Critical Thinking: What can it be?

Critical thinking is in vogue – in colleges and universities as well as in elementary and secondary schools. This fact alone is enough to give us pause: seldom do shifts in academic fashion happen concurrently at all educational levels.

The following is a thumbnail sketch of the movement. It offers a definition of what critical thinking is (or, more precisely, what it can be); it relates some of its more recent historical background; and it lists and comments on some of the dichotomies that presently characterize it.

I.

Robert Sternberg has defined critical thinking as "the mental processes, strategies and representations people use to solve problems, make decisions and learn new concepts."[1] A more precise definition would be desirable: the mental processes employed in decision-making, for example, are not employed *only* in decision-making, and the activity known as critical thinking does not exist *only* for the sake of problem-solving, decision-making and concept-learning. Further, there are ways of making decisions that are uncritical: one may make a decision on the basis of a name picked at random from a phone book, but one would hardly call this an instance of critical thinking.

On the other hand, Robert Ennis has defined critical thinking as "reasonable reflective thinking that is focused on deciding what to believe and do."[2] This definition is too restrictive and is in danger of circularity. The possibility of circularity is introduced by the term "reasonable," since this term may itself be understood as a correlative of "critical thinking." The definition is too restrictive because critical thinking is employed for many other purposes, and not just for deciding what to believe and do. People have thought for centuries about very complex and profound problems without reaching definitive conclusions, but the thinking process they have employed could certainly be called a "critical" one. Critical thinking encompasses analyzing, judging, hypothesizing, explaining and many other cognitive activities besides deciding and problem-solving. Critical thinking is a process that occasionally results in decisions or solutions, but the process is not to be defined solely by those occasional consequences. And even if decision-making or problem-solving were said to be the *goals* rather than the *consequences* of critical thinking, the matter would be unchanged: the process must be defined functionally rather than teleologically.

Such a functional definition would consider critical thinking to be defined by three characteristics: (1) it is *self-corrective* thinking; (2) it is thinking *with criteria*; and (3) it is thinking that is *sensitive to context.*

1. *Critical thinking is self-corrective thinking.*

What has come to be known as scientific method is a distillation of the exploratory and self-corrective procedures employed by ordinary persons in everyday life. These same, self-corrective procedures are responsible for the emergence of logic. In turn, science and logic provide us with models that we can attempt to internalize and emulate in our thinking.

Thinking abounds, but most of it is wayward and uncritical. Only a small portion of our everyday thought is subjected to scrupulous self criticism. Nevertheless, critical thinking represents the careful nurture of this miniscule element in our thought, in the hope that it can become dominant.

Self-correction is not equivalent to metacognition. Metacognition is intellectual self-consciousness: the mind turns on itself and thinks about its own thinking. But it can do so without thinking self-correctively. One can think about one's own thinking and yet do so uncritically.

Thinking self-correctively about one's own thinking becomes critical thinking when it employs criteria and is sensitive to context.

2. *Critical thinking is thinking with criteria.*

It is generally agreed that critical thinking entails the development and orchestration of cognitive skills and dispositions. Now a skill is a performance that is measured against a standard or criterion. Thus reasoners are adjudged skillful or not by assessing their performances by means of principles of logical validity. To measure, we need standards of measurement; to classify, we need classificatory criteria; to be judicious, we need standards of judgment. Critical thinking without criteria would be like *Hamlet* without the Prince of Denmark.

We may distinguish informal from formal criteria. On an informal basis, anything whatsoever can serve as a criterion. When we say that mice are small compared to cats and elephants are large compared to cats, we are using the size of a cat as a criterion. When we say that Tuesday's weather was good compared with Monday's and Wednesday's weather was bad compared with Monday's, we are using Monday's weather as a criterion. In this informal sense, every simile involves a comparison with something that serves extemporaneously as a criterion.

Another example of informal criteria would be the class of reasons. Every reason presupposes a criterion as necessarily as every angle subtends an arc. If the reason Johnny is to be excused from school today is that he is ill, then presumably poor health is a criterion of absence. Without any reason at all, it is unlikely that Johnny can be excused simply on the basis of his opinion that he need not attend. Providing good reasons upgrades the quality of thinking. For a reason to be considered good, it must be *relevant* to the opinion in question and *stronger* (in the sense of being more readily accepted, or assumed to be the case) than the opinion in question. The improvement of student thinking – from ordinary thinking to critical thinking – depends heavily on the ability of such students to identify and cite good reasons for the opinions they utter.

Formal criteria are those that have been accepted in some institutionalized context, in the sense that Roberts' Rules of Order are relied upon to determine what is permissible in formal meetings, or in the sense that customary or natural uniformities are systematically referred to when it is necessary to make judgments of appropriateness. Thus one class of formal criteria can be thought of as containing laws, by-laws, rules, regulations, charters, canons, ordinances, guidelines, directions and the like. Another class of formal criteria might consist of standards, requirements, specifications, stipulations, restrictions, limits, etc. A third could comprise conventions, norms, regularities and uniformities. Principles might be a fourth group, ideals a fifth and tests a sixth. Each of the instances just cited represents the sort of external standard we invoke in order to decenter our judgments and make them more objective.

When we have to select among criteria, we of course must rely on criteria to do so. Some criteria serve this purpose better than others, and can be said to operate as *meta-criteria.* For example, it was earlier pointed out that the *strength* and the *relevance* of reasons could be used as criteria for selecting among reasons. Still others could be adduced, such as *consistency, coherence* and *reliability.*

Some criteria are of a very high level of generality, and are often presupposed, either explicitly or implicitly, whenever critical thinking takes place. Thus we generally have reasons for calling some statements true and others false, for calling some actions good and others not good, or for saying that some things are beautiful but not others. Truth, beauty and goodness are thus *mega-criteria,* and may be examples of the still more general criterion of meaning.

Thinking with criteria becomes critical thinking when it is self-correcting and is sensitive to context.

3. *Critical thinking is thinking that is sensitive to context.*

Just as critical thinking is sensitive to uniformities and regularities that are generic and intercontextual, it is sensitive to characteristics of situations that are holistic or context-specific. Thinking that is sensitive to context involves recognition of

(a) *exceptional or irregular circumstances and conditions,* with the result that thinking which might normally be prohibited is considered permissible. For example, a line of investigation that ordinarily would be considered *ad hominem* and therefore fallacious might be found permissible in a trial.

(b) *special limitations, contingencies or constraints.* Under such circumstances, normally acceptable reasoning might find itself prohibited. An example might be the rejection of certain Euclidean theorems, such as that parallel lines never meet, in non-Euclidean geometries.

(c) *overall configurations.* Thus a remark taken out of context may seem to be flagrantly in error, but in the light of the discourse taken as a whole appears valid and proper, or vice versa.

(d) *the possibility that evidence is atypical.* An example would be a case of overgeneralizing about national voter preferences based on a tiny regional sample of ethnically and occupationally homogeneous individuals.

(e) *the possibility that some meanings do not translate from one context or domain to another.* There are terms and expressions for which there are no precise equivalents in other languages, and whose meanings are therefore wholly context-specific.

Thinking that is sensitive to context becomes critical thinking when it is self-correcting and when it makes use of criteria.

What are the curricular implications of the foregoing approach to critical thinking?

(a) With regard to the fostering of *self-correction,* there is nothing more effective than the disciplined dialogue that occurs in a classroom community of inquiry. In such cases, the self-correcting procedure of the group (questioning, asking for reasons, demanding evidence, hypothesizing,

drawing inferences, seeking underlying assumptions, requesting clarification, etc.) becomes internalized by each and every member of the group.

(b) With regard to *thinking with criteria* and *sensitivity to context,* a suitable illustration might be an exercise or assignment that would involve the application of a particular criterion to a set of fictional situations. Suppose the criterion in question is *fairness* (which is itself a way of construing the still broader criterion of justice.) One form which fairness assumes is *taking turns.* Here is an exercise taken from *Wondering at the World,*[3] the instructional manual accompanying *Kio and Gus,*[4] a Philosophy for Children program for children of 9 to 10 years of age:

Chapter Four, Episode 2

Leading Idea 2: Taking Turns

There are times when people engage in sharing. For example, they go to a movie and share the pleasure of looking at the movie together. Or they can share a piece of cake by each taking half.

In other cases, however, simultaneous sharing is not so easily accomplished. If two people ride a horse, someone has to ride in front. They can take turns riding in front, but they can't both ride in front at the same time. Children understand this very well. They recognize that certain procedures must be followed in certain ways.

For example, ask your students to discuss the number of ways they "take turns" in the classroom during the ordinary day. They take turns washing the blackboard, going to the bathroom, going to the cloakroom, and passing out the papers. On the playground, they take turns at bat, they take turns lining up for basketball, and they take turns at the high bar.

Ask your students what they think the connection is between "taking turns" and "being fair." The resulting discussion should throw light on the fact that sometimes being fair involves the way children are to be treated simultaneously, while at other times it involves the way they are to be treated sequentially. For example, if it is one child's birthday and there is going to be a party with cupcakes, there should be at least one cupcake for every child. This is being fair simultaneously. Later, if you want to play "Pin the Tail on the Donkey," children should sequentially take turns in order to be fair. (The prospect of everyone *simultanelusly* being blindfolded and searching about with a pin boggles the mind.)

EXERCISE: When is it appropriate to take turns?

	Appropriate	Not Appropriate	?
1. Pam: "Louise, let's take turns riding your bike. I'll ride it Mondays, Wednesdays and Fridays, and you ride it Tuesdays, Thursdays and Saturdays."	☐	☐	☐
2. Gary: "Burt, let's take turns taking Louise to the movies. I'll take her the first and third Saturday of every month, and you take her the second and fourth Saturday."	☐	☐	☐
3. Jack: "Louise, let's take turns doing the dishes. You wash and I'll dry."	☐	☐	☐
4. Chris: "Okay, Louise, let's take turns with the TV. You choose a half-hour program, then I'll choose one."	☐	☐	☐
5. Melissa: "Louise, what do you say we take turns doing our homework? Tonight I'll do yours and mine, and tomorrow you can do mine and yours."	☐	☐	☐
6. Hank: "Louise, I hate to see you struggle to school each day, carrying those heavy books! Let me carry yours and mine today, and you can carry yours and mine tomorrow."	☐	☐	☐

Classroom discussion of the individual situations cited in the above exercise should be able to discriminate those situations in which the procedure of turn taking is appropriate from those in which there are special circumstances which might render

the use of such a procedure dubious. When this exercise or any of the thousands of similar exercises in the Philosophy for Children curriculum are utilized in a community of inquiry setting, the three necessary conditions for critical thinking are likely to be in place.

II.

What was the first American work in critical thinking, as distinguished from works in formal philosophy? A defensible answer might be Josiah Royce's *Primer of Logical Analysis for the Use of Composition Students,* which apparently fell stillborn from the press in 1881. Evidently Royce was drawing upon the work of the German logician Sigwart and the British logicians Boole and Venn. In any event, what he produced, apart from its musty examples, was as fine a text in critical thinking as any that has heen produced to this day. (The book is now a rarity.)

Scarcely more than twenty years later, there appeared John Dewey's epochal *The Child and the Curriculum* (1902) and *How We Think* (1903, 1933). The latter remains, rightly, the single most influential work in the field, but the former, in some ways more penetrating, provided a vision of the reconstruction in education which critical thinking might help bring about. It was perhaps the lack of this critical thinking component which guaranteed the ineffectiveness of the progressive education movement.

Nevertheless there was, as we know, a revival of sorts of the Deweyan ideal of education as democratic inquiry in the reflective teaching movement of the 1950's, under the leadership of Ernest Bayles, H. Gordon Hullfish, Lawrence Metcalf and others. Unfortunately, reflective teaching alone, creditable as it may be, does not reflective education make.

These developments of the 1950's passed over into the stirrings of critical thinking which were more readily identifiable as such in the 1960's. Especially worthy of mention are B. O. Smith, Robert Ennis, Louis Raths and John Passmore. Texts of pivotal importance were produced by Max Black (*Critical Thinking*) and Monroe Beardsley (*Practical Logic*). At the same time, on a more theoretical level, there were the splendid essays of Gilbert Ryle on thinking and education, such as his "Thinking and Self-Teaching."

Over the past few decades, the general rubric of "critical thinking" has been used to indicate a point of convergence of many different disciplines and traditions, all of them emptying, like streams and rivulets, into a river of considerably greater breadth than depth. Some of these can be mentioned here, along with the names of some typical or exemplary representatives. Thus, from the field of education, one recalls the emphasis on thinking of Dewey, Seymour Sarason and Israel Scheffler, the stress on thinking skills of Hilda Taba, Benjamin Bloom and, more recently, Reuven Feuerstein, and the development by Peirce's conception of a "community of inquiry" by Joseph Schwab and Paolo Freire.

Because critical thinking is frequently taught by discussion rather than by lecture, we should not forget the dialogue tradition, as represented by Martin Buber, G. H. Mead, Bochenski, P. T. Geach and Ruth Saw, or the scholarship in the oral tradition by Walter Ong.

In science and mathematics education, there has been the important work of Polya, of Roger Osborne and Merlin Wittrock, and more recently, of Lenore Resnick, Jack Lochhead, Arthur Whimbey and Michael Martin.

An increasingly powerful impact is to be found in current work in linguistics, especially in the work of those, like George Lakoff and James McCawley, who are as much at home in logic and philosophy as they are in linguistics proper. The work of Johnson-Laird can be mentioned in this connection as well as relation to artifical intelligence, which also includes such figures as Ray Nickerson and Allen Collins. Johnson-Laird's work also reaches into the psychology of reasoning, in which significant work has also been done by Wason and Braine.

Of course, contributions to the emergence of critical thinking have come from any number of subdisciplines of psychology, in some cases very directly and positively, as in the work of Reuven Feuerstein and Robert Sternberg, and in other cases more circuitously, as in the writings of Lev Vygotsky and Jerome Bruner. Certainly, critical thinking among the young has been enormously facilitated by those revisionist critiques of the earlier works of Piaget which took a dim view of the child's capacity to handle abstract ideas. One might mention here the sterling analyses by Margaret Donaldson, John Macnamara and Susan Carey.

Mention must be made too of the many contributions from fields such as English and rhetoric which neighbor on linguistics on the one hand and philosophy on the other. I am thinking of Chaim Perelman's work, of Richard Ohmann's and Roger Brown's.

But there are, obviously, many, many more from these fields.

Finally, there is philosophy, with its vast tradition stretching back to that greatest critical thinker of them all, Socrates, and reaching a huge number of familiar names along the way (such as Descartes and Spinoza) as well as lesser known but highly influential individuals such as Ramus. And can we really neglect all those treatises on "The Art of Thinking" that are sprinkled through the French (and to some extent the British – recall Graham Wallas) philosophical tradi-

tion? Can we really ignore the impact of Diderot's *Great Encyclopedia,* or of the "unmaskers" of ideological distortion in the German tradition – Hegel, Schopenhauer and Nietzsche? Even if we limit ourselves to 20th century philosophy, we can hardly pass over without mention the influence of ordinary language philosophy – especially that of Wittgenstein, Austin and Ryle. Mention must be made too of the persistence of the Socratic influence in Leonard Nelson and Bochenski and Collingwood, the continuation of dialectical analyses in Mannheim, Habermas, Kenneth Boulding and Richard Paul, the efforts to apply philosophy to problems of ordinary life and the professions, as visible in some of the work of Hare, Gorovitz, Peter Singer and Tom Regan, the emergence of informal logic in the writings of Toulmin, Scriven, Kahane, Ralph Johnson and Tony Blair, and the scrupulous examinations of children's conversation and literature for children by Gareth Matthews. Nor should critiques of critical thinking be omitted, such as the trenchant one by John McPeck.

I suspect that many of the above influences will be rediscovered, translated for teachers and students, in the novels and instructional manuals of the *Philosopy for Children* curriculum, which incorporates many more traditional philosophical influences as well. If there are to be better curricula in critical thinking, however, it is likely that they will more successfully build upon or incorporate the pioneering efforts just cited.

III.

Prevalent differences of emphasis or approach. A casual survey of the contemporary scene, with regard to the critical thinking movement, is likely to turn up a number of differences – or even dichotomies – with regard to emphasis or approach. Here are some of them:

1. *Disagreements over the nature of thinking*

   a. Those who see thinking as primarily *problem-solving* (sciences)

   vs.

   Those who see thinking as primarily *problem-seeking* (philosophy)

   Comment: This should not be taken as suggesting that scientists are uninterested in seeking out problems or that philosophers are uninterested in solving them. The implication instead is that science educators tend to stress the *clear* and *settled* aspects of knowledge while philosophers emphasize the *fuzzy* and *problematic.*

   b. Approaches which aim to get students to think

   vs.

   Approaches aimed at getting students to think *better.*

   Comment: If students are at all conscious, they are already thinking. "Getting them to think" merely means, in this context, getting them to think about what *we* want them to think about, rather than what *they* want to think about. Neither course necessarily involves teaching them procedures that will lead to their thinking *better.*

   c. Goal-oriented approaches that see the goal of better thinking as better behavior.

   vs.

   Process-oriented approaches that see better thinking as an end in itself.

   Comment: Both of these approaches have merit. Thinking is *both* an instrumental and a consummatory activity.

   d. Those who see critical thinking as desirable because it leads to better-founded beliefs.

   vs.

   Those who advocate critical thinking because it leads to more tentatively held beliefs.

   Comment: Much depends here on whether one sees life as a state of belief interrupted by occasional inquiry, or as a state of inquiry interrupted by occasional lapses into belief. One response to the above dichotomy is that it is more apparent than real: it might be desirable to have *both* better-founded beliefs and more tentatively-held ones. But the question of the relationship between inquiry and belief in education is fraught with difficulties. Prudence suggests *not* defining them in terms of each other.

   e. Approaches that contend that critical and creative thinking are compatible

   vs.

   Approaches that see critical and creative thinking as opposed.

Comment: The opposite of *creative* is not critical but *routine, mechanical, tedious* and the like. The opposite of *critical* is *uncritical, undiscriminating, haphazard.* Critical and creative thinking are compatible and even overlapping.

f. Those who rank thinking operations or skills hierarchically

vs.

Those who classify and construct taxonomies, but avoid hierarchies.

Comment: Some skills are more important than others – but only in a given context. Fixed hierarchies of skills are therefore deplorable. But taxonomies can be equally static and atomistic, failing to convey the *orchestration* of skills that critical thinking involves.

g. Those who claim that children's thinking develops through stages, from the concrete to the abstract, and that instruction should follow the same sequence, by emphasizing the concrete in the early elementary years.

vs.

Those who argue for early formal instruction in mathematics, logic etc.

Comment: Since young children constantly employ abstract terms like *good, true* and *right,* and do so intelligently, it seems pointless to accuse them of incapacity in this regard. And since thinking at any age involves the interpenetration of abstract and concrete, or theory and practice, why defer the introduction of ideas that would facilitate such thinking?

2. *Differing psychological approaches*

a. Those who attempt to understand children's cognitive development by studying children's "natural" or "casual" behavior, so as to discover what children *cannot* do, at any given age, *without* instructional intervention. (Piagetians)

vs.

Those who attempt to understand children's cognitive development by studying the effects of adult mediation, so as to discover what children *can* do, at any given age, *with* instructional intervention. (Vygotsky, Feuerstein)

Comment: This dichotomy has profound implications for the future of education. Knowledge of what children can or cannot do without intervention has its place in the literature of psychological research. Knowledge of what children can do with intervention is absolutely vital to all future curriculum development and teacher preparation.

b. Approaches that emphasize the varieties of human intelligence (e.g., mathematical, musical, linguistic, etc.) and want to cultivate all varieties

vs.

Those approaches that stress linguistic thinking because language performances seem to be the chief basis for measurements of educational progress and for communication in the classroom.

Comment: Both alternatives are meritorious, and the two are not incompatible. It seems pointless to deny the centrality of language in education, and it seems equally pointless to deny that non-linguistic forms of intelligence should be cultivated as much as possible.

3. *Disagreements over the role of philosophy*

a. Those who contend that the only model for good thinking is that of scientific "problem-solving"

vs.

Those who contend that philosophy and thinking have a special, intrinsic rapport analogous to that between literature on the one hand and reading and writing on the other, so that philosophy is the only model for good thinking.

Comment: If we see critical thinking as the internalization of inquiry in general, and not just of scientific or philosophical inquiry, the apparent conflict here becomes unimportant. Philosophers have long been concerned to portray excellence of thought; more recently, science has begun to explain the thinking process. For educa-

tional purposes, the claim of philosophy to be the aegis of thinking instruction in the way that English is the preferred aegis of reading and writing instruction makes considerable sense.

b. Those who focus upon *descriptive* studies of thinking, on the ground that only by first studying how thinking *does* occur will we learn how it *ought* to occur

vs.

Those who approach thinking *normatively* and attempt to explicate the nature of *good* thinking, but who are suspicious of descriptive studies on the ground that "we cannot infer *ought* from *is*," i.e., we cannot figure out how people *ought* to reason merely by studying the random and often slipshod ways in which they *do* happen to reason.

Comment: These are both one-sided approaches to a highly complex problem. In terms of cognitive education, however, the approach that emphasizes normative intervention is preferable. What would be the point of teaching critical thinking – thinking with criteria – if it didn't help us distinguish better thinking from worse?

4. *Disagreements over preferential educational approaches*

a. Approaches which attempt to elicit and strengthen the cognitive skills students already have

vs.

Approaches which attempt to provide students with cognitive skills they presently lack.

Comment: The second approach is, as stated, both psychologically and educationally naive. And yet it contains a profound grain of truth. One of the lessons learned from the teaching of formal logic has been that such a course generally appeals only to those who already possess the logical skills the course purports to teach. It will not be helpful if our critical thinking curriculum materials presuppose in the student the existence of the very skills and motivations which instruction in critical thinking has been designed to inculcate. Anyone who can take such a course doesn't need it. For proof, look at the textbooks in critical thinking.

b. Those who see critical thinking as involving generic skills that are not in pre-college education (Ennis)

vs.

Those who argue that there is no "thinking in general": there is only "discipline-specific" thinking, with the result that critical thinking instruction must differ from discipline to discipline. (McPeck)

Comment: While there is merit to both contentions, the second is needless narrow. The fact that "science" is not identical in botany, archaeology, physics and mathematics does not mean that a general course in scientific method would be useless. In any case, philosophy is exceptional: it represents a specific discipline that deals with thinking in general.

c. Those who believe critical thinking courses should teach students *about* critical thinking

vs.

Those who believe critical thinking courses should consist primarily in *doing* (i.e., practicing) critical thinking.

Comment: Students of critical thinking must develop both critical skills and critical dispositions. They are therefore in the status of craft-apprentices, and they must largely learn by practice. This does not mean, however, that they are forbidden to learn *about* critical thinking.

d. Those who stress paper-and-pencil exercises and homework to sharpen thinking

vs.

Those who stress conversation and dialogue.

Comment: Conversation and dialogue enlist children's social impulses in the service of their education; techniques that isolate the child and ignore such impulses tend to be educationally ineffectual.

e. Curriculum materials that *explain* the thinking process

vs.

Curriculum materials that *model* the thinking process.

Comment: Modeling is essential; explanation may at times be desirable. Unless the curriculum dramatizes what it is to be a thinker, students will be unable to picture themselves as thinkers. Unless the curriculum portrays a community of inquiry, students may be unable to conceive of themselves as belonging to one.

f. Approaches to teacher-training which conceive of the teacher as the primary initiator of thinking in the classroom

vs.

Approaches to teacher-training which conceive of the teacher as one who helps students initiate their own thinking.

Comment: The first alternative depicts the teacher as questioner, and this has unfortunately led students to see themselves as mere answerers. It does not lead to their thinking for themselves, nor to their carrying their cognitive proficiencies with them from classroom to classroom, thereby illuminating every subject they study.

g. Approaches which treat critical thinking as a mere educational additive

vs.

Approaches which seek to develop it as an educational discipline in its own right.

Comment: The first approach, that being presently insisted upon by proponents of the major disciplines, is likely to result eventually in the disappearance of critical thinking from the educational scene. The second approach will move critical thinking to the very center of education. The initial likelihood is that many schools will choose the first alternative. But some will choose the second, by making space for philosophy as a regular elementary school subject.

h. Those who assess the educational worth of thinking programs by means of experimentation (such as pre-post testing with control groups)

vs.

Those who assess the worth of such programs in terms of their congeniality to existing teacher preferences.

Comment: Educational decisions should not be based solely on taste. Those who "shop around" should do so critically. Educational research can be a reliable criterion for distinguishing programs that work from programs that don't. Still, the problem is not with teacher preferences, but with those who create or mold such preferences into a force that will preserve matters as they are, whether they work or not.

Matthew Lipman

Footnotes

1. Robert Sternburg, "Critical Thinking: Its Nature, Measurement, and Improvement," in Frances R. Link (ed.) *Essays on the Intellect* (Alexandria, VA, ASCD, 1885,) p. 46.
2. Robert H. Ennis, "A Taxonomy of Critical Thinking Dispositions and Abilities," in Joan Boykoff Baron and Robert J. Sternburg, *Teaching Thinking Skills: Theory and Practice* (New York: W. H. Freeman and Co., 1987) p. 10.
3. Matthew Lipman and Ann Margaret Sharp, *Wondering at the World* (Lanham, Md.: University Press of America and IAPC, co-publishers, 1986)
4 Matthew Lipman, *Kio and Gus* (Upper Montclair, N. J.: IAPC, 1982)