The idea that theorists in Composition Studies can provide foolproof strategies for creating an ideologically engaged “community of discourse” has been with us for some time now. Whether this community would have an irenic character, in which all parties learn how to get along and perhaps learn to “agree to disagree,” or an agonistic one, in which difference and heterogeneity are valued over and above consensus, we have received no shortage of advice about how to achieve such reflective cultural spaces in our classrooms. The trouble with these arguments lies with the tendency on the part of scholars to revert to idealizations and political abstractions: even when we favor agonistic outcomes, the world envisioned is still kind and gentle, and though we claim to be thinking more carefully about student backgrounds and ideological concerns, we still see their differences as insignificant obstacles to a classroom wherein the many become one. In a recent essay that explores how Mikhail Bakhtin’s concepts of heteroglossia and dialogism might inform an irenic multicultural composition classroom, Chikako Kumamoto offers the following vision of the culturally-aware student writer:

[T]he eloquent ‘I’ is a discourse site of a writer’s epistemological ascent to reach a more richly achieved self—her sense of personal order—through a series of her highly self-aware encounters with powerfully patterned culturescapes, each receptive to critical connections and resulting in a new knowledge of herself. (Kumamoto 75)
The tone here is triumphal, and the writer does little justice to the incommensurable conflict among discourses experienced in writing classrooms every day by teacher and student alike.

For all of our theorizing and self-critique, rhetoric and composition scholars tend to minimize the often interminable character of political and moral disagreement among students from various backgrounds, and, like the writer in the quotation above, we simplify the backgrounds from which they come in order to fit them into our arguments. These tendencies, though efficacious for conference papers and journal articles, threaten to undermine the very objectives that we claim to uphold: the intellectual benefit of our students. One might attempt to counter these tendencies by producing a “new and improved” formula for achieving some measure of community in the classroom, but my aim will be more narrowly focused. I will argue that one of the greatest ideological challenges that students face is not the ubiquitous Other that might be sitting in the next row, but rather the collision of public and private discourses. These collisions, such as those between an instructor’s academic discourse and a student’s religious commitment, are not mere pedagogical nuisances but, in fact, may strain the possibilities of ideological coherence for student writers more generally.

Some scholars operate from the premise that the greatest enemy to a student’s grasping of an issue is the tension arising from differing viewpoints. Trish Roberts-Miller expresses this perspective vis-à-vis moral argument: “Arguing from a specific (and unarguable) moral code means seeing one (and only one) side as the moral one; hence, such arguments are so full of hate” (551). Roberts-Miller seems to fear not that students will have moral perspectives, but rather that they will hold onto those perspectives too strongly, thus opening the door for scorn and exclusion of those unlike themselves. So we are (apparently) left with a choice: if we want a positive, irenic rhetoric in our classrooms, then we will attempt to teach students to, ideologically speaking, play well with others, while if we want sparks and debate, we will foster difference and agonistic rhetoric. Whichever is more preferable may depend upon ideological assumptions and goals or on a given instructor’s pedagogical style.¹

In fact, the moral components of the issues covered in composition course assignments have already created a difficult situation for our students, a situation scarcely addressed by the irenic-agonistic argument in pedagogy scholarship. To illustrate my position, I want to focus on one major discursive conflict that finds its way into many courses: the collision between a student’s personal beliefs and the discourse of the natural sciences.² In journal articles and conference halls, scholars have addressed the latter primarily with regard to the use of quantitative data and methods in research. The former, on the other hand, is often met with trepidation or suspicion. Personal beliefs, termed
by Patricia Sullivan as “cultural frames of intelligibility” (46), are generally connected to religion or some other traditional discourse that many in academia may explain away as merely mystical, emotive, or conservative in character. Beyond these implied assumptions, our ideas about the separation of church and state would render the broaching of students’ beliefs as unseemly and challenge the parameters of legality and ideological fairness in the classroom. Meanwhile, the discourse of the natural sciences is so endemic to academic thinking that even scholars in the humanities ignore its influence on their own perspectives. Put simply, this discursive conflict between the discourse of science and the discourse of belief rubs against the grain of our idealistic theorizations about classroom dialogue. Amitai Etzioni argues succinctly that the moral consensus envisioned by many in composition studies is built on the foundation of “mutual dialogue and persuasion, not coercion” (xix). If we are too idealistic on these issues, though, we may perceive (falsely, I contend) of any attempt to bring religion or other private discourses into such an equation as inviting the resurrection of ancient demons. Moreover, the isolation of scientific discourse as the sole authority on a given topic may not simplify matters for our students but instead may reveal the inability of such discourse to provide the ideological malleability necessary for rhetorical exchange and debate.

Class discussions and assignments related to literature often provide plenty of room for varying opinions. But some issues involving interpretive debate of scientific data, which might include stem cell research and global warming, may seem more limiting in the ideas and engagements generated through class discussion and written analyses. With an incomplete grasp of scientific discourse, inexperienced teaching assistants and even seasoned instructors risk oversimplifying matters for their students by positing that science is a publicly accepted discourse that trumps any private discourses positioned agonistically in relation to science. In this paper, I hope to demonstrate that a more productive orientation toward such a “scientism,” defined formally by Jürgen Habermas as “the conviction that we can no longer understand science as one form of possible knowledge, but rather must identify knowledge with science” (4), may enable the instructor to gain better footing with the discursive nuances of scientific statements and arguments.³ Rather than simply submit to scientific authority or, by extreme contrast, disregard it as meaningless in relation to questions of private belief, we can help students to enter into a fruitful and evolving dialogue with it.

Scientific discourse has an implicit doxa, that empirical investigation will accurately interpret the world, and for this reason, it finds itself rivaled by various other discourses, specifically those that offer a different interpretation of the world.⁴ These discourses often reflect the tenets of various religious
traditions and systems, yet the variety of their expression and manifestation makes them elusive to simplistic labels (“right-wing fundamentalist,” “Catholic,” “liberal Protestant,” etc.). But they are also connected to other traditions, those of region, subculture, nationality, and race. As Alasdair MacIntyre has explained, these belief systems offer various kinds of rationalities, or ways of reasoning, from which emerge assumptions and ideas about issues ranging from politics to ethics to personal behavior and so on (349-88). They vary in foundation and particularities, they are necessarily embedded with numerous public discourses, and they may be silenced out of fear, but private discourses factor into the ideological makeup of the critical mass of students in college writing courses. Despite their resistance to comprehensive understanding, these discourses invite and even demand a level of personal commitment from adherents, a commitment that often incites friction with other discourses that achieve the same *doxa* by different means (D. Sullivan “Discourse Communities” 150). Because college students often lack experience in engaging such robust discourses as those of science and the academic community, they may perceive intellectual challenges to their beliefs as a kind of interrogation (Rand 350; Perkins 586). The general lack of civility in public discourse about politics, religion, and values only reinforces the base-level agonistic character of many expressions of these discourses both within and outside of the composition classroom.

The public manifestations of this tension have not made our jobs easier. Recent films such as *Contact* and *The Exorcism of Emily Rose* have located the discourses of science and personal belief in a strictly agonistic relationship to one another, offering few legitimate possibilities for engagement or dialogue between these rival terministic screens. Both films present this rivalry in formal terms, as the encounter between these two discourses takes place in a courtroom setting where each perspective has its say. The protagonists in each of these films, played by Jodie Foster (*Contact*) and Laura Linney (*Exorcism*), must make a choice between what they experienced (extraterrestrial life and demonic forces, respectively) and the claims of science that would invalidate their experiences; there is no middle ground available by which these protagonists might adjudicate their dilemmas with subtlety. Elsewhere, media coverage of current issues such as the battle between Intelligent Design and evolution in public education and the court case of Terry Schiavo has confirmed the aforementioned dynamic, portraying those with religious views as driven by emotion and ideology in contrast to the cool-headed, facts-oriented scientist. Because conflict is almost always newsworthy, the coverage and populist analysis of such matters encourages little if any of the nuance to this discursive interaction. In a word, these news stories are often portrayed as further evidence of the culture wars in America, with the implication that

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74 *Composition Studies*
all must choose and take sides. While the culture wars metaphor accurately describes these power struggles, it also stifles the possibilities for dialogue or for self-reflection and self-critique. Instead, we are left with a posture that aims simply to undermine the opposition by any means necessary. If the enemy’s position is always already a product of hegemony, then conversation proves futile. By extension, any internal contradictions or presuppositions are then swept under the rug, and the “us and them” character of the debate ignores the multiplicity of available subject positions. Though the specific impact of this cultural construct may depend upon a given audience, the perpetuation of this tug-of-war in the public imagination all but ensures that many students will enter the writing classroom with this basic assumption in tow. At present, writing instructors have inadequate scholarly resources with which to address this specific pedagogical issue.

Despite its ubiquitous character in modern culture, the discourse of science has drawn inconsistent attention from rhetoric and composition scholars in the last decade. Composition theorists often follow the lead of poststructuralists who critique science as a manifestation of dominant ideology, but they have done little with the pedagogical implications of such critique. Even so, Davida Charney and Carol Berkenkotter have argued that quantitative research in composition scholarship need not be seen as blindly positivistic and thus ideologically tainted, citing the post-Enlightenment critiques of Karl Popper and others to demonstrate that science and the results of scientific research are far less objective (and thus ideologically “safe” for progressive scholars) in both practice and self-definition than many perceive. Meanwhile, Dorothy Winsor has investigated the role of rhetoric in workplace-oriented scientific writing.

While some writing instructors may concede that they view science with an air of suspicion due to its association with theories of objective knowledge, few have unpacked its particular situatedness in the context of composition pedagogy. The lack of attention in scholarly publications to the pedagogical impact of scientism may indicate that many in the field of rhetoric and composition may have trouble placing the discourses of positivism and empiricism in meaningful relationship to the dynamics of the classroom. The end result is unfortunate, though, as disciplinary praxis would appear to take science on its chosen ideological terms, a discourse about facts that stands in favorable relief next to the values-laden (i.e. ideological) discursive formations of literature and politics.

In the preface to his book Personal Knowledge Michael Polanyi rejects what he calls the “ideal of scientific detachment” as an unambiguously destructive influence on human psychology and sociology (vii). Such an assertion runs counter to the contemporary public assumption that science proffers what Polanyi derides as a “convenient summary of experience” (9).
The epistemological gloss that organizes different kinds of knowledge in our culture tends to cite scientific data as objective, beyond rational dispute, as “fact,” thus qualifying all other forms of knowledge, especially those related to religion and ethics, as subjective and contested, as indicated by the common moniker of “value.” Polanyi argues that this binary opposition fails to account for the changing assumptions of scientific discourse, for the need for interpretation of all “pure data,” or for the passionate commitment that drives scientists in their discoveries, claims, and investigative criteria.

For his part, Polanyi sees the Enlightenment attitude toward scientific knowledge as overly simplistic and naively positivist, as that epistemological matrix overlooks the ideological, historical, and even emotional aspects of scientific discovery and its resultant discourse. The epistemological implication here is that a “scientific image of the world,” in which all other forms of knowledge are subordinate to the claims of science, has essentially falsified the foundations of knowledge (Gelwick 6). The success of scientific discourse in analyzing and improving the world has resulted in a binary opposition at the heart of epistemology in the modern West. Whereas subjective knowledge identifies all of one’s personal beliefs and values, objective knowledge identifies all knowledge that is theoretically detached from those who adhere to it (12). Thus, the scientist may objectify knowledge. The application of scientific knowledge proceeds from this assumption, consequently eliding the personal and ideological components of science. As Dale Cannon explains in an analysis of the objective-subjective binary opposition vis-à-vis Polanyi’s thought, the concept of objectivity radiates outward from the discourses of science, thus finding its way into rhetorical strategies everywhere:

Since its inception at the dawn of the modern age [objectivity] has functioned primarily in connection with a rhetorical strategy legitimating the avoidance of a preferred view as one’s own, as one competing among others on equal grounds, by presenting it as established on a privileged, impersonal basis, invulnerable to the challenge and interplay of merely anthropomorphic perspectives because it is above them. (158-59)

Were scientific knowledge to remain isolated in the domain of science, the cultural and ideological implications might prove relatively inconsequential. Polanyi explains, though, that because the main influence of science is not in the field of technology but on imagination and worldview more generally, the implications are vast.
Any essentialist view of history or of epistemology tends to depersonalize knowledge and its application so as to take the knowing subject out of the picture. This illusion of objectivity translates into the illusion of autonomy, whereby one may control the flow of discourse and manage the orientation of one point-of-view over and against another. But Polanyi challenges the objectivist view of scientific knowledge through a painstaking investigation of the character of scientific discovery. Discovery involves two crucial steps, imagination and intuition, neither of which are strictly objective (Gelwick 89). While the results of the process require validation and often quantification, the process itself resists strict definition, and the terms of investigation depend upon hunches and assumptions rather than hard data. The scientist works within a web of discursive formations and a dynamic interpretive community, learning his craft in a convivial relationship both to his peers and to his discipline in a manner similar to that undertaken by the child learning speech for the first time (Polanyi 206). The entire domain of scientific knowledge is pursued collectively by individual scientists and built upon the basis of mutual trust in the work of other scientists and in the scientific tradition (219). This tradition does not strictly determine the work of the individual scientist, however, for he pursues his work in relation both to the tradition and to his own interests and ideas. The questions that he asks are not necessarily predetermined, so he must generate those questions and then attempt to answer them through a combination of accepted investigative paths and passionate intuition. Thus, the procedures of scientific discovery occlude comprehensive analysis and are not mechanistic or even strictly ideological. At every step of scientific discovery, the individual scientist must make choices and live with the consequences.

Viewed epistemologically, scientific investigation involves both definite and indeterminate actions and decisions (Gelwick 40). Even though the results of scientific discovery must submit to public scrutiny and validation, the process undermines the assumption that science deals merely with data that might be easily proven or refuted. Rather, this knowledge is based on communal trust and adherence to traditional standards and is not merely utilitarian or empirical in its character. The findings and data of science, then, are not entirely objective, but to label them as merely subjective is also inaccurate. The information and ideas that we think of as scientific knowledge occupy a rhetorical space in which one simultaneously makes verifiable claims about reality and acknowledges that those claims are contested, contingent, and in perennial need of reevaluation and reflection. Polanyi refuses to label any realm of discourse as either objective or subjective, and he thus problematizes the foundationalist/anti-foundationalist binary opposition that many modernists and postmodernists take for granted. But Polanyi did not wish to completely discredit science; rather, he wanted modern intellectuals to view it in its proper
context, as a discourse that speaks intelligently about the world but without exclusive claim to a definitive interpretation of that world.

In the composition classroom, the instructor apprentices her students in the way not merely of writing, but of thinking about questions and problems. In short, I argue that we define the writing process as a heuristic art form. Even when we talk about audience or the perspective of the writer, we often simplify the rhetorical and discursive elements so as to give students confidence in the acts of drafting and refining texts. The theorizing and reflection ultimately give way to the need to produce an insightful, well-organized product. Thus, essay writing for a college course involves a formal aspect that we simply cannot escape. The “objective ideal” made manifest through the process may encourage instructors to proliferate the scientistic habit of mind, whether out of professional ignorance about science or out of capitulation to societal norms. Emotional if not necessarily ideological detachment, accuracy, fastidious arrangement of data—these are the values that we inculcate to one another and to our students for the purposes of logical progression and organizational clarity. It is only natural, then, that when students encounter scientific discourse, they perceive it as an objective discourse (mostly) unfettered by any personal or contextual minutia. The academic environment, with all of its formalities and its endless quest for precision and clarity, offers scant impetus for reflecting on the implications of its relationship with science more generally.

Let us look at the greenhouse effect, commonly termed “global warming,” as an example. Because it is a scientific issue laden with political and sociological implications, global warming seems a prime candidate for introducing students to scientific discourse in the composition classroom. Historically, the debate has been fairly straightforward: the validity of the theory is either supported or refuted with scientific “evidence,” and perspectives have typically been divided according to political leanings to the left or the right. The average composition course reader will have an offering of articles that generally reflect the two perspectives, with perhaps one or two that take more moderate, nuanced positions. For their assignment, then, the students will need to take a side and find scientific data to support their own reflections and arguments. This formula sounds straightforward, but a closer look reveals complications for teacher and student alike.

While the textbook may attempt to provide articles that reflect the varying sides of the debate, its representation will by definition be incomplete and lead students, knowingly or not, in one direction or the other. In addition, the instructor’s own bias about the subject matter may influence the directions of class discussion, and by extension, determine the ways in which students frame the issue in their own writing. Having accounted for major details, then, we can see how this scenario might prove troubling for the
reflective student: she is supposed to have her own opinions but must nevertheless submit to the pronouncements of the scientific community; science is fact, but its implications are explained only by the interpretations that emerge from the writing processes of students who have yet to enter the discourse community of science; while the issues raised by the writing assignment deal with seemingly objective evidence, the goal of the assignment is an argument that manifests one perspective against others. More generally, the discourses that engage the greenhouse effect both as a predictive concept and a physical reality are shot through with assumptions about nature, human responsibility, and political ethics, all concepts which often fly beneath the radar of the average interpretation of a given article. The very efforts to make the subject manageable for a writing assignment can leave out significant voices in the dialogue. The unfortunate irony of this scenario emerges as we see the probable if not necessary implication that the facts-values dichotomy that the instructor may reinforce rather than problematize will induct students into a scientistic mindset, even if unwittingly. But if the instructor takes care to historicize scientific discourse within a web of public and private discourses with which it must spar and negotiate, she may help students avoid interpretive “blind spots” in their analysis. With the fact-value distinction blurred, students will interrogate more closely their assumptions about the discourse of science, and they will in turn be able to identify how their own worldview speaks back to science and creates a dialogue with scientific discourse.

Writing instructors have the means to offer students, most of whom have complex political, religious, and subcultural commitments, the chance to look across at science rather than feel compelled to look up to it in ideological subordination. But the act of closely engaging scientific discourse, reveals this writing situation as inherently problematic on both discursive and ideological levels. Students will not be able to feign confidence in an agonistic position toward science or any dominant discourse without a proper understanding of their relationship to discourse. If they perceive that discourse is always outside of them, speaking to and commanding them, they may feel silenced by this subject position. Polanyi’s theory of indwelling helps to alleviate this ideological pressure while also complicating the relationship between discourse and the writing subject. For Polanyi, indwelling refers to the admittedly partial assimilation and internalization of an idea or a claim in order to understand it and apply it (Personal Knowledge 59, 64). As students are introduced to a given discursive formation, likely assigned readings about a given subject, they will familiarize themselves with the subject matter, but also with the language of the related professional disciplines. When they utilize the words and ideas of professionals in their own writing, the language has become a tool for them. As such, their writing involves a combination of analysis, first in looking at
the language they are using, then in using that language (i.e. discourse) as a tool for communicating their response to the subject at hand. This second impetus finds them in a relatively uncritical relationship to the discourse; they have taken it on as a part of themselves in order to orient themselves to it. Regardless of their attitudes toward that discourse, they will not be able to avoid this indwelling completely. In Polanyi’s words,

> We are faced here with the general principle by which our beliefs are anchored in ourselves. Hammers and probes can be replaced by intellectual tools; think of any interpretive framework and particularly of the formalism of the exact sciences. I am not speaking of the specific assertions which fill the textbooks, but of the suppositions which underlie the method by which these assertions are arrived at. We assimilate most of these presuppositions by learning to speak of things in a certain language, in which there are names for various kinds of objects, names by which objects can be classified. . . . (59)

Just as the hammer becomes, metaphorically, an extension of the worker’s body, the discourse of a subject acts as a foundational principle whenever incorporated into analysis or argument. The committed yet ever-evolving character of scientific inquiry ensures that both the discursive self-identification of science and also the language that it uses to communicate its data and claims will change along with new discoveries and interpretive paradigms. Even as the student critically engages a discursive formation, she will indwell (i.e. internalize) that discourse, even if tacitly so, recognizing the discourse not as objective but as perspectival, determined as much by assumptions and interests as by empirical investigation.

Should instructors fail to connect linguistics, personal commitment, and ideology, they risk losing the centrality of the dialogic process at work in their classrooms. The anthologized primary texts that students encounter often lack the cultural and historical contextualization necessary for understanding the complex interrelationship among different scientific positions and interpretations of given data. Those who would champion authoritative discourses such as science deny that discourses always interact in ways that generate ideas and perspectives rather than stifling creativity, and any “victory” by one discourse over another is always temporary. Michael Bernard-Donals articulates Mikhail Bakhtin’s positioning of scientific discourse as follows: “Bakhtin clearly places the purview of science inside the study of ideologies, implying that the scientific object[s] of knowledge . . . are likewise always
affected—even in their theoretical disclosure—by ideological considerations [sic]” (105). While scientists may address the same issue, at least ostensibly, the presuppositions of their interpretive grids often go unacknowledged, and therefore, unexamined. As Kuhn pointed out famously in *The Structure of Scientific Revolutions*, the metadiscipline of science is a dialogue rather than a list of commandments, a dialogue changing with new findings and shifting presuppositions about rules of experimentation and about the boundaries of knowledge more generally. All too often, students are left with little ideological guidance about how to navigate and, as it were, fill in the blanks of what is in fact a discipline-based dialogue among varying factions. Even so, composition instructors need not feel that they have no means of accounting for this pedagogical shortfall.

Most composition textbooks have at least a small section on the issue of warrants, an issue germane to basic argumentation. Ironically, though, common definitions of warrants in the classroom may belie their complexity even while highlighting their rhetorical significance. The warrant “All men are mortal” in relationship to the argument “Socrates is a man, therefore Socrates is mortal” hardly compares to the assumptions and implied connections that inform both scientific and religious beliefs. Textbook examples rarely disclose the multivalent clash of warrants inherent in perspectives that appear, and indeed may be, incommensurable. When comparing scientific theory with religious beliefs about nature, for instance, instructors should present these competing discourses as worldviews, subject positions that are informed by a variety of assumptions. If scientists offer up experimental data as evidence for their position while religious leaders cite sacred texts or philosophical ideals, how does the evidence for these respective sides interact, if at all? Rather than attempt to produce some ideal speech act in order to foster common ground among various perspectives, instructors may need to spend time unpacking how these various positions talk past one another about the same topic. Warrants do not simply provide a “logic” for a given argument; they also serve as the veritable foundation of the arguments that they inform. For instance, varying ideas about the predictive nature of scientific analysis will likely distinguish those scientists who believe that global warming is a verifiable phenomenon from those scientists who doubt that such questions could be answered with any certainty at all. This set of warrants may also share a symbiotic relationship with other, specifically ideological, ecological, and ethical considerations. In short, a host of warrants might inform what appear to students as the simplest of arguments or disagreements.

The interaction between these discourses, moreover, is not always predictable. A conservative Baptist student may cite a passage from the Old Testament as her reason for opposing abortion and still incorporate the scientific
term “fetus” to describe the unborn child. That same student, though, might view stem cell research as valuable for saving lives in spite of the misgivings of others in her religious community. The interaction among warrants will vary among individuals; while one student may seem predictable in the ways that she adjudicates various claims, another student may not be as predictable. To further complicate this picture, we should note that warrants often resist analysis or challenge by outside discourses. A student who drives an SUV and has a father who works for an oil company may not ever hear the arguments of environmentalists, no matter how well articulated. This contingent nature of the power of warrants may discourage many instructors from connecting them to the hard work of invention and argumentation. But Candace Spigelman has incorporated the terminology of Aristotelian rhetorical analysis to contend that instructors may look at the persuasive strength of students’ personal narratives through particular attention to the “paradigms” and assumptions “both explicit and implicit” that inform the writer’s story (80). Even though they resist easy classification, these paradigms help to determine clarity and validity in argumentation, both of which most instructors address in their comments on student writing. As such, the connection between warrants and argumentation proves more “natural” than we might assume. Even as we challenge students to investigate their own worldviews, we should be careful to reign in our expectations and assumptions about the outcome of those investigations. Some students may well change their minds after acknowledging the potential or real contradictions of their assumptions about a given topic, but others may not.

Rather than attempt to provide simplistic answers to the contradictions that students will inevitably find in the clash of ideological discourses, the instructor should highlight those contradictions so that students may then grasp the agonistic character of dialogue. One means to this end is the reconstruction of syllabi. Many syllabi for freshman composition courses are designed with short units so as to move students quickly from one assignment to the next in hopes of maximizing the amount of writing students do. The reading assignments come from one or at most two readers, and the number of readings per unit is kept at a manageable ceiling so as to preserve the centrality of writing as opposed to reading. Both of these tendencies find the instructor flooding the discursive contact zone and thus dominating the trajectory of events. But making space for students would involve at least two revisions to this approach. First, the instructor might consider longer units—two six week units and one three week research unit as opposed to four three week units before a final research unit. Each unit would encompass several formal writing assignments as opposed to the single essay found in the first example. This strategy would enable students to investigate and write about a multi-faceted topic such as
bioethics or environmentalism from numerous angles, including a personal reflection essay followed by a more critical analysis. The organization of the assignments would allow students to recognize how their own preconceived notions about a given topic intersect with the various political, ethical, and scientific discourses that inform the parameters of the topic. Coupled with this protracted tempo would be “blank spaces” in the syllabus where students would do their own research to add another voice to the collection of discourses and perspectives represented by the textbook’s unit on the topic. In this way, the students would play an active role in shaping the discussion rather than feel that they must submit to the instructor or to the editors of their textbook.

One common means by which instructors manage student discourse is by reverting to modes of discourse when distinguishing public and private language. When we describe student writing, we often characterize narratives as examples of private discourse, where students are allowed to be themselves. The analytical or argumentative essay, on the other hand, is defined as public, critical, and distinct in character from the personal narrative essay. Breaking down writing exercises along such modes may be simplistic but can be helpful for instructors attempting to organize composition syllabi. Even so, we should consider blurring the distinctions between narrative and argumentation that some instructors may take for granted. Utilizing both feminist and traditional conceptions of rhetoric, Spigelman has encouraged writing teachers to consider narrative as arguments because they often “serve the same purposes” (64). Our marginal and end comments offer opportunities for us to encourage student writers to mingle public data and discourse with an attention to private beliefs about ethics and values. As an example, if a student asserts in a draft that she believes that euthanasia violates her Catholic beliefs in human dignity, she should be challenged to draw out the connection between the discourse of medical ethics and religious ideas about the nature of humanity. Some instructors might view the student’s assertion as a gut reaction to a disconcerting idea, but if we create a space for students to explore such connections, then we give them an opportunity to explain, or perhaps discover, why they believe what they believe. Kay Halasek advises that “teachers of writing must resist perceiving the voices of the elder, teacher, or parent as ‘breaks’ in student writing. Instead, we must realize the validity of these voices and their power in our students’ lives as a point from which to begin discussing alternative authoritative voices privileged by the academy” (41). If we lead students to understand that their private beliefs about complex public policy issues can never be put in conversation with academic discourse, then we risk separating the topics of our units from real world application. Students may in turn begin to see argumentation as an intellectual sport without bearing outside the classroom.
With extended units as part of our course construction, we can help create an environment in which the historical and philosophical twists and turns of a cultural debate open themselves to investigation. One of the intellectual clichés of the last two centuries has been the animosity between science and religion, but students might be surprised to see how much both of these discourses have changed in order to make room for and respond to the other. In 1967 Lynn White published an article in *Science* entitled “The Historical Roots of our Ecologic Crisis” in which the writer charged adherents of Christianity in the West with harboring a laissez-faire attitude about the environment, the result of which was a culture which failed to heed the dangers of wasteful consumerism. Because religious considerations had shaped so much of the cultural agenda during the first half of the twentieth century, the lack of leadership from clergy on environmental stewardship led others to ignore the value and necessity of conservation. If church leaders decided to adapt a more thoughtful approach to environmental stewardship, White argued, the rest of culture would follow. The causal warrant of White’s essay proves open to debate and nuance, but the result of his challenge is a conversation among science, religion, and public policy that has remained intense over the last thirty years. Intriguingly, much of the drama in this discursive interaction has escaped media attention. While rhetoric readers might give some attention to this debate in a unit on environmentalism, few would have the space to present the complexities of this conversation. A limited set of offerings on the topic might pit right-wing business interests based in a reading of Genesis highlighting a Christian call to “subdue the earth” against left-wing ecological activism that refers to biblical conceptions of environmental stewardship more implicitly. By contrast, White’s essay and the ensuing debate exemplifies the presence of numerous subtexts to public perceptions about a given hot topic, as well as the reality that there are always more discursive layers to a conversation than meets the eye. The conversation between religion and environmentalism seems to be as much about heuristic explorations as about identifying ideological positions. With so many variables at work, from political ideology to biblical hermeneutics to consumer practices to conceptions of nature, the possibilities for discursive interaction seem endless. When instructors present the interaction among worldviews as points in a constellation rather than on a narrow axis, students can be more creative and self-reflective in finding and articulating their own subject positions.

The example above offers writing instructors an intuitive logic for constructing an extended unit in a freshman writing course. Students might begin such a unit by writing a short reflective piece on their ideas about the relationship between technology and the environment. By targeting a specific audience, say a newspaper editor or a member of Congress, the students would
take the edge off of the generally abstract nature of the assignment. Regardless, the formal nature of the assignment would force the student writers to draw out the tacit assumptions they hold about the topic. From this point, the students would move to a second assignment wherein they would analyze the arguments of one or two articles addressing the subject. The instructor would thus shift the focus of the student writers from the personal to the public, challenging the students to evaluate other ideas for their rhetorical effectiveness and logical consistency rather than simply react approvingly or negatively to those points-of-view. A formal argument would then complete the unit. Here, the students would place their own ideas in context with creative, personal reflections on the topic (exemplified in the writing of Wendell Berry and Annie Dillard, for instance) and more public, scientifically informed arguments written by scientists and public policy experts. The rhetorical goal here is the articulation of one’s perspective as one voice among others. As long as the student could locate her ideas in meaningful relation to the various sources she incorporates into the argument, nothing would be off the table. On the one hand, the student writer will acknowledge her indebtedness to the public voices on the subject, but on the other, she will clarify, critique, and perhaps preserve, her “private” assumptions, as well. The heteroglossia that scholars take for granted as a foundational characteristic of public discourse will then have manifested itself for instructor and students alike.

Consider the following voices that interact when a student writes about science in freshman composition: the various ideas floated by the instructor, the different perspectives of classroom peers, the sources researched (both those cited and those residual in the writer’s subconscious mind), past experiences with science both informal and formal (views of science gleaned from popular culture and from other textbooks), personal convictions, religious beliefs, parental and peer attitudes toward science and toward the given subject, and ideas gleaned from media sources. This short list indicates the presence of far more than David Bartholomae’s famous discursive continuum running from students’ “primary discourse” and that of “standard, official literary criticism” (690). As they write analyses that combine quotations and statistics from divergent professional sources, notes from class discussion, and personal thoughts on the given subject, students would be served by seeing their work as a polyphonic amalgamation of various perspectives and discourses that, by its exploratory nature, proves contingent in its claims and assessments. The instructor might encourage the students to look at the rhetorical situation as one inviting a variety of perspectives, not merely one or two. This agonistic stance holds out against scientistic indoctrination in the microcosmic sense and totalitarianism in the macrocosmic sense, and it enables the student to engage meaningfully with authority while still maintaining her own voice. This empowerment will
likely manifest itself through a process of discursive refraction. Rather than simply mimic or repeat what they read or hear, students will take up the goal of accenting, of redirecting the authoritative claims of their primary sources. Though they will doubtlessly be shaped by what they read, their own analysis (reading) can now take on a more ideologically charged aspect.

But we would be remiss to assume that we can or should attempt to direct any group of students toward consensus. Chikako Kumamoto articulates a rather utopian vision of how the individual might experience dialogism:

An interiorized community of one, the eloquent “I” is the self-other dualism transformed into a self-diversity wherein exist synchronously and heterogeneously meaning-inscribed multiple “I’s.” Conceived in my faith in the mind’s inherently cognitive and transformative abilities to absorb, integrate, combine, fuse, and synthesize different sources of knowledge, the eloquent “I” is multidirectional . . . and sees its self [sic] through the notion of the other and discovers various others within. (74)

Kumamoto explores the rich possibilities for the dialogic classroom within the consciousness of an individual student, but a truly multidirectional self seems more believable in theory than in experience. Consensus may occur in frozen moments both internally and socially, but may prove too perfect for most instructors to achieve. In “Consensus and Difference in Collaborative Learning,” John Trimbur has argued for a “revised notion of consensus” that “depends paradoxically on its deferral, not its realization,” and he is “less interested in students achieving consensus (although of course this happens at times) as in their using consensus as a critical instrument to open gaps in the conversation through which differences may emerge.” He is not interested in an agonistic rhetorical situation as opposed to an irenic one. Rather, he states, “Under the utopian aegis of consensus, students can learn to agree to disagree, not because ‘everyone has their own opinion,’ but because justice demands that we recognize the inexhaustibility of difference and that we organize the conditions by which we live and work accordingly” (614-15). This more balanced perspective on the possibilities of classroom consensus ensures that our multicultural classrooms can be truly multicultural, taking on lives of their own rather than conforming to well-intentioned if unrealistic scholarly visions about how they should look and operate.

Without this dialogic model as a backdrop for science-oriented writing assignments, we risk ignoring the role of private conviction in the analysis of public information. Don Bialostosky explains: “Recognizing languages as
languages and exploring the worldviews inherent in them allows us to engage languages in a new way: responsibly, self-consciously, and openly, or—for it amounts to the same thing—authentically” (17). If a pre-med student believes that all of the mystery of bioethical technology can be spirited away by empiricist discourse, then she may assume, mistakenly so, that her own subculturally-informed ethical responses to genetic engineering can never impact the public conversation on such matters. By highlighting the contingent discourses that shape the various disciplines of science, we enable our students to find a space in which to respond with confidence not merely in their analytic skills but in the strength of their private commitments to the assertions of various public authorities. From a self-consciously ideological perspective, this revised approach to science in the composition classroom enables our students to recognize the learning process as a process based on contingency and socio-historical context. Just as the scientist must learn through the role of apprenticeship, in relation to a community and answerable to peers and authorities, so the student must do the same. Far from delimiting the boundaries of knowledge, these criteria provide for hermeneutical exploration and unforeseeable new directions in creating arguments and subject positions with respect to the issues in question. Just as the scientific discoverer is guided by intimations of hidden knowledge (Polanyi 395), the student will also feel free to interpret her relation to science more openly in the assigned paper topics. As a result, a well-developed assignment has the chance to serve as both an investigation of a specific problem or issue and a more ideologically-focused engagement with a dominant cultural discursive formation.

Finally, students will not feel that their personal convictions need to be threatened either by the claims of science or the challenges of the freshman composition classroom. The instructor should orient her classroom and assignments so that students will engage discourses that might differ with their personal commitments without presuming that they must necessarily compromise those commitments in order to either please the instructor or engage the subject in question (Lynch 271). Such assumptions ring false with democratic pedagogy and our current understanding of discourse more generally. Bakhtin explains, “It is necessary that heteroglossia wash over a culture’s awareness of itself and its language, penetrate to its core, relativize the primary language system underlying its ideology and literature and deprive it of its naïve absence of conflict” (368). The key is not the avoidance of conflict but rather its embrace. Bialostosky offers much-needed perspective here: “Though we would not want to train students in inappropriate genres and behaviors that would hinder their success in history or biology or even other English classes, we are free to engage them in intellectual struggles from which they learn to hold their own and choose their own genres, not just to behave themselves”
(16). If students enter the struggle willingly (and some students may never do so), their experience in the writing course will equip them not merely to critique pronouncements from science but to embrace an intellectual humility that identifies the contingent nature of all human endeavors. That perspective will enable them to resist the various calls of hegemony in our day. As long as individuals have to wrestle with the assumptions of an often conformist culture, the experience of discursive interaction in the composition course can only serve to assist them in navigating and interpreting public knowledge with better clarity and fewer opportunities for deception or coercion. With such results, we may yet see a world with more informed belief and less dogma, scientific or otherwise.

NOTES

1 The battle over irenic and agonistic rhetoric and their relative merits in the composition classroom has raged for decades. Two seminal essays on the topic include Kenneth Bruffee’s “Collaborative Learning and the ‘Conversation of Mankind’” and John Trimbur’s “Consensus and Difference in Collaborative Learning.” Two helpful book-length studies of the issue are Deborah Tannen’s The Argument Culture and Gregory L. Clark’s Dialogue, Dialectic and Conversation.

2 For recent articles dealing overtly with issues of faith in the composition classroom, see Rand and Perkins. Rand articulates that faith issues are often more important to students than to instructors and that instructors should encourage students to express their faith responsibly in academic discourse rather than attempt to silence or ignore its role in students’ discursive formations. (Marsha Penti refers to religious students as “students of difference.”) Perkins, meanwhile, asserts that critical pedagogy modeled by Freire and others has created a space wherein students may learn to integrate their faith into their academic work in intellectually significant ways. Thus, Perkins claims, writing instructors should help students utilize their faith commitments to “generate” a critical literacy with respect to social issues raised in writing assignments.

3 While many in the humanities take the perspectival nature of scientific discourse as a given, few know of the historical evolution of objectivism as a concept. Lorraine Datson offers a solid overview of the history of this notion in “Baconian Facts, Academic Civility, and the Prehistory of Objectivity.” The other essays in Megill’s collection provide various reflections and interpretations of objectivity as both a concept and a standard in various academic disciplines.
In this essay, I use the term *doxa* in the Greek sense, as a reference to belief, religious or otherwise, but one might also connote this term as opinion, or, more forcefully, judgment.

In “Making Writing Matter,” Jane Hindman discusses the “master narrative” of Alcoholics Anonymous and its transformative power in her life even though discourses of recovery find themselves marginalized by more dominant discourses in academia. Her example demonstrates that subcultural discourse traditions take many forms; writing instructors would do well to realize that many students now embrace alternative religions (Wicca, for example) with no less fervor or commitment than those who adhere to more traditional religious discourses.

Discussions of popular culture in composition studies have tended to look at specific technologies rather than genres of entertainment. Two book length studies of the ways in which television and computers have affected literacy and language are Kathleen Welch’s *Electric Rhetoric* and Bronwyn Williams’s *Tuned In*. The former investigates the role of popular culture in writing and literacy from the point of view of classical rhetoric and theory, while the latter investigates opportunities for pedagogical use of popular culture in the writing classroom, identifying the television show as a certain kind of text with its own particular rules for production and reception. But despite these studies and the inclusion of sections on popular culture in many composition readers, how and whether writing instructors should include pop culture in their courses remains a heated debate. In the January 6, 2006 edition of *The Chronicle of Higher Education*, Mark Bauerlein writes a polemic against the use of popular culture in the humanities, citing it as a distraction from more important cultural and political issues.

Both Charney and Berkenkotter incorporate the assumptions of feminist and postmodernist theory to challenge the profession to reevaluate its orientation toward scientific discourse and the use of quantitative data in composition research. Meanwhile, Dorothy Winsor focuses on work-place technical communication. Winsor’s work reveals the impact of convention and expectation on one’s introduction into and use of technical discourse outside the classroom, but her connections between discourse and the acquisition of particular kinds of knowledge is helpful for writing instructors, as well.

For book-length introductions to Polanyi’s thought, see Richard Gelwick, *The Way of Discovery* and Drusilla Scott, *Everyman Revived: The Common Sense of Michael Polanyi*. Polanyi has received relatively little attention in composition and rhetoric scholarship in the last few years, but those looking for a collection of articles on connections between his thought and rhetoric and composition should look at *Pre-Text* 2.1-2 (1982) for a special issue dedicated to Polanyi.
In a peculiar irony, many rhetoric readers have all but eschewed any direct engagement of science. The ever-popular *Everything’s an Argument* (Lunsford and Ruszkiewicz) has no coverage of scientific issues, as is the case with *Open Questions* (Anderson and Runciman), a reader that focuses exclusively on ethical issues. The Prentice Hall reader *Inquiry* (Bloom et al.) does a little better, as it includes a section on science that focuses primarily on Darwinism but also follows this section with Thomas Kuhn’s essay “The Route to Normal Science,” which treats science as a discourse. One notable exception to this tendency is the reader *Saving Place* (Dobrin). The various essays included here offer underclass writing students various points of entry into reflections on nature, their relationship to it, and ways of ensuring a meaningful future for nature and humankind alike. Even so, the offerings tend to veer away from scientific discourse toward creative reflection and public policy debate, and the model of discursive interaction here resembles a more intuitive blending of ideas about the physical world and personal commitment than the more combative model that I incorporate in my essay.

In her article “Revealing Silence: Rethinking Personal Writing,” Anne Ruggles Gere is particularly helpful in mapping the connection between students’ personal writing and the positive aspects of silence. Gere explains that the use of silence enables a student to negotiate the writing situation on her own terms, and that her silence may represent ethical choices rather than anxiety or ideological coercion. Perhaps, then, silence may indicate a desire not to fully engage a particular discourse, a right of students that teachers should willingly defend.

For a helpful introduction to the subject of warrant with reference to scientific discourse, see R. Allen Harris, “The Rhetoric of Science.”

The modes of discourse as traditionally codified have fallen out of fashion, but the interest in personal, expressive discourse as a counterpoint to the argumentative essay remains fertile ground for scholarship. Even so, the tension between public and private discourse that I have highlighted in my essay has been seen by scholars as alternately promising and dangerous. A recent collection of perspectives on this issue, “The Politics of the Personal: Storying Our Lives against the Grain” (Brandt et al.), indicates the slim probabilities for consensus on the issue.

Though Spigelman’s observation proves helpful in terms of evaluating rhetorical purpose and effectiveness, she ultimately subsumes narrative within argument, as the former is only validated insofar as it operates similarly to the latter. Nevertheless, her book-length treatment of the issue, *Personally Speaking* offers a helpful overview of the prospects for challenging disciplinary assumptions about the basic ingredients of academic discourse.
The White essay has spawned a long conversation about environmental ethics from scholars in various fields, including the natural sciences, philosophy, ethics, and theology. The conversation has revealed various definitions of environmental responsibility, stewardship of what Christians believe to be a created order, and has spilled over into discussions of consumerism. Perhaps the most famous entry into the debate is Albert Gore’s *Earth in the Balance*, while the presence of Catholics, Quakers, and Methodists in the discussion has indicated the variety of ethical perspectives in Christian denominations.

Thanks to Bakhtin, we now use various iterations of heteroglossia to explain this conglomeration of discourses in modern culture. Though scholars have theorized and applied the term endlessly, the ineffable and even unmanageable quality of many of the non-academic “voices” that speak through student writing may indicate that the term serves as a theoretical placeholder as much as a useful descriptor for investigating discursive interactions.

Works Cited


