both heavy **and** frivolous, difficult but not worth the bother. Our association of it with medieval scholasticism contributes to this reaction. We may see in the etymology of the word trivial the low value we have come to place on the subjects of the trivium.

We think of the Renaissance as a re-birth of classical learning, but this view doesn't apply well to logic. As we have seen, the entirety of the Organon was available to the

late medieval thinkers, who tended to elevate Aristotle to a high pedestal as the pure embodiment of pre-Christian philosophy. The Renaissance took him down a few pegs, especially outside Italy and among those interested in practicing, or at least philosophizing about, science. Francis Bacon, for example, thought he saw the fallacies which had led medieval thinkers astray. Specifically, he distrusted human perception, questioned our tendency to generalize from our own quirky experience and education, recognized the instability of language, and inveighed against the deference paid to very old and very dead philosophers. Aristotle, for instance. Bacon's advocacy of experimental science based on his inductive method helped kick off the scientific revolution. As Minard asserts, Francis Bacon was more of a linguist and rhetorician than a scientist and logician, but his influence on science was substantial. Eiseley contends that Bacon forced a backward-looking Renaissance England "to swallow, figuratively, a pill--the pill of science ..." (Eiseley 20).

Bacon also helped assure that Aristotle would be associated more with formal logic than with the scientific method. As the natural sciences (and later, the social sciences) expanded, they appropriated inductive reasoning for themselves, leaving to logic only deductive reasoning. The latter makes the more powerful claim--that its

conclusions follow with certainty from true premises. Inductive reasoning claims only near-certainty, or probability. But induction, neglected while theology ruled philosophy, opened up new methods for the budding natural sciences. The science of Newton and Descartes supplanted logic and metaphysical speculation as ways of making knowledge. Academic departments based on induction multiplied; logic and philosophy shrank. As the inventor of formal logic, Aristotle lost stature. This was somewhat unfair to Aristotle, whose **own** science was more inductive than deductive. True, he made claims for logic that seem absurd in a scientific context. He thought that a scientific discovery is verified when it can be made the conclusion of a syllogism, or series of syllogisms. Ackrill allows that "the notion that scientists occupy themselves in expounding demonstrative syllogisms based on definitions is indeed laughable" (98). Ackrill goes on, though, to suggest that in describing a science of demonstrative syllogisms, Aristotle was not advocating a practical method, but depicting an ideal or "finished" science. There hovers over Ackrill's discussion of Aristotelian science the cloud of a great historical misunderstanding, resulting in an "Aristotelianism" that distorted the totality of the great man's thinking. Bacon sought to break the grip that "the sterile logic of the Aristotelian school men" had on his

contemporaries (Eiseley 35). More recent scholarship has rehabilitated Aristotle who, it is noted, with his helpers collected and analyzed all the natural stuff they could get their hands on, classifying nature according to observed characteristics. But the perception of his science as absurdly theoretical persists.

So the paradigm shifted gradually from Christianity and a disembodied Aristotelianism to the rationalism of the Enlightenment and the empiricism of modern science, leaving Aristotle momentarily behind. But the scientific revolution left open some of the questions it had raised. What, for example, was the true relationship between deduction and induction? The working out of this question must necessarily re-involve Aristotle, whose science contained elements of both. An epic attempt at synthesis was performed by John Stuart Mill in 19th century England. His Logic comprised six books and underwent many revisions and eight publications during his lifetime (August 95). Part of Mill's genius lay in the ability to find disarmingly simple solutions to old questions. He pointed out that even deductive syllogisms arrive at their first (major) premises inductively. The premise "all men are mortal" is not a deduction, but an inference that rests upon millions of cases. Mill "... established a working relationship between the two kinds of logic" (August 98). The vindication of

Aristotle inscribed in Mill's solution is also contained in the quotation from Einstein with which August prefaces the chapter on Mill's logic: "The supreme task of the physicist is to arrive at those universal elementary laws from which the cosmos can be built up by pure deduction" (August 89). Modern science relies upon induction rather than naus (intuitive reason) to establish first premises, but often proceeds deductively towards its conclusions. Naus and induction are, it seems to me, related psychologically. Naus is probably guesswork informed by experience. Bacon's breakthrough would seem to be his attempt to systematize naus. After him, scientists replaced guesswork with a developing system based on induction and probability, which are now thought to dominate the research methods of the natural and social sciences.

To take it further, Mill describes the method by which hypotheses are generated and tested experimentally as a syllogism with induction supplying one or more of the terms. We may see the truth in Mill's formulation by considering Millikan's oil drop experiment, which established the existence of the elementary unit of electrical charge and won the 1923 Nobel prize for physics. The experiment was the major premise of a syllogism whose middle term might be expressed in this way: particles sprayed through an electronically charged field will fly randomly if there is

no elementary charge, but in a pattern if such a unit exists. The conclusion of the syllogism, that a unit does or does not exist, cannot be deductively certain, since the first premise is empirical observation of a contrived experiment, and the second is a theoretical hypothesis. But if the hypothesis makes sense and the experiment operationalizes the question in a manner that rules out all other explanations and achieves replicable results, then the conclusion may be accepted as true. The breakthrough concept is the middle term, the link between observation and new knowledge. This framing of the scientific method recalls Aristotle's conviction that science, in its pure form, is a search for the elusive middle term (Posterior Analytics II.2.89b36; see Ackrill 100). What Aristotle began to suspect about the connection between deduction and induction, Mill made explicit, and science confirmed.

Up to the time of Mill, formal (deductive) logic had advanced but little after Aristotle. Ackrill quotes Kant as having said that "... since Aristotle, [logic] has not required to retrace a single step ... to the present day this logic has not been able to advance a single step, and is thus to all appearances a closed and completed body of doctrine" (Ackrill 81). That was in 1787. The relationship between logic and mathematics, remarked on earlier, is visible in the contributions made by mathematicians to

formal logic in the 19th and 20th centuries. Editor William Bartley introduces Lewis Carroll's Symbolic Logic by dividing formal logic into three historical periods. The Aristotelian period spanned more than two millennia, with scant change. Bartley fixes the Boolean or transitional period from 1847 into the early 20th century. George Boole, a contemporary of Mill, got deductive logic moving again with a system of symbolic logic modeled on algebra, with applications that reached beyond logic to science and engineering. (Electronic calculators use principles of Boolean algebra to perform arithmetic functions.) Carroll himself was a math professor who devoted much of his last years to the project of making logic fun and accessible to the masses. The logicians of the transitional period did not abandon the syllogism, but put it in a new and reduced perspective. Their task was no longer to validate a line of reasoning by reducing it to a syllogism or series of syllogisms, but to find the logic inherent in a given set of premises or conditions (Carroll 15-23).

The third period began with Bertrand Russell's The Principles of Mathematics (1903). This book, along with Russell's later collaborations with Alfred North Whitehead, sought to demonstrate the unity of mathematics and logic. We grasp intuitively that math is "logical"; Russell attempted to show that from the principles of formal logic,

it is possible to deduce the fundamental principles of math. In the process, he developed a "propositional calculus" that extended formal logic beyond the range of nearly everyone not already defeated by the syllogism or by Boole's algebra. Building on the work of Russell, and heavily influenced by the British empiricists, notably Hume, the logical positivists then took the extreme position that no proposition is meaningful unless it is subject to empirical verification. Logical positivism banished metaphysical speculation from philosophy, along with ethics and aesthetics, in so far as judgments cannot be verified by the senses. Under Ayer, "philosophy is a department of logic" (Ayer, Language, 57).

Logical positivism was attacked from many sides. George Santayana's metaphor for Russell expressed the humanist objection to the new logic: "Russell's eye is mobile and accurate. It sweeps the universe like an intensely concentrated searchlight, but it sees only a small patch at a time ... (absorbed with) the absolutely obvious and logically certain" (Santayana, Birth, 127). Durant averred that the logic of Russell and Whitehead "was as completely divorced as possible from all experience ..." (Durant, Mansions, 29). Karl Popper whimsically took personal credit for killing logical positivism (Schilpp, Popper, 69). Popper wanted to extinguish the growing

preoccupation of philosophy with linguistic precision, but the dominance of linguistic issues over contemporary philosophy, traceable to the logical positivists, shows that he was not successful. But philosophy departments still teach ethics, aesthetics and Hegel. There seems to be a general sense that logical positivism has made its contributions and run its course.

Of the generation we're now discussing, John Dewey had the greatest direct impact on American education. American pragmatism had obvious roots in British empiricism, but the key test of a proposition for Dewey was not whether it could be verified, but whether it worked. Dewey thought practical logic to be a general, intuitive human attribute, like speech, and that experience would show what principles and orders of relations were valid within a given subject. He referred to a "natural selection" by which different logical approaches would compete to meet the test of expediency. The example of jurisprudence served to illustrate the problem of applying logic to human affairs. He quoted with approbation Justice Holmes: "... the whole outline of the law is the resultant of a conflict at every point between logic and good sense--the one striving to work fiction out to consistent results, the other restraining and at last overcoming that effort when the results become too manifestly unjust" (Dewey 130). Better to try each case on

its merits and invoke logic retroactively to justify the outcome. The Pragmatists anticipated logical positivism in the emphasis on experience and distrust of metaphysics, but logic for Dewey was not the unifying principle of his philosophy. Let's find out what works, he urged, and let the British worry about consistency.

The fragmented state of logic that we observe in American education may be said to represent a victory of pragmatism over logical positivism. This is ironic because the logical positivists didn't direct their main attack against pragmatism, but rather against anything that smacked of metaphysics. In this fight Dewey and the Vienna Circle were distant allies. Both preferred common sense to abstract speculation, induction to deduction. Logical positivism, had it prevailed, might have been able to restore to higher education a unifying center to replace rhetoric, which had enjoyed a central position in the American university through most of the 19th century. As departments of rhetoric were replaced by departments of English and communications, and the common core of rhetoric and the classics by the new elective curriculum, undergraduate education lost its center. The logical positivists sought to elevate a unified and sophisticated logic to the position once held by rhetoric, in the process restoring a degree of unity. But the centrifugal power of

pragmatism proved too great. The "whatever works" approach freed each new department to discover its own "logic," its own rules for making knowledge. Also, the relativist bias of our age is as hostile to the idea of logic as it is sympathetic to pragmatism. In any event, the appeal of pragmatism slowly exploded the notion of a unifying logic.

The shards from this explosion lie scattered throughout the academy. Formal or deductive logic is sometimes still said to be the property of philosophy departments, while induction belongs to the natural and social sciences. But after Mill, this formulation is conceptually obsolete. "Formal logic" has also come to mean exalted academic logic, both deductive and inductive, as distinct from informal logic, the practical kind that gets the hay down to where most of us goats can get it. Informal logic is what the Greeks meant by logos before Aristotle came along. We encounter it today in writing classes, critical thinking classes, speech and debate, and indeed, in logic courses, where the textbooks of such "informal" logicians as Toulmin, Quine, Beardsley and Kahane have largely supplanted the study of formal logic. Psychology, as it investigates cognition, attempts to account for logical ways of thinking. Natural sciences teach the scientific method; social sciences, research design and statistics; and math departments, advanced probability theory. Logic is

everywhere in academia. However, only students who take upper-division courses in logic from vestigial philosophy departments are likely to be taught the subject in a systematic way. Most American students know a little of Aristotle, but of the syllogism, perhaps only BARBARA. Each discipline teaches that portion of logic that it deems necessary for its own purposes. Regarding the task of assembling the fragments into a coherent whole, today's students are, to an extent I find distressing, on their own.

III

Despite the close kinship between logic and rhetoric, we cannot accurately say that they followed parallel courses in the evolution of American education. True, the influence of British thinkers dominated American practice until well into the 19th century for rhetoric, and well into the 20th for logic. But aside from the British connection, the two disciplines moved on separate tracks, only occasionally crossing each other at stations along the way. As we have seen, after two millennia of stasis, logic grew exponentially from the time of Mill and Boole. The competing claims of deduction and induction were reconciled, new avenues of inquiry were opened up, and a relatively small number of obsessed geniuses, led by Russell and Whitehead,

built up the structure of contemporary logic. By comparison, the history of rhetoric is a mess, a cacophony of many voices, a mad attic of swinging pendulums and revolving carousels, a twisted skein of theory and practice whose varied threads are truncated only to appear again, decades later, intertwined with other threads in new combinations.

This discrepancy between the recent histories of rhetoric and logic is predictable and healthy. Logic is a permanent, pre-existing system of relations that awaits discovery, or so logicians might have it; one would expect its development to be cumulative, like math. Rhetoric, according to the very oldest and the very newest theory, is transactional, a negotiation of meaning achieved by the interplay of rhetor, audience, object (subject matter), and language, to be used in areas where logic or science or sensual experience are unable to determine truth. Aristotle thought the domain of rhetoric to be the public arena of law, politics, and similar situations where persuasion is called for, but proof not possible. For some, the domain of rhetoric is much greater. There is a new transactional rhetoric, which Berlin identifies as "epistemic," that "exists not merely so that truth may be communicated [but] so that truth may be discovered." Since "knowledge itself is a rhetorical construct" (Berlin, 20th, 165), the domain

of rhetoric is all-inclusive. On the other extreme, social scientists who attempt to employ the methods of natural science, math and logic to human relations may operate from epistemological assumptions more positivistic than Aristotle's, and would narrow the terrain that rhetoric is free to negotiate. As Berlin points out, the variable here appears to be epistemology. As he puts it, "Every rhetoric...is grounded in a noetic field: a closed system defining what can, and cannot, be known; the nature of the knower; the nature of the relationship between the knower, the known, and the audience; and the nature of language" (19th, 2). Berlin goes on to acknowledge that in a pluralistic democracy as large as the United States, it is unlikely that one noetic field, or one rhetoric, will dominate (although one rhetoric, the "current-traditional" one, dominated college writing instruction for nearly a century, and still informs the practice of most [according to Berlin; I would say "many"] English teachers in American secondary schools). There has been no American rhetoric, but rather, many American rhetorics, which have varied hugely in the treatment and importance given to logic.

Berlin uses two different but related taxonomies to help unravel the skein, one for the 19th century and one for the 20th. His two-volume overview does not discuss the details of how logic has been incorporated into American

writing instruction, but is informed by a critical reading of dozens of rhetorical treatises and textbooks. His taxonomies and comments are thus pertinent to our discussion of logic. American departments of rhetoric lagged their British counterparts by several decades, so that as Berlin picks up the story at the end of the Revolution, the classical rhetoric that prevailed in America gave way in the 19th century to a psychological or "18th Century" rhetoric based on Scottish Common Sense Realism (hereafter SCSR). To summarize: Classical rhetoric, descending from Aristotle, Cicero and Quintilian, occupied the central position in American higher education at the time of the Revolution. It was a time-honored, comprehensive system that accounted for every step of the composing process. It had a rational base in the deductive logic of Aristotle, but valued emotional and ethical persuasion in their proper spheres, and accommodated the audience, in that the task of the rhetor was to find the available means of persuasion according to the sophistication of the audience, its receptiveness to the rhetor's message, etc. John Quincy Adams, ensconced in the Boylston Chair of Rhetoric at Harvard for a few years in between stints as legislator and diplomat, assembled his lectures into an elegant statement of the classical position. Published in 1810 to the utter indifference of the civilized world, Lectures on Rhetoric and Oratory

presented "nine lectures on invention, eight on arrangement, ten on style, one on delivery, and even one on memory" (Berlin, 19th, 15). The rational basis of Adams' rhetoric is clearly stated, as is its affinity to the separate discipline of logic: "'The connexion between genuine rhetoric and sound logic is indeed indissoluble. All good speaking must necessarily rest upon the basis of accurate thinking.' He goes on to argue that logic and rhetoric must be separated, but that they are closely related: 'logic to the operations of the mind, within itself; rhetoric to the communication of their results to the minds of others.' In this view, 'logic is the store house, from which the instruments of rhetoric are to be drawn'" (19th, 16). Berlin finds much to admire in the classical approach, including the observation that its professors were dedicated to the teaching of undergraduates. But Lectures was already obsolete by the time it was published.

In explaining the demise of classical rhetoric, Berlin notes that its association with England tended to discredit it in post-revolutionary America, which was struggling to establish a system of education, not to mention a literature, that was suited to and reflective of the American experience. But it was more than that. Adams' rhetoric suffered, unjustly, from the association with Aristotle, and here we see an American replication of the

"great historical misunderstanding" alluded to above in connection with Francis Bacon and the Enlightenment thinkers who followed. 19th Century America conducted the same rebellion against deductive reasoning and in favor of induction that the British empiricists had a century earlier. "And in overthrowing Aristotelian logic, the age discarded Aristotelian rhetoric as well, if only for its association with the deductive method" (19th, 17). George Campbell, one of the architects of the "18th century rhetoric" that defined American rhetoric in the 19th century, went so far as to deny the validity of deductive reasoning in either logic or rhetoric. This anti-Aristotle bias may have had political motives. Aristotelian rhetoric, in so far as it does privilege deductive reasoning, is inherently conservative, since it proceeds from existing knowledge to find new truth, rather than relying upon empirical observation, which might refute existing knowledge altogether. Classical rhetoric's association with the aristocratic English university made it politically incorrect in the age of expanding American democracy. Adams' rhetoric drowned in the same rising tide that swamped the sixth president himself in the election of 1828, the "Jackson" in this case being the rhetoric of Campbell, Hugh Blair and Richard Whately.

These three proponents of SCSR dominated American

rhetoric up to the Civil War, when their American disciples, such as Samuel P. Newman and Henry Day, took over. Newman followed the belletristic approach of Blair; Day built upon the "faculty psychology" of SCSR, following Campbell. Each of these authors differed from the others on some points, and spawned proteges who also had their differences. But in broad outline, as Berlin schemes it out, these "18th century" rhetoricians produced a mechanistic and reductive rhetoric whose direct descendent, the "current-traditional" rhetoric, held sway until the 1960's. Berlin doesn't mention Boole, but we may note that 18th Century rhetoric was not informed by the new Boolean logic, which developed independently of current rhetorical theory. Logic and rhetoric, so closely united in Adams' work, were now split apart, and remain split to this day.

In what ways were these 18th century rhetorics "reductive"? Although based on the probable conclusions of induction, their proponents entertained a markedly positivistic epistemology derived from SCSR and its "faculty psychology." SCSR posited two corresponding realities, the material and the spiritual. Human beings are born with certain "faculties" that enable us to perceive truth in both of these areas, if we open up our faculties to receive it. It's up to the individual to seek truth by developing and freeing the intellect, reason, intuition, etc., in an

environment uncontaminated by the mediation of other thinkers. This done, the seeker may become rhetor by so arranging his speech or writing as to re-create the truth in the minds of listeners or readers. This rhetoric tends to factor out the social context. Since truth is apprehended first by the rhetor, he knows what he wants to say, and so invention disappears from rhetoric, or takes on a new definition, namely arrangement. Truth is not negotiated or transacted, but conveyed. The rhetor adapts his message to his audience, which remains a passive recipient. 18th century rhetoric elevated speech above writing, because speech engages more faculties in both sender and receiver. In this, it anticipated the romantic rhetoric of Emerson.

Nineteenth century America was not yet democratic, and neither was its rhetoric. The American university at mid-century was administered mostly by clerics and served, mostly, the aristocracy. However, after the Civil War, a radically changed economy, an emerging middle class with college aspirations for its children, and the spread of free public education through high school, together with other forces nearly as wrenching, wrought great changes within the academy. It would not be unreasonable to expect, under such conditions, a major paradigm shift in rhetoric. The third category in Berlin's 19th century taxonomy, romantic rhetoric, would have accomplished such a shift, had it

succeeded. Based on the speech and writing of Emerson and other Transcendentalists, "romantic rhetoric" may strike us at first as an oxymoron: since Romanticism glorified the individual and the need for self-expression, of what use is the art of persuasion? Indeed, one common interpretation of Emerson is that his individualism and preoccupation with spiritual reality, or the "oversoul," precluded him from considering a transactional rhetoric. A rhetoric based on this interpretation would be Platonic rather than Aristotelian, and would lead to a composition pedagogy that emphasizes the removal of barriers to self-expression. As with "18th century" rhetoric, the role of the audience as a partner in the making of knowledge disappears. The difference is that the focus shifts not to transmission of effect, but to the authenticity of the rhetor's voice. Recent composition textbooks by Macrorie, Coles, Stewart and others have worked this "rhetorical vein" (Berlin, 19th, 45). But there is a different reading of Emerson that produces a much more comprehensive rhetoric. Emerson, although he sought a faculty chair in rhetoric, never compiled his thoughts on rhetoric into a single treatise on the subject, and his writings allow for conflicting interpretations. But remembering his dictum on foolish consistency, we may extract from Emerson a comprehensive rhetoric tailored to the needs of emerging American

democracy.

Emerson was an idealist in love with self-reliance, and one of his ongoing concerns was the reconciliation of philosophical idealism with democratic politics.

Transcendentalism shared with SCSR the dualism of material and spiritual reality. But under Emerson, the dour Presbyterian outlook of SCSR became an enthusiastic love of nature. The external world was sacred for Emerson not just because God created it, but because its reality corresponded in some organic way to a higher spiritual realm, so that understanding nature is a pathway to understanding the divine. Since language is grounded in the external world, it may express through metaphor the deep, transcendent truth that makes the rhetor valuable and necessary **especially** in a democracy. Emerson's rhetoric derived its energy from the value that democracy places upon resolving problems by discussion and debate. In America, rhetoric **mattered**, and every citizen should be motivated to hone his rhetorical skills to the level of eloquence:

If there ever was a country where eloquence was a power, it is the United States. Here is room for every degree of it, on every one of its ascending stages...Is it not worth the ambition of every generous youth to train and arm his mind with all the resources of knowledge, of method, of grace and of character, to serve such a constituency (20th, 55)?

Metaphor is no mere embellishment nor, as with Plato, the "exceptional province of the philosopher" (48). It is the

universal language of truth. Nor should the orator's diction and syntax be confined to polite speech. Rather, he "must command the whole scale of the language, from the most elegant to the most low and vile" (52). Emerson's democratic rhetoric made the common man into a poet, and the elite orator into a verbal street fighter.

Here was a rhetoric for an emerging democracy. But in spite of Emerson's popularity, his rhetoric never quite took hold. Composition textbooks informed by Emersonian rhetoric did appear later in the century. Fred Newton Scott, a colleague of John Dewey who was himself an admirer of Emerson, published (along with Joseph Villiers Denney and Gertrude Buck) a series of textbooks that presented an alternative to prevailing practice. But romantic rhetoric lost out to the "current-traditional" school. Berlin locates the reason for this in the politics of the academy and of the larger society in which it nested. The egalitarian strain in American culture did not yet prevail over the totalitarian. Emerging democracy aside, America was still a top-down society. By choosing a sender-receiver model of rhetoric over a self-expressive one (and passing Emerson over for the elusive professorship of rhetoric), college administrators were responding to a market demand for communication and correctness--for graduates who could function in a corporate environment. After all, in spite of

being endowed with an egalitarian political theory and entrusted by history with the chalice of democracy, America has remained a conservative society through most of its history. America was not "ready" for Emerson in the 19th century, and may not yet be. The fate of romantic rhetoric may be seen as a demonstration that America's love affairs with its radical thinkers tend not to be consummated by permanent union.

The various nineteenth century rhetorics that replaced the classical assigned a low value to deductive logic. Eighteenth century rhetoric explicitly set itself in opposition to Aristotle. Emerson glorified reason, but it was an instinctive reason grounded in metaphor rather than logic. Moreover, as the century waned, the college curriculum changed in ways that were hostile to both logic and rhetoric. Under the new elective system pioneered at Harvard, the required course in rhetoric shrank from three years to one, and there was considerable pressure around the turn of the century to eliminate the freshman rhetoric course entirely. The new English departments made literary studies their new centerpiece, relegating rhetoric, once the heart of the under-graduate curriculum, to low-status drudge work. Logic lost prestige along with rhetoric, so that the proportion of students who actually studied logic decreased during the era of logic's greatest growth since the death of

Aristotle.

For the 20th century, Berlin employs a new three-slotted taxonomy; rhetorics are seen to be objective, subjective or transactional, according to the underlying epistemology. Objective theories include most notably the "current-traditional" rhetoric, whose most influential proponents at the turn of the century were A.S. Hill and Barrett Wendell of Harvard, and John Genung of Amherst. In the latter's hands, rhetorical study "abandoned concern for the ethical as it became completely positivistic in intent." The composition taught in classes guided by this rhetoric tended to focus on discourse "conceived exclusively in empirical and rational terms" (Berlin, 20th, 8). Emotional, ethical and aesthetic considerations were subordinated to unity and correctness and precision of language. JoAnn Campbell's review of English A at Radcliffe finds the old professors to have been afraid of intimacy and the objects of frustrated covert criticism by some of their students: "Wendell conceived of the classroom as a combative arena and believed that an important element of education--vigorous contest--disappeared when women were taught alongside men" (Campbell 478). This was rhetoric in the service of science, men's work, and it clearly anticipated logical positivism.

The logic employed by current-traditional teachers was

almost always the informal kind. The propositional calculus being developed by Russell and Whitehead and their followers was too large and abstruse to be mentioned in a composition class, and because of specialization and the elective curriculum alluded to earlier, few composition teachers would have been qualified to teach it. By mid-century, those few philosophers and mathematicians who were doing original work in formal logic labored in relative isolation from scholars of rhetoric. By 1949, when two famous New Critics at the peak of their careers collaborated to describe the existing state of rhetoric, practically no one advocated teaching formal logic along with rhetoric. Brooks and Warren voiced confidence that the student need not burden himself with formal logic: "...to learn to think straight is the aim of your education..." (Brooks and Warren 1). "As for logical thinking," you already use it in everyday life; you need merely "to apply it to the subject at hand..." (8). Nevertheless, to develop the "it," the authors included sub-chapters on propositions, evidence, induction, deduction, fallacies, and implied syllogisms. The 928-page Modern Rhetoric was heavily weighted toward analysis of selected passages, models and readings. Composition could not reach up into the rarified world of the new theoretical logic, and didn't feel the need of doing so; but the rational, positivistic, analytical basis of

current-traditional rhetoric is present as Berlin describes it.

Berlin brings the semanticist S.I. Hayakawa into the objectivist tent. I'm not sure he belongs there. His Language in Thought and Action is in part a semantical critique of formal logic. "The belief that logic will substantially reduce misunderstanding is widely and uncritically held," he asserts (241). But logic only works within communities of discourse whose members not only share a common language, but are able as well to "police" it. He finds Aristotle outdated and recommends against "the assiduous study and practice of traditional, two-valued logic..." (241). Thus the conservative wire-puller would pull the plug on Aristotle and traditional logic. Furthermore, his critique of "two-valued" logic--meaning a logic that allows only dualities of right-wrong or true-false, as opposed to gradations of rightness or truth--might be construed as anti-positivist. That said, Hayakawa perhaps displays enough zealous confidence in the explanatory power of semantics to qualify as a positivist, though not a logical one. So he shares tent space after all with the current-traditionalists, and also with purveyors of rhetoric based on structural linguistics and behavioral psychology.

Berlin cites several historical examples of subjective

rhetoric, from Plato through Emerson and Thoreau, past the rhetoric of "liberal culture" and down to Rogers and Maslow. Subjective rhetoric "locates truth either within the individual or within a realm that is accessible only to the individual's internal apprehension..." (Berlin, 20th, 11). Composition pedagogy based on such a rhetoric typically searches for original metaphor, fosters autobiographical writing, emphasizes such practices as journal writing, freewriting and peer-editing groups, and seeks to cultivate the unique voice and vision of the individual student. The teacher becomes less of an authority and more of a co-learner. Practitioners of the art of subjective rhetoric tend to be explicitly hostile to logic if they mention it at all, and it's easy to see why. Their theoretical orientation views students as possessing the innate ability to write, but lacking the confidence. Students have been discouraged by their experience in school from believing that they can write, or they write so fearfully and carefully that their creativity is stifled. The solution for such writers is not to impose tests of logical validity on their writing, which would only inhibit them more, but to remove such blocks, thereby freeing the subconscious mind, accessing existing knowledge, and allowing the writer's individual voice to resonate on the printed page. Such a pedagogy must value the subconscious "logic" of associations

and feelings over the artificial logic of terms and propositions. Echoing Bacon's dismissal of Aristotle, such teachers often refer to logic as sterile, or even oppressive. If logic fits at all into the processes of subjective rhetoric, it is late in the revision stage, after the fact of inspiration, when it is time to bring coherence to the nearly finished product. Logical thinking as a habit of mind is seen as an impediment to writing in the student, and in the teacher, a source of intimidation that he should consciously suppress in the classroom.

The most eloquent defense I've seen of subjective rhetoric is Elbow's Writing Without Teachers. To this short primer on "teacherless writing" the author appends an essay meant to justify his methods to a skeptical academy. In it, Elbow distinguishes between the "doubting game" and the "believing game." Starting with the quote from Alice about believing impossible things, Elbow characterizes the traditional academic enterprise as one of doubting, of seeking truth by ferreting out error, of teaching writing by pointing out faults. The "machinery of symbolic logic," he notes, helps in the doubting game by factoring out the self (Elbow 148). Elbow finds that the doubt induced by years of formal education may ricochet back to the student, turning into self-doubt and blocking the writing process. By contrast, the believing game replaces doubt with a

purposefully naive credulity. Elbow invokes Tertullian: "Credo ut intelligam" (I believe in order to understand). All assertions may be "believed," even absurd ones, in the sense that the believer makes an earnest effort to understand or postulate the people who make them. The doubting game values logic and the dialectic of propositions; the believing game, metaphor (remember Emerson!) and the dialectic of experience. The one extracts the self; the other re-inserts it.

Elbow is willing to risk absurdity for the reward of tapping into the power of belief. But he does so with both eyes open, and makes it clear that he still values the doubting tradition of Socrates and Descartes. His thesis is that the doubting game has held a monopoly over Western culture for too long, and needs to move over and grant legitimacy to the believing game, so that the two may sit side-by-side and reinforce each other. Logic does not die under Elbow's regime, but its mechanical buzz is muffled while student voices are nurtured.

Is rhetoric complete when doubt and belief co-exist? Berlin would say no, if it means that the grounds for knowing remain confined to the objective and the subjective. Berlin holds out for a transactional rhetoric "based on an epistemology that sees truth as arising out of the interaction of the elements of the rhetorical

situation"--rhetor, object, audience, and language (20th, 15). He distinguishes three types of transactional rhetoric. The first of these, the classical, refers to the Aristotelian tradition, a comprehensive body of thought that regards non-scientific knowledge as socially-constructed phenomena, rather than as objective fact. In this ancient formulation, science, math and logic deal with facts outside the domain of rhetoric. Rhetoric takes over at the point where fact cannot be established and agreed on. (But logic, math and science may contribute to the rhetorical resolution of disputes.) Complete and internally harmonious, classical rhetoric underwent a revival in the 1960's with the publication of Edward Corbett's Classical Rhetoric for the Modern Student and articles by Corbett, Hughes, Price, Raymond and others. In the early 1960's, classical rhetoric helped provide material for the emerging discipline of composition studies, as opposed to the old one of rhetoric. Stephen North fixes the birth of "modern Composition, capital C" at 1963 (15). At that time, an educational reform movement in English studies sought to replace the old Dewey-inspired progressive education with more clearly defined subject matter, and college composition teachers, realizing that their subject consisted of some fifty years of practitioner lore without a research base, or the rules for making such a base, saw the necessity of assuming

authority for scholarship in their field. Until such time as the composition community could develop and pursue its own research methodology, it had to make do with the materials at hand. There in the closet was the same baggage from antiquity that had been abandoned in Adams' time, and again by the 20th century logicians. Corbett et al gratefully rediscovered Aristotle, as some academic community or other seems to do, once or twice per century.

Passing over "cognitive rhetoric," we see in Berlin's embrace of "epistemic rhetoric" a quest for that Holy Grail of academe--philosophic unity of the disciplines. If consummated under the terms of the epistemics, one might expect to see a further decline in the prestige of logic, at least the formal kind. Epistemic rhetoric holds that all knowledge-making, without exception, is rhetorical activity. Physical science, math, logic itself, as well as the "softer" human sciences, all must rely on rhetoric to create meaning. Such a formulation would not only restore rhetoric to the center of higher education, but would make it central to each discipline. Seen in relation to the past, it is a truly radical idea. Viewed in the context of modern philosophical relativism, and the resulting unmet need to have something absolute to hang one's intellectual hat on, epistemic rhetoric becomes understandable, even "logical." Here, the absolute is that there are no absolutes. All

knowledge is subject to negotiation and re-negotiation. Certainty is inherently suspect. Each community, each discipline makes its own rules for making knowledge, as they do now; but the rules and the knowledge they produce are contingent, even in the "hardest" of sciences.

The advantages of such a world view to the academy are obvious. It would help guard against false certainty, against the closure of academic minds to new ways of looking at things. It would encourage a proper sense of humility in the face of humankind's imperfect ability to know. It would foster habits of listening and attitudes of acceptance that might, in spite of human nature, restore civility to campuses split and frayed by the culture wars. And it would make multi-culturalism easier for such campuses to digest. New or dissenting groups could advance their agendas without having to overcome the solidification into absolutes of practices, procedures, theories and literary canons that are, at the core, contingent and negotiable. Advocates of epistemic rhetoric would in this light seem to be ahead of the curve in campus politics.

Meanwhile, of course, informal logic and logic-based modes of discourse have remained a part of the college composition pedagogy. A survey of a dozen popular textbooks bears this out. One worthy of mention because of its emphasis on logic is Martin, Ohman and Wheatley's The Logic

and Rhetoric of Composition. The book's unstated premises are that the students of the era (the 1960's) needed help with logical thinking, and that it was appropriate for the composition teacher to supply it. Discursive in tone and measured in pace, the book takes teacher and student on a tour of the landscape of informal logic as it elicits (hopefully) logical writing by exercises scattered through the text. Logic-based chapters on explanation, speech acts, proving and persuasion, containing some two dozen sub-headings such as "The Uses of Definition," "The Limits of Logic," and "The Ethics of Persuasion," precede sections on style, diction and correctness. In that it implies belief that students can and should learn discourse without first having to master correctness, it is consistent with later theorists, such as Shaughnessy. The chapter on proof is interesting. In it the authors echo Brooks and Warren: "Most educated people reason well enough for most purposes, most of the time" (Martin et al, 85). Yet the first half of the book is as much a primer on logic as a composition text. Teachers who have the inclination and time to teach logic to their composition students might find this text congenial. Like many of the texts I reviewed, it squirms against placement in Berlin's taxonomy. Current-traditional in its emphasis on reason, it is transactional in its awareness of the limits of logic and of the social context of

knowledge-making.

Logic texts by Irving Copi, Monroe Beardsley and others have influenced composition teachers and have even been used in the composition classroom. Martin et al acknowledge a debt to Beardsley, whose various editions of Thinking Straight have been in wide use for decades. Of particular interest to composition teachers are Beardsley's distinction between rhetoric (does it convince) and logic (should it convince); his rules of "grouping" and "direction" for organizing evidence (see p.19); the tree diagram for analyzing arguments; and his introductory defense of objective thinking. Copi's Introduction to Logic (seven editions from 1953 to 1986) defines logic in its rhetorical context. W.V. Quine's Methods of Logic, also cited by Martin, emphasizes symbolic logic systems with only indirect relevance to composition. Stephen Toulmin's writings have also been influential. According to Fulkerson, Toulmin's six-part model for informal logical analysis is incorporated into some composition textbooks (although in isolation; see Fulkerson 445). Trimbur reports that the controversial University of Texas program that stipulated a political content for all sections of freshman composition also stipulated the teaching of Toulmin's concepts of claims and warrants as tools for evaluating the course readings, suggesting a less restrictive agenda for the course than its

media critics claimed to have discovered. Another critical thinking text, Howard Kahane's Logic and Contemporary Rhetoric, is distinguished by its accessibility, its emphasis on current topical examples, and its discussion of "impediments to reasoning" (provincialism, loyalty, wishful thinking, etc.) to complement the usual material on fallacies. Some texts, such as Axelrod and Cooper's St. Martin's Guide to Writing, take a middle position, offering both subjective and objective modes of discourse in sufficient quantity to enable the teacher to emphasize one approach or the other, according to the teacher's preference or the perceived needs of the class. Like most composition texts, St. Martin's contains a section on logical fallacies and how to avoid them. Most chapters present a "Guides for Writing" section that provides invention and organizing strategies tailored for the particular mode under focus. In general, today's composition texts incorporate at least some principles from informal logic. But I found no recent text that follows the model of Martin, making instruction in logic central to the teaching of composition. More typical of current trends is Linda Flower's Problem-solving Strategies for Writers. This book mentions logic only in passing, giving instead practical advice on organization, invention, etc. The "issue tree," elements from Christensen's "generative rhetorics," and Rogerian argument

are presented, the organizing principle being Flowers' goal of making the benefits of traditional rhetoric and modern scholarship available to the writer at the point of need. Judging from the sample I reviewed, the presentation of logic in the college composition classroom, once a systematic undertaking, is now done haphazardly as interest in it wanes, and as other activities, notably autobiographical writing, compete successfully for instruction time.

The logic that does get taught is alarmingly deficient in the opinion of Fulkerson, who takes the writers of composition textbooks to task for their shortcomings as logicians. Noting that the texts deal with at least two paradigms--logic, and writing as process--Fulkerson finds that the logic component often fails to integrate with the writing process as presented. The breakdown occurs because the process that the student would have to follow to meet the criteria of the logic component is not delineated. "Almost never do the two paradigms meet in composition textbooks" (Fulkerson 445). Only one, Rottenberg's Elements of Argument, integrates the two to Fulkerson's satisfaction. One reason for this bleak assessment is, I suspect, the lack of time and space to do justice to the complexity of the subject. This situation results in the emphasis on fallacy, which he shows to be inherently negative. "It [fallacy

theory] tells students some argumentative moves to avoid, but not how to reason well" (443). Perhaps more significant is the fact that, as a group, the present (indeed, the last several) generations of composition teachers have not had formal training in logic themselves, beyond a course or two as undergraduates. From medieval times through the middle of the last century, the educated elite knew both rhetoric and logic. As we have seen, the link between the two disciplines underwent severe strain with the demise of classical rhetoric and the rise of middle-period (Boolean) logic. The link snapped at the century's turn when the elective curriculum pulled against the quantum advances in logic under Russell. The resulting gap has been partially plugged by informal logic, but rhetorical theory has been so changeable in recent years that authors of textbooks have had difficulty formulating an approach to logic that mates with their approach to rhetoric.

If logic is important in the teaching of composition, then the field of composition studies is at, or near, a point of crisis. Logic is still taught, but often in a fragmentary way that fails to integrate logic's discipline with the writing process. The emphasis given to concerns of logic has waned while the process model has emerged as the dominant paradigm in the field, and subjective rhetoric has challenged the traditional logic-based pedagogy. There is

no consensus or operating agreement on what if any logic should be taught in the composition classroom, and how to teach it. Many academics, both within and without the field, are at best skeptical toward logic, and sometimes openly hostile toward it, even while using it in their own rhetoric. There is in progress a debate within academia about the validity and place of logic, the outcome of which will determine the fate of logic as it relates to composition. If there is no outcome, we will continue to muddle through.

The current debate is a continuation of a very old one. As we have seen, Zeno ridiculed logic a century before Aristotle, whose works have been attacked periodically down through the ages. But the current debate adds new perspectives that need to be listened to. Before advancing my opinions on how the debate ought to be resolved, I shall briefly consider some of these new perspectives. My personal bias has not been lost on the attentive reader. I am arguing for the re-strengthening of logic across the curriculum, not just within composition studies. For this position to be persuasive, proponents of the logic-based curriculum will have to answer its contemporary critics, and to do this, I must consider, however briefly, the cultural ramifications of the debate, giving particular focus to the problem of the survival of democracy in the post-modern

cultural environment.

IV

Deconstruction, reader-response criticism, multiculturalism and feminism deserve to be treated in far more depth than I have space for here. But they have some common elements, including a shared critique of logic that is implicit in their approach to knowledge-making, and often stated explicitly. The four movements overlap in membership; most of the humanities professors and instructors I've met consider themselves members of all four groups, or are at least sympathetic to their goals. They have each had a transforming impact on campus, and feminism has rearranged the cultural and political landscape of America. I have heard Derrida and Tompkins discussed in high school faculty rooms; feminist and multi-culturalist input has re-written the high school literature anthology and seems poised to re-write the canon of required book-length works as well. These forces beg for inclusion in any discussion of logic.

As Culler points out, Derrida and deMan were capable of minute logical explication of texts, but their method was to push to the point where logic can no longer account for the phenomenon under study (usually but not necessarily a

literary text), and then move beyond that point. Culler quotes Miller: "In fact, the moment when logic fails in their work is the moment of their deepest penetration..." (Culler 23). The irrational, or the "uncanny," is thus in deconstruction privileged over logic. As an instrument of literary criticism, it is hard to find fault with deconstruction on this ground. Literary works, after all, are not exercises in logic. But the success of deconstruction has worked to discredit logic generally, partly by the repeated spectacle of logic failing to deliver the most convincing readings, but also because deconstruction set itself in opposition not only to formalistic analysis, but also to the more recent critical approaches of structuralism and semiotics, all of which are logic-based and positivistic (Miller's formulation, with which Culler voices reservations). Properly understood, deconstruction affirms what most critics, even the most traditional, have long known to be true--that logic can't "read" a literary work, or prove one reading superior to another.

Reader-response criticism has had the same effect of upsetting traditional assumptions about how to read a literary text. A reaction against the practice of close analysis of texts in isolation from their social contexts and circumstances of creation, reader response is to the

reader what deconstruction is to the critic. It removes responsibility for meaning-making from author and text, and places it on the reader. With responsibility comes power and authority. Since different readers produce different readings, it follows that no definitive, "correct" reading can be proved. Logic stresses correctness; it dictates that two contradictory accounts of the same object cannot both be true. Therefore, at least in literary criticism, logic dictates that logic won't work. Reader-response criticism thus has a deconstructing effect on formalistic analysis.

Multiculturalism is a growing force on campus that appears to have a glorious future, given the increasing diversity of the university community and the demographics of society at large. Multiculturalist theory is suspicious of logic, and even more suspicious of positivism. Speaking for previously marginalized cultural groups, James Banks presses the claim that "knowledge is positional, that it relates to the knower's values and experience..." (Banks, 23). He condemns "positivist" critics of multiculturalism, mentioning Leo, D'Souza, and Schlesinger. Banks doesn't attack logic or rationalism explicitly; instead he advances a taxonomy of five kinds of knowledge: personal/cultural, popular, mainstream academic, transformative, and school knowledge. Transformative knowledge, which "challenges the facts, concepts, paradigms, themes and explanations

routinely accepted in mainstream academic knowledge" (26), appears to be privileged over mainstream academic, which is on an equal footing with personal/cultural and popular knowledges. Banks' approach, like Berlin's epistemic rhetoric, seeks to undermine the certainties and complacencies of traditional scholarship. Logic, especially the formal kind, proceeds from one certainty to the next along pathways designed to eliminate error. Thus the logic-based pedagogy and the multi-culturalist agenda appear to be worlds apart. But they needn't be. The bridge between them is the emerging discipline of **informal** logic, which deals not with absolute certainty, but with claims, warrants and inferences whose validity is subject to analysis and testing. If proponents of logic can present a pedagogy that values new lines of inquiry, promoting standards that don't automatically choke off non-standard forms of knowledge, they may yet find sympathetic ears within the multi-cultural movement. If they can't, they will find rough sledding in today's campus environment.

There exists within feminist studies a vigorous anti-rational strain, and another of equally vigorous rational argument. The reconciliation of these two strains has proved problematic for feminists. There have been many feminist attacks on what Ayim calls the "rejection of the emotional and affective realm in the name of reason" (Ayim

190). Such writers see logic as part of the male, rational, abstract, positivist and ultimately destructive dominant thesis in Western culture, as opposed to the female, emotional, natural, relativist and nurturing antithesis. The trap here is that the essential difference between men and women implied by such a formulation may leave women on the margin of serious scholarship, or reinforce the stereotype of female deficiency in reasoning ability. Zawacki recognizes the danger of identifying gender with forms of discourse, yet "we may have to risk focusing on gender difference if we want to hear voices which have been marginalized or silenced by our own insistence on rational argument as the prevailing mode of discourse in the academy" (Zawacki, 34). Feminist rhetoric thus often privileges the subjective over the objective. As Lamb notes, "Current discussion of feminist approaches to teaching composition emphasize the writer's ability to find her own voice through open-ended, exploratory, often autobiographical writing in which she assumes a sympathetic audience." While supporting these approaches, Lamb raises the possibility that the audience might not be sympathetic; what then? Both Lamb and Zawacki work toward a feminist style of argument that seeks to build bridges of understanding between rhetor and audience, rather than pitting one against the other until a knockout blow is landed. Still, Lamb sees the need for

"monologic" argument "at the early stages of resolving a conflict, when both parties need to be as clear as possible about what they think and feel" (11).

This conflict within feminism poses a dilemma for Culler, a male feminist who clearly wants the favor of both camps. "For women writers," he states, "the question has been whether to adopt 'male' modes of writing and prove themselves 'master' of it or whether to develop a specifically feminine mode of discourse, whose superior virtues they might hope to demonstrate" (Culler 172). His answer is that "the example of deconstruction suggests the importance of working on two fronts at once, even though the result is a contradictory rather than a unified movement" (173). The lack of logical consistency here is potentially more than just a temporary embarrassment to feminism. If it is decided that women do indeed write less logically than men, they will either take a back seat in the academy, or re-write the rules of academic discourse. At present, the drive is to re-write the rules.

Proponents of these alternative voices share the dilemma of having to employ the traditional rational discourse of the academy to undermine the academy's traditional logocentric bias. The need for a theory to resolve this contradiction helps explain the increased interest in transactional and epistemic rhetorics. It may

also help explain Stanley Fish. The debate over how knowledge is made--over what constitutes a fact, and whether and when human certainty is ever justified--is one of philosophy's oldest discussions. In the course of framing this debate as a clash between "foundationalism" and "anti-foundationalism," Fish has put forth a theory that allows for rational argument while calling into question the quest for objectivity that drives traditional academic research. Deservedly, he is required reading in graduate rhetoric classes, and anyone seeking to buttress the position of logic in the curriculum will have to confront his ideas.

We may start by observing, in frank admiration, what an inspired rhetorical coinage the word foundationalism is. Nearly rhyming with "creationism" and related by etymology and alliteration to "fundamentalism," foundationalism resonates of religious revivals--of the small congregations with long names that rock away Sundays in the basements of hardware stores in towns a hundred miles to the right of Tupelo, while smarter folks exchange patronizing grins on the sidewalks outside. Practically no one in academia admits to being a foundationalist, and few outside the academy have ever heard the term, so the foundationalist congregation ought to be a small one. As it turns out, though, it's rather large. A lot of us belong in that

basement. A "foundationalist" is someone who attempts "to ground inquiry and communication in something more firm and stable than mere belief and unexamined practice" (Fish 342). Fish enumerates a few such grounds: "...God, the material world, rationality in general and logic in particular, a neutral-observation language, the set of eternal values, and the free and independent self" (343). For the anti-foundationalist, all knowledge is "situated," meaning that it occurs in the context of the knower's own bundle of tacit assumptions. To paraphrase the argument, it is impossible to achieve a neutral, objective position from which to make or evaluate knowledge, or even to focus one's attention on one's own situation thoroughly enough to grasp what that situation might be. The act of examining one's own mental processes is still situated, still context-driven. Objectivity is thus impossible. So the whole rationalist enterprise is doomed the moment it fixes on absolutes. A corollary to anti-foundationalism is that anti-foundationalism itself can't take the place of the other debunked absolutes. Awareness of situatedness does not make one less situated, Fish insists. So we're thrown back on what we already "know," which is good enough to muddle through. We may still make rational arguments. (Fish's essay is self-consciously logical and avails itself of logical signifiers: In short, conversely, then surely,

since, thus, to put the matter in a nutshell...)). But we delude ourselves if we believe that such arguments are anchored outside our own personal and cultural histories.

What are the implications of anti-foundationalism for the teaching of composition? None, avers Fish, dashing the hopes of theorists--he mentions Bruffee, Bizzell, Lanham and Scholes--who have sought to make anti-foundationalism the theoretical basis of reform within the field. Such efforts run the risk of making a foundation out of anti-foundationalism, a trap Fish seems determined to avoid. We're approaching an old philosophical paradox here. The statement that there are no absolutes is itself an absolute, which casts doubt on the original premise. The anti-foundationalist dilemma recalls Descartes. Cognito ergo sum uses logic to proceed from situation to rationalism (and to the existence of a sympathetic God). Anti-foundationalists have little use for rationalism or God, of course. But might it be possible to start with the fact of situation and build a theoretical structure that has some utility in teaching writing? Toner believes she has found such a structure in the field of teacher research, which she presents as a mode of inquiry that is narrative and contextualized, rather than objective and de-contextualized. (See her conclusion, p. 25). She rejects Fish's denial of the link between theory and practice. In any event, we may

read her claims for teacher research in light of the examples of "theory hope" cited by Fish (see especially his discussion of Bizzell, p. 344), and conclude that the attempts thus far to inform the teaching of composition with anti-foundationalist theory have either explicitly attacked logic or promoted non-logical forms of discourse. We may expect that further attempts to link this theory with practice will come at the expense of logic. Indeed, the anti-foundationalism of Fish is practically the same animal as the epistemic rhetoric of Berlin, and may become, or may be already, the new conventional wisdom, at least at the graduate level.

I share Fish's skepticism about the applicability of anti-foundationalism to practice, while opting not to participate in his elevation of situated, tacit knowledge to the forefront of knowledge-making activity. Such elevation strikes me as sentimental. The fact of situatedness is intuitively obvious, but its significance ought not to be over-stated. While philosophy may insist that pure objectivity is humanly impossible, the natural sciences have proven the power of assuming objectivity for the sake of a given experiment. Taking the example of Galileo, sometimes thought of as the father of experimental science: There is no doubt that aspects of his situation influenced his work. But such influence is of chiefly biographical interest.

What counts is what he discovered. To focus on events that expose the situatedness of his career--the revisions to the Law of the Pendulum made necessary by modern measurement techniques, for instance--is to quibble at the margins of his accomplishments. By demonstrating the validity of Copernicus' view of the solar system, he rendered ridiculous the "tacit knowledge" of all the preceding generations of humanity, at least as it related to astronomy. Perhaps we should give most of the credit to Copernicus; perhaps some of it to Ptolemy. We're still quibbling. The point is that a man, or a few men, using observation and assuming an objective stance, employed reason to remove the blinders from mankind in relation to a rather basic area of knowledge.

Insofar as science is driven by induction, which asserts probability but not certainty, and considering that deductive reasoning by humans is subject to human error, it will always be possible to nip at the heels of scientific discovery, to keep all questions open. I cannot prove that the earth revolves around the sun, or even that I exist, to one determined to remain skeptical. Moreover, scientists do make mistakes. What was thought to be a universal principle might stand revealed after further inquiry as an isolated quirk, or wrong altogether, the projection of a situated being who was too eager to publish, whose children

distracted him, or who was in trouble with the Pope. Yet, the objectivist enterprise endures. Mistakes are corrected and new discoveries made. Situated scientists assuming objectivity debunk tacit knowledge, and science bestrides the academy like a colossus, confident in the knowledge that its airplanes fly, its computers crunch, and its healing arts cushion many of the shocks that flesh is heir to. Anti-foundationalism isn't wrong, but how relevant is it in the face of such demonstrated power?

I imagine that scientists enmeshed in the highly theoretical tangle of contemporary research, such as taking measurements of sub-atomic particles or distant galaxies, are themselves anti-foundationalists much of the time. Their method, though, requires grounding their inquiry in a foundation, probably "rationality in general and logic in particular." The possibility of being a part-time anti-foundationalist would be absurd to a "card-carrying anti-foundationalist" like Fish. But the great philosopher-scientists seemed able to live and work in situations of theoretical ambiguity, "believing in" and practicing a scientific method while searching for a better one. The Aristotle of the syllogism was also the Aristotle of the enthymeme. Descartes' quest for certainty led him to abandon all inherited wisdom and start from scratch, using rationally validated methods; he was a foundationalist to

the core. In contrast, Newton's "philosophical claims...are more modest, and more experimental, than those of Descartes" (Toulmin, Cosmopolis, 82). Toulmin's account of Newton places him in the "anti" column, at least most of the time. The careers of Newton and Descartes suggest that what Fish finds true of composition instruction is also true of science: We learn by doing, by making use of materials at hand, including "rationalism in general and logic in particular," and our performance isn't much affected by the weight we give to epistemological theory.

Anti-foundationalism does not inhibit Fish from using rational argument and stating his conclusions forcefully. But those conclusions, if taken to heart, would remove some of the pillars supporting traditional Western scholarship--the Socratic search for self-knowledge and universal truth, for instance--and utterly transform the way the academy conceives of the function of education (such transformation, of course, is Fish's goal). Consider the following:

...I have nothing to say against this goal [of democratic liberalism]--at least not here--except that it is incompatible with anti-foundationalism because it assumes the possibility of getting a perspective on one's beliefs, a perspective from which those beliefs can be evaluated and compared with the similarly evaluated beliefs of others...what anti-foundationalism teaches is the inescapability of situatedness, and if situatedness is inescapable, students could not possibly identify in non-evaluative ways their own beliefs, because as situated beings some set of beliefs of which they

could not be aware would be enabling any identification they might make; and, therefore, the act of identification would from the very first be evaluative through and through. One could escape this logic only by saying that while the operations of the mind are always a function of context, in one operation--the identification of its own context and that of others--it is independent. Such an exemption is obviously contradictory... (350)

The use of syllogistic logic to prove anti-foundationalism strikes me as ironic, and I wonder if logic hasn't led Fish into shallow waters here. Self-knowledge, we are led to conclude, is impossible. Not elusive, as Socrates would have it, but impossible. Fish's consolation--the sufficiency of our tacit knowledge--would not have sufficed for Socrates, who pushed onward in pursuit of universal truth in defiance of the Sophists' contention that truth cannot be proved, that all questions can be argued both ways. Should it suffice for us? Fish states his case in absolute terms; awareness of situation offers no "purchase" on our situations. The picture I get is of a climber whose every step upward brings him slipping back down to his original position; or of a half-blind sojourner whose horizon recedes before him and trails along behind, with no milestone to measure movement, much less a reachable goal. Such a life is not only unexamined, but unexaminable. My own experience of life is better described, I think, by the old "onion" metaphor. The personality is formed by layers; self-understanding, by the critical mind peeling back the

layers to search out the inner core. There are always more layers, but in the time race between self-knowledge and death, some get much closer to the core than others, and for reasons other than mere longevity...An alternative metaphor combines the climber with Zeno's arrow. We may never reach the pinnacle of self-knowledge, but by halving the distance, and halving it again, we begin to approximate wisdom. Perhaps I delude myself, but awareness of situation does give us some purchase--quite a bit of purchase--on the slippery slope. Our understanding is never perfect. We'll never get to the top. But the higher we go, the more we can see of our situation, though not enough of it to satisfy Fish. I can answer his absolute statements on situatedness only by a weak relativistic insistence that, while we can never know our whole situation at once, we can know more of it that we did last year.

Which points up an interesting paradox. Fish, along with like-minded critics of logocentrism in the deconstructionist, feminist, and multi-culturalist camps, has good reason to be fond of logical argument. Logic likes to proceed from certainty. When one holds, as Fish does, that the only certain thing is that there is no certainty, one has a foundation, albeit a narrow one, on which to build an argument. From the premise "all knowledge is situated," one derives "no knowledge is certain," stated as a

certainty. The narrowness of the foundation is glimpsed in Fish's concession that his theory lacks a methodological payoff. Anti-foundationalism is inherently negative and iconoclastic. Conversely, foundationalism, taken here to mean the assumption of objectivity and use of "rationalism in general and logic in particular" to make new knowledge, is in a weaker logical position. It has to assert certainty beyond uncertainty, and as it does so, it invites the ridicule of Sophists like Fish. It has to come up with a convincing result--space travel, say, or the discovery of DNA--to silence, momentarily, the bench jockeys of post-modern relativism.

Is objectivity really impossible? In the strict philosophical sense, I suppose it is. But the pursuit and near-attainment of it is hugely powerful. Objectivity loses the game of philosophy and wins the test of pragmatism. The situated self is escapable only through death, though perhaps Fish would regard death as the ultimate, irreversible situation. But an escape from self, metaphorical but still powerful, seems to occur when one is wholly engaged in something like scientific research, or acting on stage, or a competitive game of chess. Consider the latter activity. Chess is a game of situation, played by situated beings. I don't doubt that chess strategy often mirrors the personality of the players (the mercurial Fisher

being the premier American example). Moreover, the situation is fluid, even between moves, as the players anticipate their opponent's responses and plan responses of their own. Yet, the game is a supreme test of objectivity. Poor players obsess on their own strategy, hopes and fears. Good players often talk of "losing themselves" in the game. They stay focused on the pieces--the objects--and the rules which govern their movement. At the game's highest levels, chess moves are much more a function of logic than of situatedness. Indeed, computer chess programs are starting to win grandmaster tournaments as their logic increases in complexity.

"Modern anti-foundationalism is old sophism writ analytic," Fish suggests (347), reminding us that the debate we're discussing is a renewal of a longer one that goes back to Socrates and the Sophists. The Sophist side is the safer, in that it is always easier to find flaws in someone else's search for the truth than to undertake such a search for oneself. By valuing and bringing out the existing tacit knowledge of his students, as well as by his insistence upon his own ignorance, the Socrates we see in the Platonic dialogues shows his awareness of and respect for the Sophist-anti-foundationalist position. But he was not content with "mere belief and unexamined practice" as the grounds for knowledge. He pursued self-knowledge and

universal truth in spite of the pitfalls, and urged his students to do the same. The power of the Socratic tradition derives in large measure from the foregrounding of rational inquiry in the context of an awareness of logic's limits. Such awareness enables us to critique our inquiry as we conduct it.

It is critically important, though, that our awareness of logic's limits not inhibit us from using logic, and teaching it in the composition classroom. Such inhibition could easily happen in today's academic environment. In his account of Derrida on Freud, Culler discusses a series of dualities, in which the first term is privileged over the second, but is also in some way derivative of it: the conscious mind y the unconscious; life y death; male y female. In seeking to overturn hierarchical relationships among humans, Derrida insists on a period of "reversal," of privileging the second term over the first for however long it takes to overturn the thinking or habit that led to the imbalance in the first place. There is pressure from many feminist and deconstructionist radicals to reverse the terms in some of the dualities we've been discussing: objective y subjective, positivist y relativist, rational y various other ways of knowing, and indeed, male y female. How much "reversal" is occurring behind the closed doors of composition classrooms is impossible to determine. My sense

of it is that the large majority of teachers of freshman composition still devote significant instruction time to argumentative writing. But winds of change are blowing across campus, and the unpreparedness of entering freshmen in logical ways of thinking and writing puts many of them at risk of failure to meet traditional standards. The pressures of this situation have given the momentum to the second term, at least on most college campuses. Today's students are tomorrow's teachers, and I think we have reason to fear for the future of logic when today's Fish-fed graduate students meet Butthead in tomorrow's composition classroom.

My concern is that support for critical thinking and logic in the curriculum, especially in composition, will continue to wane at a time when we shall need them more than ever. The "we" here is the body politic, and the need is to cure the radical anti-rationalism of the post-modern age with the only antidote available--a rational education.

The problem of maintaining democratic institutions in the post-modern environment is the subject of many articles and books, including a recent one by Harper's editor Lewis Lapham, The Wish for Kings: Democracy at Bay. Lapham characterizes the post-modern imagination as a "product of the mass media," whose "vocabulary is necessarily primitive, reducing argument to gossip and history to the telling of

fairy tales. Like the old pagan systems of belief, the mass media grant the primacy of the personal over the impersonal" (Lapham M2). Lapham sees the anti-intellectual, anti-meaning aspects of contemporary culture as analagous to paganism and fears the destruction of the rational impulse, which comes harder to humanity than the telling of stories, but is necessary for democracy to function. In this thesis he echoes Neil Postman's 1979 book, Teaching as a Conserving Activity. Postman was a 1960's radical whose earlier book, Teaching as a Subversive Activity, attacked the traditional pedagogy, especially the emphasis on factual knowledge. Conserving reveals a conversion of the author from radical to conservative. Postman sees the electronic media as the "first curriculum," the most powerful influence in the lives of the young. The first curriculum undermines the second, that of the traditional classroom that values and models inquiry. The media offer fragmented, superficial content that is visual or sensual rather than intellectual, resulting in the short attention spans and insistence on instant gratification that educators have bemoaned since television first appeared in large numbers of American living rooms. Popular culture, both authors contend, is ruining our children's ability to think.

Postman's thesis is that education should function as a "thermostat" or counterweight to cultural trends that become

too extreme. School should re-define itself to correct serious imbalances. He proposes a return to a rigorous traditional academic classroom in which knowledge of the "logic" of each discipline would be a major goal of instruction. In short, school should function as the true counter-culture, in the hope of turning out well-rounded citizens. His aim is not the restoration of positivism, nor does he argue for studying logic in isolation from other subjects. Conserving is informed by modern rhetorical theory and allows for the existence of many "logics." Each subject has its "rhetoric of knowledge, a characteristic way in which arguments, proofs, speculations, experiments, polemics, even humor, are expressed" (Postman, 162). Education should not withhold the logical and rhetorical bases of the subjects it teaches, but rather should place high priority on imparting them to students.

Postman's approach strikes me as timely today, but the creation of a school culture strong enough to stand up to the youth culture will not be easy, especially in troubled districts. Teachers today find themselves pressured to make huge accommodations in the classroom to maintain order and ensure their own survival, much less compete with the "first curriculum." With justification, teachers feel themselves agents of a dozen agendas, many of which are imposed from outside the school community. Principals, administrators,

teachers' unions and parent groups vary widely in their tolerance of change. The current move toward local autonomy, itself a reaction to the crisis in public education, will make top-down reform harder to effect. And classes are too big and money is too scarce...the litany is familiar to us all. Any prescription I could make becomes an exercise in utopian dreaming once it gets outside my own classroom door. But dream we must, especially if the stakes are the viability of the democratic institutions we claim to value so highly.

v

In proposing the "strengthening" of logic in education, I am not suggesting simply requiring the study of formal Aristotelian or Boolean or Russellian logic, in the hope that the mental discipline derived therefrom will transfer to general situations. Carroll and others have claimed such transferability for logic (see Carroll, p. 24 onward, and Emmet, ix). Such claims seem plausible to me, but I was able to find no research results that back them up. Nor do I advocate a scattering of units on critical thinking up and down the curriculum. We have suffered through enough piecemeal reforms to know that they aren't effective, and I'm convinced that a "rational education," however we may

define such an edifice, cannot be built on the cheap. The medieval trivium that we post-moderns find quaint was the rough equivalent of our undergraduate degree. It should not surprise us that the fragmentary exposure our students receive to a lightweight critical thinking pedagogy fails to result in mastery, or to prepare high school graduates for college-level writing. Fulkerson describes an experiment in which two groups of students were taught informal logic in two different ways; when their writing was compared to that of a control group to see if the logic instruction "took," the results were not encouraging. The lack of research support for the current critical thinking pedagogy reflects, I believe, the unfortunate reality that 40 hours of the best instruction one might hope to receive cannot in isolation counterbalance sixteen years of brain-numbing exposure to the electrified grunts that constitute our children's first curriculum.

All this is another way of suggesting that logic, of all disciplines, is least amenable to haphazard attention. An essential quality of logic is that it proceeds cumulatively, like math. We insist on an orderly presentation of the math curriculum, with yearly review so that students who fall behind can catch up. We should follow this model for logic. Indeed, the math curriculum is the closest thing our students get to an organized approach

to critical thinking; its contribution to their development goes far beyond mere manipulation of numbers. But the English curriculum, writing instruction, and critical thinking remain fragmented, and our students are missing something important. They are missing a coherent presentation of the methods by which reason, which is exercised abstractly in math, can be brought to bear on problems whose solutions, if they exist at all, lie outside the realm of numbers. And to the extent this is true, they are missing an informed appreciation of the limits of logic, as well. Just as one cannot grasp the limits of calculus without mastering calculus, so our students cannot benefit from the various critiques of logic without first learning a fair amount of logic. I hope Fish would agree that it accomplishes nothing to ridicule foundationalism or positivism in class and expect students to become anti-foundationalists on faith. They need space to explore positivism, think about the human needs that foster it, examine their own positivist assumptions, and meditate on the implications of their possible abandonment. They get none of these things from the first curriculum, and little of them from the second as it now exists through high school.

Although I'm concerned for the future of logic in the teaching of composition on the college level, at present,

the problem lies in what is happening, or not happening, in K-12 education. Fulkerson's findings aside, teachers of freshman composition do not lack the means and materials for teaching the logical modes of discourse. The most widely-used text (The St. Martin's Guide to Writing) contains more than enough material on logic to occupy the instructor who wishes to emphasize logical writing. We need to solve the problem where it is. The project of countering the first curriculum must reach down into the early grades and extend across the curriculum. It should be as coherent as the discipline of logic itself. And its aim should be not the restoration of positivism, but the cultivation of rational, critical, autonomous thinking in each new generation of American citizens.

Several disciplines have advanced themselves for the role of tying things together. As we have seen, scholars in rhetoric are making the case for the restoration of their discipline to the center of the curriculum. In part to support such a restoration, they give rhetoric a much broader definition than "the art of persuasion." Hence Knoblauch: "...rhetoric is the process of using language to organize human experience and communicate it to others. It is also the study of how people use language to organize and communicate experience" (Knoblauch 29). So global a definition invites the elevation of rhetoric to the position

of arbiter of knowledge-making activity, the role I had conceived for logic in the early stages of researching this paper.

Lunsford makes a similar claim for the field of cognitive studies. She draws attention to the relationship between writing and thinking in a way that suggests support for "rational education," but avoids the L-word: "It seems clear, then, that ...the cognitive strategies of generalizing, inferring, and abstracting are basic to writing...student writers must be able to draw inferences from the wealth of materials, observations and impressions at their disposal in order to conceptualize and sustain even a very short piece of discourse...a writer must produce a text that is able to sustain a reader's inferences about the underlying conceptual structure" (Lunsford, 158, quoting Bracewell, Frederiksen and Frederiksen). Lunsford continues with the observation, backed by "recent studies," that "inferential reasoning skills are not taught until the last years of high school, and then only sporadically and unsystematically taught at best" (158). She notes the difficulty our students have in academic writing, citing Bartholomae, and advocates not a "quick pedagogical cure," but a systematic application of the insights of her discipline to achieve conceptual unity across the curriculum, thus fulfilling the ancient goal of Cicero for a

pedagogy that "would unite thought, language and action" (160).

Our students need more help with reasoning skills than composition and critical thinking courses can by themselves supply. In the current climate, such help should not be called "logic." The last thing our students need is an academic turf war. They need something (why not call it "philosophy"?) to help them make sense of what they are being taught. They are entitled to such help, it seems to me, if we expect them to sort through the complexity of post-modern life, see behind its false gods, and return the level of public discourse to one consistent with enlightened self-government.

The proposal that follows is both unrealistic and anti-climatic. It is unrealistic in that it would strengthen logic in defiance of the major currents of contemporary educational thinking. It will be seen as anti-climatic by teachers who may be looking for a detailed prescription, or who may already be doing the things I suggest, none of which are new. I propose nothing radical. I wish only to arrest the pendulum as it swings toward a naive anti-rationalism, and send it back far enough to ensure that the reductive effects of the electronic culture find a counterweight in the common pedagogy. Even that much asks a lot of the school community, including our students, many of whom

(those most in need of a counterweight, probably) would resist it. Thinking logically is hard. It is also, in the form of the scientific method, the dominant means of making knowledge in the "hard sciences," and in its informal manifestations, has value in nearly every activity that involves rhetoric, analysis of texts, evaluation of proposals, or application of abstract principles to human affairs (i.e., law and politics). Nearly every profession requires logical proficiency in some form. Those who truly wish to empower students should therefore insist upon a curriculum that includes a solid grounding in logical principles.

Such grounding should follow a few general guidelines. First, the temptation to ratify the primacy of inductive over deductive logic ought to be resisted. Both should be taught. The distinction between deduction and induction, and their combination to produce scientific inquiry, are too important to gloss over. Second, as with any subject, logic should be presented in increasing complexity as students develop the intellectual capacity to access it. The math curriculum might serve as a guide here. For example, since deductive proofs are an integral part of geometry, which is commonly taught in the 10th grade, it is reasonable to assume that high school sophomores are developmentally ready for the syllogism. Following the math model, logic should

be presented in a cumulative and coherent way, with frequent parallels drawn between the two subjects so that they reinforce each other. Finally, journal and autobiographical writing should continue to be assigned and encouraged. With Elbow, I believe that the doubting game and the believing game can co-exist--should co-exist--if our goal is a balanced education.

Who will teach the logic curriculum? In the elementary grades, that would be the same person who teaches everything else. When instruction becomes departmentalized, I believe with Postman that the emphasis should be on having all academic teachers teach the logic of their disciplines. Math teachers already teach logic, and the recent movement to stress concepts and applications over mechanics in math instruction can only help prepare students for exposure to logic in other classes. Science teachers are supposedly already teaching the scientific method, and giving hands-on training in the lab on how observation is translated into new knowledge. Similarly, social science teachers should be sharing with students the logic of their field. Or fields, since the "logic" of history, if there is such a thing, is quite different from the logic of, say, psychology. There is certainly a **rhetoric** of history, meaning the set of protocols by which historical questions are researched, sources evaluated, and theses put forth and defended. Logic

is also invoked by historians who see cause and effect relationships between historical events, or analogies between one lost civilization and another. Gradually, as students are ready to assimilate them, the differences between the terms and propositions of history and those of "pure" logic should be worked into the curriculum. And so it should go with controlled experiments in psychology, text analysis in English, and so on.

The departmentalized approach has one obvious defect. It speaks to the peculiar logics of each discipline, but not to the quest for a unifying theory of knowledge. Students would understand math and science and history better, but would not get the benefit of an organized attempt to tie things together until college, if then. I hope we can do more to help students tie their learning together before attempting college study, or leaving the educational system completely. In the middle grades, I'd like to see a home room or master teacher present study skills and critical thinking skills a day or two per week during the SSR (sustained silent reading) mini-periods that seem to be ubiquitous now at this level. In high school, I'd like to require, or at least offer, a "senior seminar" to help students make sense of their education and prepare them for futures as life-long learners and citizens. One semester of it, called "psychology," would present the basics of human

behavior, growth and development, family dynamics, and personal relationships, including ethics, and use literary texts as well as case studies and other readings. The other semester, called "philosophy," would include logic and the scientific method, and political philosophy, focusing on some of the prominent shapers, so that high school graduates could be presumed to know not just the names of Aristotle and Darwin and Marx and Freud and a few others of that rank, but something of how they thought and what they added to the sum of human knowledge. Entering freshmen would take courses in rhetoric and critical thinking as now, but with much greater assurance that they would be ready.

What, exactly, should be taught? I'm not sure about "exactly," but a few ideas suggest themselves to me. In spite of having been told once by an education professor that 9th graders aren't ready for abstract thinking, I'm convinced that they are, or should be, and I've observed children in the late elementary grades struggle impressively with questions, such as the guilt or innocence of certain celebrity criminal defendants, that engage their interest and require application of principles to cases, evaluation of evidence, and distinctions between fact and assumption. It is also true that the intellectual development of children follows its own individual timetable, and for that reason, the logic curriculum in the early grades should be

kept simple and, where possible, fun. Puzzles, games, simple verbal analogies, speeches and debates, and writing assignments that begin to work in logical concepts should be part of the curriculum at this age. Writing instruction should include organizational concepts like topic sentences and paragraphing, introductions and conclusions, and supporting evidence. Topics need not be abstruse. "The Gap is better than Mervyn's," or "the Chargers will make the play-offs," will suffice at this level. The goals should be to introduce the basics, follow student interest, and keep it fun.

Seventh grade strikes me as time to re-introduce Lewis Carroll. The Alice stories stand logic on its head while ultimately supporting it (Alice becomes empowered when she uses logic to critique the absurdities of the adult world, but then must confront "reality"). The Alice experience could be enriched with the whimsical puzzles that Carroll devised to make the syllogism accessible to children in their early teens. By eighth grade, students have had enough algebra to enable them to digest a basic exposure to symbolic logic, preferably in a unit that coordinates this abstract exercise with material on fallacy and/or argument analysis. Writing instruction in the middle grades should include expository, analytical, and persuasive modes, as well as creative and autobiographical, using set forms, such

as the 5-paragraph expository essay, to meet the need of the age group for structure. (But students who demonstrate mastery of the forms and readiness to move beyond them should be helped to do so). Journal writing should include topics that require abstract thought and argument, such as making and defending decisions on questions of values. Reading and writing assignments that teach logic in engaging ways should be developed and shared. (One example: assign a mystery novel, have students keep a log of characters and clues, and assign a series of short papers on who they think did it, and why. Then have them trace and evaluate, perhaps working in groups, the strategies by which the author built suspense about the identity of the guilty party.) By the ninth grade, students ought to be writing short but competent 5-paragraph expositions and 4-paragraph arguments, and simple analyses of literary texts. Also by this time, students should be introduced to, and asked to explore in their journals, such basic philosophical conflicts as determinism y free will, personal freedom y social obligation, and objective y subjective thinking.

By high school, the pre-set essay forms will have outlived their usefulness and should be phased out in favor of organic approaches in which the rhetorical situation determines form. Teachers should be sharing basic rhetorical theory in class as they present new writing assignments.

They should be showing students how to use transitional words and phrases to signal logical relationships, and how to use concepts of grammar and style (such as coordination, subordination, parallel construction, and verb tense) to further reveal logical relationships. Students should be thinking and writing about such questions as logic y rhetoric, positivism y relativism, and scientific knowledge y the humanities. Education at this level should encourage students to focus their growing critical faculties on social conditions, on powerful forces such as the media, and on the tacit assumptions as well as the explicit ones that cultures generate. By the end of high school, students should be ready to make college the transforming experience it can be when one's full intellect is engaged across several disciplines at once.

For this to happen, and to meet the demands of college writing, our students will need to be able to write reasonably clear expository, analytical, and persuasive prose. They'll need to be careful and thorough about defining their terms, developing their arguments, providing evidence, justifying their assertions, and avoiding the damaging inconsistencies, hasty generalizations, and other fallacies that mar the writing of many of our students. They need to become rhetoricians, using the available means of persuasion and modes of discourse to meet a variety of

writing situations. These should be the goals of freshman composition. By strengthening logic in K-12 education, my hope is to bring more of our incoming freshmen up to the level of our better-prepared students. Freshman composition teachers would then spend less time on remediation, and more on rhetoric, broadly defined.

Education can't force the young to abandon its popular culture, but it should work purposefully to mitigate its nihilistic and hedonistic tendencies, its hostility toward reason and learning, its insistence on instant gratification, its superficial worship of celebrity. It must offer something better. Not something more comfortable or entertaining, but something more challenging and empowering. To survive and thrive in college and beyond, and to function as effective and responsible citizens, our young people need to learn to think critically and communicate in the languages of knowledge and power. Whether it wants one or not, we owe our current student population the benefits of a rational education.

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