The practice of critical thinking in North America, where it has taken root, splits into two focuses—each with characteristic methods and theoretic underpinning. The first, and a progenitor of the current effort, is the undergraduate critical thinking or informal logic course, drawing justification and pedagogical strategies that grow out of the traditional role of logic as a mechanism for supporting thoughtfulness. And with such courses came the substantial industry in textbooks and university positions that responded to the late 1970's call for cognitive remediation and intellectual readiness for non-traditional college students who responded to the expanded availability of post-secondary education in that era.

The second focus, reflecting a variety of trends in pre-college education—including those in developmental and cognitive psychology, curriculum theory, problem solving, and "hands on methods" in science, in addition to elements of formal and informal logic, has resulted in a wide variety of materials suited for integration into existing subject matter, particularly in the elementary school, as well as comprehensive explorations of teaching and learning. This latter, generally identified as the critical thinking movement, is, in addition, focused on deeply comprehensive recommendations for educational reform. The former focus is generally more limited in its concern with teaching in general, remains housed within university departments teaching philosophy, communications, or composition, and generally respects the political integrity, if not insularity, of disciplinary learning elsewhere.

This paper recommends that those concerned with critical thinking at the post-secondary level expand their view consistent with advocates of educational reform in pre-college education. Critical thinking at the college level needs a paradigm more deeply rooted in the social and moral requirements of thinking in a complex world, including a more critical look at prevailing practices. This requires, first, that the normative force of educational reform
through critical thinking be made transparent in its application to post-secondary education, and, second, that the theoretic weakness of prevailing conception of informal logic be exposed.

This is a dangerous inquiry, for informal logic has yielded a happy compromise for critical thinking advocates at the college level. Rather than explore the institutional and pedagogical reasons that critical thinking is so rare among our students, most critical thinking advocates at the college level limit interventions to the safe area of first-level courses, freeing other faculty for business as usual. But there is danger in the politics of informal logic based approaches as well. In their search for generality, informal logic courses look to available content, usually short selections from the press or popular essays that present issues freed from the complexity of learning in the academic disciplines. This opens such courses to the charge that in attempting to teach available general rubrics applicable to non-academic, content they teach little of value when contrasted with the depth and breadth of information and skills included in the traditional academic disciplines (See McPeck, 1981 for the classic statement of the complaint).

Of course, limiting critical thinking to first level courses renders such a charge less serious then it otherwise might be, but the cost is the isolation of critical thinking and informal logic skills and attitudes from teaching across the subject areas. And to the extent that the underlying goals of critical thinking are crucial to all learning and its application, and to the extent that informal logic forms an essential part of the theory of inquiry, the standard approach trivializes the project to inform thinking and learning by the insights available from within both of these fields.

The problem goes deeper. Even if successful to some degree, introductory level critical thinking courses seen as requiring no more than the remediation of student deficits enable self-serving university departments, essential to the academic industry of lowest level thinking skills courses, to sidestep the moral and epistemological critique of education found in the critical thinking movement, most notably, that of Harvey Siegel, Richard Paul, and from critical theory, Henry Giroux (Siegel, 1988; Paul, 1990; Aronowitz and Giroux, 1991). Whether it is Siegel's
reminders of the rights of learners, Paul's emphasis on the moral and social reflexiveness of 'strong-sense' critical thinking, or Giroux's concern with issues of domination, critical thinking presents a challenge to much that is standard in university instruction in North America and perhaps elsewhere.

In our efforts at the Institute for Critical Thinking, we have attempted to develop both theory and the practice in support of the reform of post-secondary teaching and learning. Prompted by our perception of the limitations of traditional college instruction in the face of the explosion of information, the unpredictability of the social and intellectual needs for understanding, and the ever-broadening population we are called upon to serve, we have attempted to develop a framework that respects the special expertise of the academic disciplines in the definition of subject matter and pedagogy, while asking colleagues from all disciplines to explore the teaching of their subject matter through the lens critical thinking affords. And so we eschew the paradigm drawn from first level informal logic courses and strive instead to articulate the role of critical thinking across the range of courses taught at the undergraduate and graduate level.

In this way, we hope to influence not only the teaching of academic subject matter, but also those professions whose pre-professional training reflects, albeit indirectly, models available at the university. Most particularly, we hope to influence teaching in pre-college by creating an undergraduate experience that demonstrates the value of critical thinking in all subject matter, inoculating future teachers against the range of superficial curriculum materials all too available from vendors of critical thinking workbooks and texts at the pre-college level. In addition, perhaps ironically, our project has the added advantage of requiring the strengthening of informal logic theory in a manner that appears ultimately productive of a stronger and more relevant theory of inquiry (See Weinstein, 1994).

In what follows I will offer an overview of the Institute's theory and practice, hoping to move the discussion point to where we believe it must go if it is to address the requirement to broaden and deepen available educational structures to meet the ever increasing demands upon intelligence. In the sections that follow, we first
rehearse the motivation for critical thinking, attempting to make its relevance to post-secondary education clear. Section two turns to the issue underlying the critique of general thinking skills approaches most often based on informal logic models. Section three offers the theory of a particularist approach. We first look at the structure of critical thinking as seen in teaching academic disciplines, assemble some reminders of the varieties of thinking in academic subject matter, and then offer a theoretic frame, owed to Matthew Lipman, that offers a unified view of critical thinking adequate to the particularity of disciplinary understanding. We then turn to the project of integrating critical thinking across the university curriculum at the Institute for Critical Thinking at Montclair State University, offering some indications of our practice.

1. Why Critical Thinking?

As everyone seems to agree, not only is the amount of information increasing, but the rate of increase is itself increasing. A consequence of this is not quite so apparent. The problems and possibilities for which knowledge is required proliferate in varied and unpredictable ways—in part as a result of the many unintended effects of knowledge put into practice, and in part because of the rising level of expectation that results from information growth and dissemination. Thus, those who seek knowledge for various purposes increasingly need to extend the knowledge bases they have, as well as to add increasingly varied knowledge bases to their repertoire.

Such a state of affairs requires critical thinking, for it is only through an understanding of the underlying structure of information that we can develop rationally supportable alterations and extensions of what we already know.

In addition, as we appreciate the interconnectedness of systems of all sorts, we see the need to integrate disparate domains of fact and method. Different points of view, whether diverse disciplinary lenses, differing social points of view, or alternative value stances reflect divergent aspects of complex problems or understandings. And so, what is needed is flexibility of thought—the ability to synthesize deeply different frames of reference,
to think across differing perspectives, and to weigh competing values.

This too requires critical thinking. For only as we understand the similarities and differences across competing disciplinary and social points of view can we hope to reasonably synthesize alternative perspectives, evaluate and prioritize disparate goals and purposes.

There is still more. Recent modern times is typified by a heightened awareness of and respect for diversity, both within and among societies. Diversity reflects difference in perspective, and all perspectives must be considered as potentially relevant for determining the future, for that future impinges on us all. And so, there is a requirement that people of all classes in every society have an intelligent appreciation of the problems facing humankind and be empowered to recommend and evaluate possible strategies for their solution.

This too requires critical thinking, for it requires that our interactions be governed by a sense of peoples' rational potential, that we engage through seeking and offering reasons, by exploring the warrants of each other's recommendations and points of view.

The task of actualizing rational potential falls to education and results in understanding and the power to recommend and evaluate. Intellectual competence and practical wisdom, among the most venerable of education's goals, incorporate the culturally embedded transmission of language and value, and specialized, and often technical, cross-cultural knowledge reflecting inquiry-based understanding. The former speaks to the accumulated wisdom and self-understanding of groups of people. It sets the framework within which education will be understood and generates the values and perceptions that must be accommodated if educational outcomes are to be owned by a people. The latter speaks to the special understanding that the rigor and sophistication—the intensity of purpose—that disciplinary knowledge affords.

The considerations brought forward, in light of tradition-bound educational practices, prompt the reconceptualization of the social role and practice of education in light of critical thinking as a deeply compelling educational ideal. This is particularly true of post-secondary education.
Post-secondary education is an essential locus for broad and effective educational reform. It produces the most adequately educated citizens, the new generations of leaders in politics and the professions, in industry and the military. It is freer from social and political control than the schools. And most importantly, it is where future teachers are taught.

Nevertheless, post-secondary education has been characterized by a tradition of exclusivity. This is problematic to the extent that our concern with diversity moves us to greater inclusion. Critical thinking seeks to move post-secondary educators from gate-keeping and towards the identification of methods and attitudes that help all students to achieve the standards of intellectual excellence and practical wisdom required for full participation in the economic and political life of society. Among other things, it demands a rededication to liberal education, including both an introduction to the ever expanding domains of specialized knowledge, and a heightened awareness of the complex and multi-faceted issues that cross the narrow bounds of specialized understanding. The latter, "multi-logical" issues, require the integration of the many disciplines and so students must be helped towards competency in accessing information of all sorts, and assessing the strengths and limitations of particular disciplinary theory and practice within the context of a concern (Paul, 1990). Disciplinary knowledge, if it is to be effectively employed in response to "real-world" issues must, in addition, be related to individual and social values, to cultural understanding, and to social, economic and political realities. Helping students to perform such tasks is at the heart of critical thinking as an educational ideal.

Can this be done? There are reasons to think it can. First, critical thinking is a far-ranging ideal that speaks to the entire range of educational concerns. A term of praise, 'critical thinking' denotes a high level of competence; it is a common objective of the various disciplines themselves. Although critical thinking is most often implicit in the various disciplines, it is a goal that most instructors in whatever discipline can aspire to. Critical thinking draws upon the best in disciplinary practice in order to warrant the epistemological and other normative claims that are implicit in a discipline's claim to adequacy. Traditional college teaching, driven by its
concern for exclusivity, has proved adequate to develop critical thinking in the most gifted and motivated students. College teaching for today and the future must accept the challenge of the remainder.

Next, the theoretic apparatus is in place. Matthew Lipman has offered an analysis of critical thinking that is adequate to the formidable task. It includes a differentiable core, exhibiting the general nature of critical thinking, yet flexible enough to accommodate demands of applying critical thinking within the various disciplines. His analysis sees critical thinking as: "skillful, responsible thinking that facilitates good judgment because it (a) relies upon criteria, (b) is self-correcting, and (c) is sensitive to context" (Lipman, 1988, p. 3). Each component serves as an indicator of the direction in which critical thinking must go, and, in doing so, points to the relevance of this conception of critical thinking to current educational concerns.

As we hope to elaborate below, Lipman's conception offers a potential bridge between the post-modernist focus on particularity, and the foundationalist requirement of objectively defensible critical standpoints, for, unlike other accounts of critical thinking, his makes no claims about the particulars that govern modes of inquiry. And so critical thinking remains open to whatever details of reasoning individual discourse frames employ. Critical thinking in Lipman's sense does not rule out the possibility of very different criteria in place in many different contexts of inquiry. Stopping short of self-defeating relativism, this account of critical thinking permits the widest range normative practice to full within its purview. For although indifferent to the details, the account places limits on what can count as critical thinking within a discipline. To be critical, inquiry must satisfy the constraints enumerated in his analysis. That is, critical thinking within a justificatory framework, and most relevantly within the special disciplines, must appeal to a tradition of successful practice (skillfulness), must address the community of competent inquirers (responsibility), must be based on acceptable principles (criteria) in a fashion that takes into account the details that the particular issues involve (sensitivity to context), and must be reflexive in a fashion that supports progressive change (self-correction). We will return to
Lipman's definition shortly, but first a central issue in the field.

2. Universal norms and specific practices

The two focuses mentioned above are, to varying degrees, each subject to the tension created by two poles that support the critical thinking enterprise. On the one hand, there is the philosophical ideal: critical thinking as, in Harvey Siegel's phrase, "the educational cognate of reason," the deeply humanistic notion of the critical spirit and a supporting non-relativistic epistemology (Siegel, 1988). On the other hand, there is the technology of thinking skills, with foundations in logic and informal logic, cognitive science, and educational theory and practice.

The two poles, one deeply normative and socially compelling, the other empirical and pragmatic, pull in opposite directions, yet are deeply intertwined. For the context of education requires praxis, and, within practices, facts and values blend gently into each other. Praxis yearns towards well-functioning. Janus-faced, our education looks to achieve its preferred ends by enhancing the functions that serve these ends. But an end does not entail a functioning through which it is served, and so, from the desirability of an end we cannot derive the existence of a human ability sufficient to achieve that end. That being the case, it is foolhardy to suspect that for each end (or cluster of ends) there is a simple ability definable in terms of the concepts available within normative theories of human functioning. Articulation of the norms governing our cognitive ends underdetermines the structures needed to understand and remediate the functional capacities upon which their achievement depends.

Although ends do not entail the mechanism to achieve them, ends, more often than not, grow out of practices through which the ends are achieved to some extent or other. This often gives us a clue as to how to articulate the underlying apparatus through which the ends are served and so, may indicate how to educate in their name. In the ideal case, our practices coherently reflect our norms, and the structures underlying both form a coherent theoretic grid that permits identification of the salient aspects that constitute the process through which the practice is directed towards its ends. An example of such an ideal case
would be the following: logic is a sufficient normative basis for critical thinking, all people are potentially logical in their practices, and teaching logic suffices for enabling people to think critically, in that it speaks directly to the underlying cognitive mechanisms through which critical thinking is performed. Even as fanciful a case as this has been taken, at various times, as reasonable if not true. Logic has, indeed, at times been taken as sufficient for critical thinking construed as argument evaluation, has formed the basis of many theories of human judgment, and has constituted a core educational practice. In fact, some might even see many in the critical thinking movement as enthralled by the logical will-o’-the-wisp, now masquerading as informal logic, now as the familiar lists of thinking skills and attitudes common in the writings of those who support generalizability (see, for example, Ennis, 1987, Paul 1990). But there is many a slip between the normative cup and the practical lip (see Weinstein, 1994, for the underlying arguments).

Our practices do, to some extent or other, reflect the norms that govern them, but that gives us precious little to go by when attempting to understand the cognitive structures or conceptual practices upon which our ability to participate in such practices depends. That is because, in actual cases, our idealized practices are often imperfect indicators of the underlying constitutive structures. One cannot immediately go from culinary norms and dietary practices to the physiology of digestion, nor can one go from probability theory and sanctioned inductive practices to the underlying cognitive mechanisms that individuals employ, nor can one go from the best philosophical analyses of norms to recommendations of a conceptual apparatus to be employed in thinking governed by those norms. Modes ponens constitutes a universal norm; it is structurally identifiable in arguments of all sorts, and it is a useful tool for doing lots of things. Yet the vagaries of its application to cases, as evidenced by decades of experimental studies of reasoning, point away from some unitary modes ponens function "wired" into our thinking apparatus, whether psychologically or neurologically construed. Logic textbook accounts of modes ponens and its deployment are neither necessary nor sufficient condition for critical thought.

It is the tension between the apparent universality of the norms to which critical thinking ascribes and the apparent
particularity of the processes through which these norms can be addressed that underlies the debate within the field as to the generalizability of critical thinking (Weinstein, 1993). On the one hand, common experience and innumerable experimental findings remind us that most people are better at some areas of cognitive concern than others, reflecting the divergent demands on thinking that each requires. On the other hand, intellectual norms and many cognitive procedures apply to many if not all arenas of thought. On the one hand, critical thinking is constituted by the many different things that people do when they think critically; on the other hand, what people do when they think critically is supported by apparatuses (ranging from dialogical to neurological) that are, plausibly, common to all normally functioning individuals.

What is the connection between these underlying unities and the diverse exemplifications? There are two questions here. First we may ask: What underlying unities support the diverse exemplifications? This first question is one that sits easily with the assumptions of many philosophers and psychologists, for it envisions the search for unity underlying diversity that has characterized philosophical and scientific thought in the modern era. There is, however, a second question: How does the existence of practices constrain both our forms of understanding the functioning that underlies a practice, and the functioning of the practice itself? This is a more subtle task and one requiring analysis, whether philosophical or empirical, of another sort. The analysis requires what may be referred to as "socio-logic": the description of the norms of practices with an emphasis on particularity and boundaries. The socio-logic of a practice reflects universal norms, in so far as they are truly universal. But it will, invariably, contain much else. How various particular and universal norms function, their relative importance, their relationships, and their articulation and interaction in the practices they support remains to be seen. There is no obvious and simple relationship between norms, no matter how general, and the development of whatever strategies there may be for educating in the name of such norms. Neither is there a readily accessible normative map that enables us to identify whatever underlying cognitive structures there are that support the correlative processes. Further, there is little reason to suppose that the most salient level of analysis for theory and practice
is that of universal norms or generalized versions of more particular normatively structured procedures.

This socio-logical mode of understanding is increasingly common in the philosophy of science with its recent emphasis on case studies, and is deeply wedded to the sort of historical and cultural analysis that characterizes post-modernism. But such a focus on the particulars is, nonetheless, alien to much of philosophical thought since it eschews the central role traditionally played by the a priori. Although the recent literature in cognitive science points away from logo-centric and universalistic accounts of thinking and reasoning, it is equally foreign to reductionist theories in psychology since it devalues the explanatory force of underlying unity in the name of the relevance and significance of manifest differences.

3. Theory for a particularist approach

At the Institute for Critical Thinking at Montclair State University, we see critical thinking at the post-secondary level to require engagement with the forms of inquiry. The forms of inquiry, embedded in language as used in the disciplines, yield the tools for inventing, organizing and communicating the content of the various areas of human concern. These, rather than the typical content of informal and critical thinking textbooks, the arena of our concern. This requires a comment. Clearly, both natural language and language-based inquiry are governed by logic at the most abstract level of critical analysis. Equally clearly, natural language applications are governed by norms of the sort articulated by informal logicians, which play a role in disciplined inquiry as well. The underlying theoretic question is: At what level of abstraction does the analysis of languages and their logics as used serve the purposes of critical thinking?

As already indicated, we have been guided in our efforts by Lipman's analysis of critical thinking seen to require the skillful, responsible, self-correcting and context-sensitive use of criteria (op. cit.). We therefore see critical thinking to require the identification and reasonable application of criteria appropriate to particular contexts of inquiry. And so our focus was turned away from the general criteria that lay at the center of recent concern with critical thinking, and towards the disciplines and the crucial role they play in determining
the more specific criteria that govern the particulars of practice.

Our perspective raises a number of fundamental questions about the relation of critical thinking to language seen as the ground in which inquiry is embedded. It also requires a focus on the academic community, which exemplifies the various forms of inquiry as practiced and taught.

The language of the disciplines

Language as related to the disciplines can be seen as involving "language" in three senses. The first two are general; the last addresses the disciplines in their relation to undergraduate education. The three senses of "language" are as follows:

1. Language as a "language game" in the sense of Wittgenstein. Expressive of a "form of life," language includes a set of paradigmatic practices that underlie the particular concepts and argument types characteristic of a discipline. Language as "language game" relates the overt language in use to the lived reality of practitioners of the discipline and draws from the historical experience that gives each discipline its characteristic profile. In this broadest sense of language, students are introduced to ways of speaking grounded in ways of doing and being.

2. Language as a specific set of concepts and argument prototypes: particular vocabulary and characteristic modes of organizing disciplinary content.

3. Language as a set of basic competencies required of students and assessed through tasks deemed necessary if students are to understand the discipline and the information and procedures that it includes.

Such a schematic representation requires a few telling examples. The following offers some sense of how the specifics of various disciplines point to the need for a careful look at the particulars of disciplinary inquiry as related to the three aspects of language presented.

1. Language as the expression of a "form of life."

To take an example: philosophy, a central paradigm, shows a marked discontinuity with an analogue in chemistry.
Philosophers take the practice epitomized by Socrates as a basic model for inquiry. That is, the practice of doing Philosophy includes at its core careful and pointed questioning, whose purpose is to elicit and clarify concepts that are thought to be already available to the philosophical thinker, either as intuitive knowledge or perhaps as the result of the internalization of conceptual frameworks and linguistic structures. It is evident from such practice that philosophers maintain that basic philosophical concepts are available to reflection and can be clarified through dialectic.

Chemists, on the other hand, base their paradigm on the procedures of classic chemists such as Lavoisier and Dalton. These procedures are quite specific—weighing, heating and combining in simple proportions—and are a small sub-set of the possible procedures that could be applied to material substances. The success of these initial methods of inquiry leads chemists to look to analogous procedures and reflects their assumption that complex chemical phenomena are explained when shown to be the result of analogues of these primordial practices (analysis in terms of mass, measurement of electrical resistance and the like).

2. Language as concepts and arguments.

Language in this sense offers an even clearer image of the differences that characterize inquiry in the disciplines. Each discipline includes both a set of concepts and a logic—a set of tacit or explicit rules governing how discourse is to be organized for presentation, challenge and defense. In classical economics, for example, typical concepts include value, exchange and market. Their variants pervade economics as a discipline and importantly define a prototypical argument type: the explanation of economic behavior in terms of subjective preferences and descriptions of market force deemed relatively objective and describable in quantitative terms.

A far-removed example of similar structure is the analysis of compositional structure in music in terms of the basic harmonic relationships. Arguments in both musical analysis and composition reflect, among a limited set of similarly crucial relationships, prototypical dominant-tonic relations which support accounts that range from the examination of the details of harmonic substitutions to
understanding large formal analogues such as Sonata-Allegro form. Inquiry, whether critical or creative, mirrors these relations in an underlying structure that accounts for significance and the well-management of items.

3. Language as a set of student competencies.

This involves the set of student skills required in the disciplines and helps to specify student tasks and grounds the assessment of student achievement. Analogous to reading and writing, such skills are grouped around information gathering and information use. These vary in obvious ways: understanding and producing laboratory reports in physics and reading and writing short stories in English. There are more subtle distinctions as well. Take as an example the contrast between analyzing a classic philosophical text to draw out its main points and writing an analytic essay showing where crucial philosophical difficulties lie, on the one hand, as compared to reading original documents to develop a sense of an historical period, and using documents to argue for a particular perspective or interpretation of an era, on the other.

Lipman serves as a frame: critical thinking is taken to be: "skillful, responsible thinking, that facilitates good judgment because it (a) relies on criteria, (b) is self-correcting, and (c) is sensitive to context" (op. cit.:3).

(1) The requirement that critical thinking be skillful thinking connects it with epistemological and other normatively relevant considerations of practice. Skillfulness points to the fact that critical thinking is embedded in contexts that furnish reliable information and warranted methodology. Critical thinking is not indifferent to the norms of the various fields; rather, it looks to appropriate practice for the standards that have proved useful so far in supporting warranted inquiry of all sorts, and for the most reliable information from which inquiry draws its relevance and strength.

(2) Responsible thinking points to the relationship between the critical thinker and the community that he or she addresses. The critical thinker sees an obligation to present reasons in light of acceptable standards, or to challenge such standards by relevant and persuasive argument. Such reasons are subject to the judgment of competent members of fields relevant to the issues
involved, and the critical thinking is obliged to address such members and reflect upon their judgments when making claims and presenting arguments and analyses.

(3) Through the focus on judgment, critical thinking is seen as directed towards non-routine thinking, thinking that cannot be adequately based on algorithms or other mechanical procedures. It is called for in those situations in which considerations must be weighed and alternatives assessed, situations that call for the assessment of priorities and determinations of truth and relevance.

(4) Criteria are the most decisive considerations appealed to in an instance of critical thinking. Criteria are those reasons that reflect the critical thinker's assessment of the essential factors to be taken into account when offering an analysis, or when supporting and challenging a claim. Lipman offers a number of examples that indicate what he has in mind by criteria; these include: "standards; laws, by-laws, regulations, charters, canons; ordinances, guidelines and directions; precepts, requirements, specifications, stipulations, limits; conventions, norms, regularities, uniformities, covering generalizations; principles, assumptions, presuppositions, definitions; ideals, purposes, goals, aims, objectives; tests, credentials, experimental findings; methods, procedures, policies" (ibid.:4). A critical thinker, thus, is called upon to make the framework of her argument clear, and to make available to her interlocutors, the considerations that she takes as crucial to the inquiry in which she is engaged. Generally, the criteria appealed to reflect the central concepts and methods in the field or fields relevant to the inquiry at hand. But as we shall see immediately below, criteria are not taken as absolute; rather, they may be questioned and changed or even replaced, as critical thinking progresses.

(5) Self-correction requires that thinkers use critical thinking processes as a method for exposing and correcting the procedures employed by the thinker herself. A critical thinker subjects the ongoing process to reflective scrutiny; both the substantive criteria employed and the procedural norms that characterize her reasoning are open to critique and reevaluation.

(6) Sensitivity to context points to an aspect of critical thinking that complements the appeal to general criteria.
Sensitivity to context demands that the application of criteria to cases is scrutinized with an eye to the appropriateness of the criteria in use, and their possible modification, in light of the particulars of the situation that prompt the judgment. The critical thinker, thus, sees criteria in relation to the context of their application. The context determines the relevance of plausibility of the criteria employed, and furnishes particular circumstances that may require specific alterations of the criteria when applied to the case at hand.

These six aspects of critical thinking must be seen against two additional commitments, central to Lipman's thought (1991). Critical thinking, as before, is dialogical, that is, it involves ongoing discussion in which criteria are put forward, contexts identified, and considered, and the process subjected to ongoing assessment. In addition, critical thinking discussions, on Lipman's view, are best carried out within a community of inquiry, that is, within a group of individuals for whom the pursuit of inquiry and the norms that it entails are the governing considerations. A critical thinker, through dialogue, strives after truth and other normatively appropriate goals. The outcome of inquiry is to be judged, for example, in terms of epistemological rather than rhetorical norms; in light of moral ends rather than mere expediency. In addition, a community of inquiry and the rational dialogue that it supports require a focus on issues rather than individuals. Communities of inquiry do not look to the status of the persons involved, except in so far as that status is relevant to the well-functioning of inquiry. And so, communities of inquiry are essentially egalitarian, tend to be inclusive rather than exclusive, and foster increased participation by the individuals involved.

4. An example of practice

The Institute for Critical Thinking at Montclair State University was established in 1987 primarily as a faculty development program with critical thinking as a focus and general educational excellence as a goal. Montclair is a selective, comprehensive state university with a strong faculty involved in their own disciplines. Without serious enrollment problems to motivate the development of new areas of teaching responsibility, and without administrative pressure for extensive curriculum restructuring, there was little incentive for faculty to
join, voluntarily, in an effort to design new general education courses in critical thinking, the typical pattern at that time. Nor did general principles of critical thinking seem, initially, to be able to offer insights into disciplinary practices that could be used in faculty members' own scholarly work or teaching. The question we asked was: How could a faculty development program be designed in such a setting, looking toward the general mission of educational excellence, and taking into account theoretical work in critical thinking and its implications for teaching and learning across the curriculum?

In order to involve as many faculty as possible in our work, we reviewed and experimented with a number of different faculty development models. We found, not surprisingly, that some faculty responded to invitations to participate in activities involving theory, some in activities involving considerations of pedagogy, etc. Some prefer to work with colleagues within their own academic domains; others prefer programs that are interdisciplinary in nature.

Our most effective programs have been those through which relationships between critical thinking and the language, methods of inquiry, and scholarly, rhetorical, and pedagogical practices in the various academic and professional disciplines are explored.

Few faculty at Montclair State, we have found, are interested in becoming students of critical thinking as a new and emerging discipline with scholarly, rhetorical, and pedagogical roots in philosophy. Although they attend lectures on topics in critical thinking that they perceive as valuable within their own disciplines, they prefer, by far, seminar settings in which their own disciplinary and pedagogical expertise is needed and valued as an integral part of the faculty development experience, and through which they can make a substantive contribution to the ongoing inquiry. Thus, we have emphasized collegial, collaborative settings in which faculty explore critical thinking as an educational goal, from their own perspectives and experiences, as articulated within the specialized contexts of their own academic disciplines.

Faculty seminars and workshops attempted to address the concerns identified by faculty from many disciplines. These well-attended seminars are now in their seventh year:
dozens are offered each year, now supported by small increments toward faculty professional travel. The overwhelming majority are designed by faculty other than Institute staff. Seminars exhibit a range that moves from disciplinary focuses such as using graphic calculators for problem solving in math, developing case studies in home economics, or contrasting trends in literary theory, through the concerns of related disciplines such as comparing approaches to teaching statistics in various social sciences, contrasting clinical and experimental approaches to psychology, or comparing writing in various contexts, to general concerns such as the use of computers, issues of gender, multiculturalism and the like.

In preparing these seminars with the faculty who designed them, the Institute serves as a resource for available critical thinking and informal logic theory and our growing fund of experience in the practice of college teaching—a practice that we have engaged in through the efforts and experience of hundreds of faculty across the discipline.

The perspectives of the faculty involved is of paramount importance. In general, we decided that getting interested and competent faculty involved in central issues relevant to critical thinking is more important than requiring that they see these issues in terms of critical thinking theory and terminology. The critical thinking vocabulary of theorists such as Robert Ennis (1987), Richard Paul (1990), or Robert Swartz (1989) is used only when it is found useful. We have found Stephen Toulmin's distinction between kinds of reasons (grounds, warrant and backing) helpful to many faculty, since it mirrors their sense of the hierarchical structure of knowledge in their fields (Toulmin, 1967). We have also found the analysis of argumentation of the Amsterdam school, which distinguishes functional stages of argument that permit informal fallacies to be seen as infelicities given the objectives of reasoned discourse, to be useful in our own conceptualization of reasoning in many fields. (Eemeren and Grootendorst, 1983). William Perry's work on cognitive development during the college years has also proved useful (Perry, 1968).

Faculty, introduced to the ideal of critical thinking and to elements of its detailed articulations, have been motivated to find relevant analogues in their own practice. Faculty consider the practices within their own discipline
that promote reasoned judgments. By supporting faculty efforts to freely define areas of interest and to use their own disciplinary frames and vocabulary, we permit faculty to take ownership of critical thinking ideals and to see its relevance to their own field and training.

When faculty look at teaching, we emphasize the notion of academic tasks. We ask faculty to organize their thinking about teaching through the tasks that they require of students. Looking more to what they require of students, our colleagues are helped to articulate their goals and purposes, how effectively tasks assigned achieve those purposes, how well the tasks and the criteria that underlie their evaluation are communicated to students, and how effectively the task constructs the learning experience so that students are focused and supported in their attempt to meet course objectives (Oxman, 1991).

At present, critical thinking is the core theme for teacher educating at Montclair, including two M.Ed concentrations, and a Newark, NJ based program to move teachers towards the masters degree programs (Oxman and Michelli, 1990); faculty development outreach into more than a dozen area school districts (Michelli, et al., 1991); and a professional development school (Oxman 1991a). Critical thinking is at the core of teaching in our freshman year experience. It is a major component of a mandated year-long new faculty program for which faculty are released from one quarter of their teaching obligation. It has influenced the courses of faculty in countless courses and un-numbered ways throughout the institution and has made the discussion of teaching and learning a significant aspect of the professional conversation on campus. (The Institute journal, Inquiry: Critical Thinking Across the Disciplines chronicles this, as do the proceedings of the Institute conferences.)

Montclair State University has officially designated itself a comprehensive teaching university. The faculty may now elect to include research on teaching and its practice on an equal basis with traditional scholarship for the purpose of tenure and promotion. The university offers release from one-quarter of the teaching obligation as an incentive to promote such research.

5. Final thoughts
A conception of critical thinking such as the one outlined here requires a radical shift in the self-conception of college faculty. Post-secondary education has, all too often, relied on the authority of expert points of view. Reform through critical thinking questions the value of such an educational stance, even where authority is rationally warranted. Critical thinking requires that students comprehend the rational basis upon which warranted authority rests and be helped to apply their understandings to the wide range of judgments that they may be called to make as fully participating members of a society. The authority of expertise—the traditional distancing of students from the special knowledge of their professors through both interpersonal and pedagogical strategies intended to exclude—is inadequate for education given our discussion of contemporary trends and normative concerns. Moreover, it is often too readily confounded with ethnocentrism, racism, and the interests of the privileged. So if people are to continue to draw upon the results of expert inquiry, particularly where the experts reflect rational traditions that may be alien to the social and cultural context within which they are to be employed, these results must be supported by educational practices that foster understanding of the relevant modes of inquiry, replacing authority of source with critical judgment.

Deepening of understanding within disciplinary frames is necessary, but not sufficient. If the sophisticated understanding of specialists is to be viewed through the lens of cultural needs and local appreciations, education must empower students to question the practices of specialists as well as reflect upon the needs and purposes of the communities that specialists attempt to serve. Critical thinking must reflect upon the social and institutional structures that underlie values and culture. The task requires both historical and social analyses, and an understanding of discourse frames. It requires an understanding of the social construction of thought and a sense of the shifting modes of understanding. To live as a thinking participant in the world requires navigating from the scientific to the ethical, learning from experiment and mathematics, qualitative social understanding and cultural insight. Citizens must reflect both on information and the medium within which it exists.

And so critical thinking extends beyond the special domains of expert knowledge. This is at the heart of the
application of critical thinking to multilogical issues, to the demands of citizenship, and to the appreciation of modes of domination. The social and cultural context, including the institutional contexts within which critical thinking is taught, must be made an object of dialogue and rational scrutiny. The competence of those engaged in institutional, social and political action must be ascertained. A community of responsible co-inquirers must be identified and addressed. The often tacit criteria that constitute social and cultural understanding must be brought into the open. The context, typically changing, must be considered. And some sense of the progressive, of the direction of self-correction, must be negotiated and engaged.

References


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