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"On our block," this gentle story begins, "there is a lady who lives alone."

What follows that opening line is a child’s reflection on a neighbor friend. As James Stevenson’s lovingly evocative drawings make vivid to the reader, this woman, with her familiarly stooped shoulders and wistful smile, is a comforting presence to the neighborhood, including the neighborhood children.

The old lady gives her neighbors daffodils from her garden in spring, zinnias in summer, chrysanthemums in autumn and holly berries in winter. She waves to the neighborhood children as they go to school in the morning and smiles at them as they return home in the afternoon. On holidays she does special things. At Halloween she invites the children in to eat apples she herself has candied. At Christmas she has them in to view her tree and eat the red-and-green-sprinkled cookies she has baked. And at Easter she bakes for them little cakes with yellow icing.

The old lady is sometimes seen to walk alone in the woods, to feed the birds and to put out cream for the cat that lives in the meadow. As Sally, the child narrator, notes proudly, the old lady knows by name both her and her dog, Matilda.

So far, then, we have the sketch of a reassuringly familiar grandmother-figure, a sketch that celebrates the virtues of old age from a child’s perspective. The old woman is not judgmental, manipulative, overbearing, arbitrary, condescending or self-absorbed. To the contrary, she is supportive to neighborhood children in just the ways they can most appreciate. She maintains a friendship with them that enhances their well-being as a natural gift of her own well-being.

The story gives us a model of one kind of human relationship, a mutually supportive and thoroughly non-competitive relationship between children and an adult. It is an ideal of one type of inter-generational friendship.

Of course, not every adult in Sally’s life, or in the life of any other child, is free to cultivate a relationship of pure friendship. In a way, perhaps, Sally’s parents can also be her friends. But they have a responsibility for her upbringing that the old neighbor woman does not, and cannot, share. Something similar is true of Sally’s teachers. They have a duty to inspire, discipline, cajole, stimulate, drill and instruct her. Those duties do not belong, as such, to pure friendship.

Sometimes teachers become good friends with their former students, as do, sometimes, parents and their grown-up children. But there are pitfalls. A grown-up child or former student who is still proving herself to teacher or parent, or a parent or teacher who has become too much invested in the success of a child or former student, is not open to the mutuality of real friendship.

Near the end of I Know a Lady Sally thinks a remarkable thought. Wondering what her old friend was like when she was a girl, Sally also wonders “if some old lady she knew had a garden and cooked and smiled and patted dogs and fed cats and knew her name.”

One reason Sally’s thought is remarkable is that it includes the realization—hard for a child to manage, but then hard, too, for an adult—that old people are not essentially old, but were once, in their very own persons, children.

Another reason the thought is remarkable is that it encompasses, briefly and succinctly, the profound realization that lives fit together in sequentially overlapping patterns.

At the very end of the story Sally has this thought: If she were an old lady and the old lady were a little girl, she, Sally, would love her neighbor just as she loves her now.

One doesn’t have to be a philosophical skeptic about counterfactual conditionals, or a cynic about human nature, to find Sally’s confidence questionable. For any one at all to be able to imagine an old woman as a young girl is hard enough. For a child to do that and, at the same time, imagine herself as an old woman, seems outrageously difficult. And who could know what anyone would be like after such great age transformations?

Still, one function of literature is to get us to try such thought-experiments, to entice us to, in Emily Dickinson’s phrase, “dwell in possibility.” Even when we don’t entirely succeed, the effort may be worthwhile.

The Sally on my own block is often amusingly bad at playing old lady to me as child. But when she carefully picks a dandelion and lovingly sticks it in my hair, the way in which she has succeeded is more important, many times over, than the obvious way in which she has failed.
Recent Developments in Critical Thinking in Anglophone North America

J. Anthony Blair

In Anglophone North America at the moment there is a widespread and growing advocacy of the teaching of critical thinking. Rather than recite the evidence for this claim, I shall take this occasion to try to characterize the nature of the phenomenon. 1

Here is my thesis. There are several perspectives to recent developments in critical thinking. Not all are emphasized by every advocate of critical thinking. Any concept of critical thinking will reflect one or more of these perspectives. Some of the perspectives have an historical component which partly explains the growing interest in critical thinking. They all help to explain what is currently understood by critical thinking. What "critical thinking" means to someone who advocates teaching it, what he or she takes it to consist of, what that person regards as its concrete implications for the syllabus, will depend on which combination of these perspectives he or she favours.

I have found four main perspectives, each of which contains subdivisions. The main perspectives are: (1) political, (2) educational, (3) ethical, and (4) philosophical.

The political perspective of critical thinking
For some, the current interest in critical thinking has roots which can probably be traced back to the U.S. civil rights movement of the 1950s and the later anti-war movement of the 1960s. 2

For others, the interest stems from the post-Watergate atmosphere of political distrust. These were part of a tradition of intellectual political dissent in the United States, one not found in Canada outside Quebec. At these times of major political divisions, there were corresponding calls for better education for dissent. 3

In some cases the critics took issue just with political policies or agendas. In others, the critics also wanted to challenge the world view or ideology they saw standing behind the policies or agendas. 4

To be sure, these critics' opposition to "indoctrination" in education have kept them from formulating their critical goals in such pointed terms. It would be indoctrination to teach distrust or criticism of particular political parties or policies. Instead, the educational objectives generated by this sensibility are more general. Still, I think its proponents operate on the faith, or at least the hope, that education for critical thinking will result in students' becoming critical of mainline political policies, and possibly of some aspects of their guiding political philosophies. 5

I should add that most of these critics have come from the political left. The impact of the U.S. conservative point of view on education lies in the direction of encouraging inculcation of what its proponents regard as basic and traditional American values, not in inculcating a questioning attitude towards them. 6

The political perspective's conception of critical thinking reflects its motivation. The central educational objective is a disposition to question generally-accepted beliefs, especially political and social beliefs, and to expose and challenge their presuppositions. The curriculum details consist of the concepts, skills and dispositions that are considered to be needed for such a critique, and of exercises designed to foster them.

The educational perspective of critical thinking
Three components of this educational perspective need to be distinguished.

(a) The first is the frequently-made
connection, tracing back at least to Dewey, between democracy and education. According to this view one of the aims of education is to produce citizens who have the capacity and who want to keep democracy safe and sound. Such education requires inculcating a spirit of reflectiveness, a healthy dose of scepticism, and an independent mind. Democracy requires citizens who can and will think, judge and act for themselves.

The education of such citizens entails teaching those critical habits of mind, and that range of intellectual abilities, which are needed to analyze and assess the policies and competencies of governments—needed to vote responsibly and to participate intelligently in political decision-making.9

(b) A second aspect of the educational perspective can be traced to the work in the analytic philosophy of education of the past two decades, whose leading figures are R. S. Peters in England and Israel Scheffler in the United States10.

According to these theorists, an analysis of the concept of education reveals that being educated entails having a kind of understanding that is accessible only to someone who possesses certain competencies and takes a certain attitude toward knowledge. The complete understanding of a theory, for example, entails knowing the arguments or evidence that support it, as well as knowing competing theories and the support they have. Thus, understanding requires quite sophisticated analytical skills, plus an ability to assess the evidence or other kinds of support for a point of view. Also, to appreciate the "epistemic status" of a point of view one has to be in the habit of wondering about it, of raising questions about it. Since, according to these theorists, a central goal of education should be to produce educated men and women, it follows that the entailed cognitive skills and attitudes should be covered in the curriculum.11

Such skills and attitudes, it turns out, are precisely those which characterize a "critical thinker," according to many advocates of critical thinking. In other words, critical thinking is regarded by these proponents as belonging in the curriculum simply because education, properly understood, requires it, by definition! The components of a critical thinking curriculum they endorse will be the concepts, abilities and dispositions needed for knowledge, understanding and appreciation in general or in particular fields.

(c) A third aspect of the educational perspective of critical thinking stems from the current alleged "crisis in education."

University and college teachers and administrators have for some years been complaining about the low quality of the skills which entering students possess. Some of these are basic literacy skills—reading and writing—and as such do not concern critical thinking directly. Others, though, have been identified as "thinking" skills.12

Different educators, depending on what they happen to teach, I suspect, have among them listed a variety of different "thinking skills," or competencies requiring remedial or supplementary work. Thus we find many who teach mathematics and science identifying critical thinking with problem solving. Those teaching civics or social studies in high school, or business, law, nursing or social work at the post-secondary level, see critical thinking as decision making, or as a combination of decision making and problem solving. Those teaching the social sciences and humanities see critical thinking as logical thinking in the sense of thoughtful interpretation of texts, and organized and cogent reason-giving or critical judgement.13

These three components of the educational perspective—stemming from the linkage of education and democracy, from the analysis of the concept of education, and from concern with "the crisis in our schools"—all find the rationale for teaching critical thinking, plus the ingredients of a curriculum for critical thinking, in their understanding of the needs, nature and role of education.

The ethical perspective of critical thinking

Some philosophers understand and justify critical thinking by appeal to classical ethical arguments.

There is an Aristotelian conception. Critical thinking, according to it, is partly an intellectual virtue and partly a virtue of character. It requires the virtues of thought of intellectual curiosity,
reflectiveness, clarity, analytical and dialectical competencies, and the ability to understand principles and apply them. It also requires the virtues of character of open-mindedness, perseverance, and self-examination. Socrates is the role model here. The combination of skills or competencies, on the one hand, and the qualities of moral character, on the other, is significant in this conception and justification of critical thinking.  

There is also a Kantian argument, which starts from the premise that critical thinking is a necessary means to self-sufficiency and autonomy, values Kant regarded as essential to functioning as a moral agent. If one values those ends, one must value the means to them. Moreover the values of respect for self-sufficiency and autonomy (treating humanity "as an end and never simply as a means") require teachers to honour students' requests for explanations, justifications, questions, and challenges, as well as their desire to exercise their independent judgement. To the extent that teaching embodies respect for these values, the teachers ipso facto engage in critical thinking, model it for their students, and encourage their students to be critical thinkers.  

Critical thinking, from the point of view of the ethical perspective, is not an instrumental means to an end. It is good in itself. It is a complex virtue of intellect and character.  

**The philosophical perspective of critical thinking**  
Under this heading I first discuss two paths that have led philosophers to the teaching of critical thinking. Then I list some of the philosophical questions that have been raised in connection with critical thinking.  

(a) One way philosophers have come to teach critical thinking, or parts of it, is *via* the teaching of logic, especially the new logic of the past 15 years: informal logic. Logic has traditionally been taught in philosophy departments. In teaching a logic for use, for application to everyday reasoning and argumentation, some philosophers have grown disenchanted with formal deductive logic as the instrument of choice. In a variety of ways they began to formulate new (or refurbish old) non-formal ways to analyze and assess arguments. Their goal was an improvement in practical reasoning, not theoretical knowledge of formal systems. In effect, they wanted to improve some of the critical thinking competencies of their students. Thus the teaching of logic was transformed into
the teaching of one component of critical thinking. From this point of view what is emphasized in critical thinking is the understanding of the argumentation and the ability to evaluate it and to use it to expose error and get closer to the truth.\textsuperscript{16}

(b) Quite independently of the developments in informal logic, other philosophers regard themselves as contributing to their students’ critical thinking abilities simply by teaching philosophy in certain ways, based on a certain understanding of what learning philosophy entails.

If learning philosophy entails learning to do philosophy, and if the latter consists of learning how to analyze concepts and to formulate, criticize and defend arguments, then the competencies acquired in learning philosophy, if they are transferrable, will be general critical thinking competencies. Moreover, if learning philosophy also entails tapping into and fostering curiosity about ideas, a passion to understand, and a simple, childlike sense of wonder, then the dispositions which are developed in learning philosophy, if they are transferrable, will be general critical thinking dispositions.

Here is one of the ways the Philosophy for Children movement relates to the critical thinking movement, it seems to me. The connection is also found in certain introductory philosophy texts, especially those influenced by analytic philosophy and by Wittgenstein.\textsuperscript{17}

(c) Finally, in discussing the philosophical perspectives on critical thinking, I should mention the issues that have come up in what might be called the philosophy of critical thinking—the philosophical analysis and critique of critical thinking. Here I count four questions. One is the issue of what critical thinking is—to which this paper is a contribution—which is constantly in the background, and sometimes in the foreground. Second, there has been considerable work done on the logic component of critical thinking, with some defending more traditional formal logic, or some of it, and others arguing for informal logic. Among the latter, there has yet to emerge a consensus about what informal logic is, though some fairly clear candidates for the title have been put forward. Third, quite a lot of attention has been devoted to the issue of whether critical thinking abilities require the knowledge of specific disciplines and so are in some sense domain-specific, or whether, instead, some or all critical thinking competencies and dispositions transfer across domains—whether there can be critical thinking “at large.” Fourth, there is the question of how the teaching of critical thinking is to be justified—what values and aims warrant teaching critical thinking, and at what levels of schooling and in what manner it should be taught.\textsuperscript{18}

At least some of the perspectives which I have mentioned obviously can overlap without inconsistency, and more than one will usually be discerned in the writings of those who advocate teaching critical thinking. So by looking at each one separately I have given a series of abstractions. Yet, I suggest that only by disentangling the mingled strands of point of view can we begin to make sense of what otherwise appears to be a confused welter of educational aims and curriculum agendas—all flying the banner of “critical thinking.”

\textsuperscript{1} The most striking indicator is the requirement of the California State University system that every student in the system must have a critical thinking credit to graduate. But there is much more evidence: an M.A. and Ph.D. program for teachers in critical and creative thinking at The University of Massachusetts in Boston; centers for critical thinking at Sonoma State University and Sacramento State University; conferences on critical thinking in Boston, St. Louis, New York, San Francisco, Rohnert Park (CA) and Newport News (VA) — the last two being annual affairs, the former in its sixth year — in the U.S.A., and at Chatham, Windsor (twice), and Toronto in Ontario, Canada; syllabus materials for elementary and secondary teachers produced in British Columbia, California, Wyoming and elsewhere; the \textit{CT News} newsletter, the journal \textit{Informal Logic}, the special critical thinking issues of \textit{The History and Social Science Teacher, National Forum, Educational Leadership, Focus and Social Education}; new textbooks in critical thinking literally by the scores; and of course the Institute for The Philosophy for Children with its literature, instruction manuals and training programs.

\textsuperscript{2} See, for example, Howard Kahane’s anecdote illustrating the goal of his text, \textit{Logic and Contemporary Rhetoric: The Use of Reason in Everyday Life} (Belmont, CA: Wadsworth Publishing Company, First Edition, 1971):

In class a few years back, while I was going over the (to me) fascinating intricacies of the predicate logic quantifier rules, a student asked in disgust how anything he’d learned all semester had any bearing whatever on President Johnson’s decision to escalate again in Vietnam. I mumbled something about bad logic on Johnson’s part, and then stated that Johnson’s reasoning — or at least its logical component — was not that kind of course. His reply was to ask what courses did take up such matters, and I had to admit that so far as I knew none did.

He wanted . . . a course relevant to everyday reasoning . . .

This book is designed for exactly that kind of course. (p. vii)

\textsuperscript{3} Kahane’s text is the most explicit on this point. In the Preface to the Third Edition he wrote, “The purpose of this third edition is the same as for the other two: to help students improve their ability to reason about everyday political and social issues, and thus to help raise the level of political discussion in America” (p. viii) Other texts may not make this objective so explicit, but an examination of the examples used to illustrate their logical points reveals this interest, even though it is usually just one among many. For example, see Michael Scriven, \textit{Reasoning} (New York: McGraw-Hill Book Company, 1976), e.g., pp. 26-27, 77, 98; Ralph H. Johnson and J. Anthony Blair, \textit{Logic Self-Defense}, Second Edition (Toronto: McGraw-Hill Ryerson Limited, 1983), e.g., pp. 45, 61, 77, 82, 85; John Woods and Douglas Walton, \textit{Argument: The Logic of the Fallacies} (Toronto: McGraw-Hill Ryerson Limited, 1982) e.g., Ch. 2; David Hitchcock, \textit{Critical Thinking, A Guide to Evaluating Information} (Toronto: Methuen, 1983), e.g., pp. 4, 37-38, 64, 124, 144, 180, 199; Trudy Govier, \textit{A Practical Study of Argument} (Belmont, CA: Wadsworth Publishing Company, 1985) e.g., pp. 34, 46, 60, 319. And see too the examples used for the purposes of exercises in these and many other texts.

\textsuperscript{4} Richard Paul’s paper, “Teaching Critical Thinking In the ‘Strong’ Sense,” \textit{Informal Logic Newsletter,} Vol. iv, No. 2, May 1982, pp. 2-7), contains the classic expressing of this view. Paul writes:

Since I teach in the United States and since the media here as everywhere reflects, and the students have totally internalized, a profoundly relativistic perspective, I focus on issues that need to be approached dialectically, require the student to discover that “American” reasoning and the “American” point of view on world issues is not the only dialectical possibility. This serves a number of purposes:

1) the students become more adept at constructing, and more empathetic toward, alternative lines of reasoning [to the . . . assumption [among others]:

a) that Americans in contrast to other peoples love and are committed to freedom in a special way . . .

b) that people speak for myself as having this objective. It is not so readily found stated in texts, presumably since authors or publishers do not wish to alienate prospective users. But it is a theme heard in conversation at meetings where authors and teachers gather.

At the Canadian Conference on Thinking, held in Toronto 19-21 November 1986, at one of the sessions I attended, a high school teacher asked a panelist how to handle the demand of a religious fundamentalist parent that her child not be taught any sort of questioning attitude.

\textsuperscript{16} Cf. many of the exercises found in contemporary critical thinking or informal logic textbooks. Kahane’s \textit{Logic and Contemporary Rhetoric} (op. cit.), now in its Fourth Edition, is perhaps the most sustained instance. For a striking example see the exercise Paul cites in his article, referred to in
Note 6: The objective of this mid-term is to determine the extent to which you understood and can effectively use the basic concepts of the course.

You are to view and analyze critically and sympathetically two films: Attack on the Americas (a right-wing think-tank film alleging Communist control of central American revolutionaries) and Revolution or Death (a World Council of Churches film in defense of the rebels in El Salvador). [The assignment goes on to request the students to construct a dialogue between two intelligent defenders of the incompatible world views represented in these films, being fair and accurate to each, and then to write a third-person commentary indicating which point of view is in the strongest position logically. I urge anyone interested in discussing Paul's exercise to consult the original description, in order to avoid misrepresentation.]

9 See the following statement by David Hitchcock in Critical Thinking, A Guide To Evaluating Information (Toronto: Methuen, 1983):

In a democracy, critical skills are particularly important. The strength of democratic decision making is its ability to bring together the suggestions and perspectives of all members of a group to result in a good decision in the sense of one that satisfies everyone's interests as much as possible. But we can be sure of such a happy result if members of the group assess critically the arguments and claims by which they try to convince one another, . . . . So citizens in a democracy should have good critical skills, . . . .


11 A typical example of the analytic philosophy of education tradition's tie between education and critical thinking (albeit without using the term 'critical thinking') is the following passage by Brian Crittenden's, Education and Social Ideals (Toronto: Longman Canada Limited, 1973):

. . . . it is clear that epistemological criteria are among the most fundamental for determining what counts as education. But it shows that education is directly concerned not simply with knowledge, understanding, belief, the characteristics of intelligent behavior, etc., but with the whole interaction in which some people are systematically helping others to know, understand, believe, act intelligently, and so on. The activities proper to schooling thus prescribe what the distinctive manner of this exchange should be. It must be such that it issues in an understanding of what has been learnt. And the teacher should always act in a way that will bring the student eventually to learn and think for himself [emphasis added] (p. 12).

12 See, for example, "Thinking Skills in the Curriculum," special issue of Educational Leadership on critical thinking (September 1985); "Critical Thinking," special issue of Focus, a publication of the Educational Testing Service (1984); "Critical Thinking," a special issue of National Forum (the Phi Kappa Phi journal) on critical thinking (Winter 1985); and "Critical Thinking," a special issue of Social Education on critical thinking edited by Barry K. Beyer (April 1985).

13 This variety is nicely illustrated by the program of the Canadian Conference on Thinking (November 19-21, 1986), sponsored by the University of Toronto School of Continuing Studies and the Ontario Council for Leadership in Educational Administration. As well as sessions on critical thinking, the program lists sessions on problem solving, inquiry, cognitive education, information processing, creative thinking, philosophy for children, computer assisted instruction for mathematics, intuition, metacognition, productive thinking, and strategic reasoning. Many of these were focused on subject specialties.


18 Here I can best refer the reader to the extensive work of Robert H. Ennis, Richard Paul and Harvey Siegel, as well as the pages of the Informal Logic Newsletter (1978-1983) and the journal, Informal Logic (1983-). John McPeck's Critical Thinking and Education (Oxford: Martin Robertson, 1981) is the most widely discussed work critical of much critical thinking literature that I know of.
Philosophy for Children and the Modernization of Chinese Education

Robert J. Mulvaney

Educational theorists and policy makers are giving renewed attention these days to the problem of thinking skills, in the United States and throughout the world, including China. Students today, it is complained, are incapable of thinking well. They cannot generalize or formulate clear and unambiguous concepts. They cannot draw inferences, or even distinguish the conclusions of arguments from their supporting premises. They cannot criticize or evaluate information they read and hear. They cannot think imaginatively, creatively or independently. The problem is not restricted to any particular grade or age group, but it is perceived most acutely among students in advanced grades, in colleges and universities.

The causes of this “crisis in thinking” are variously assigned. In the United States, for instance, it is frequently related to the so-called “back to the basics” movement of the 1970s, a wide-
spread effort to restore to a central place in the curriculum the "basic skills" of accurate and effective reading, writing, and mathematical computation. Some argue that the renewed emphasis upon linguistic and numerical skills had the effect of stifling free and original thought. Stress was placed upon getting the right answer rather than discovering the train of thought that led to the right answer. The result was a neglect of logical skills in basic education. In China, on the other hand, the difficulties are perceived to lie with more ancient educational traditions, "feudal" modes of thinking which stress rote memorization, the authority of the teacher and a concept of the child as a passive recipient of information rather than a lively agent in its discovery.

There have been any number of calls for reform and action in the face of these problems. In the United States, state and federal agencies as well as professional associations have demanded attention to the problem. Recently a major association of teachers, the American Federation of Teachers, announced the formation of a "Critical Thinking Project," designed to help teachers improve their students' ability to reason and form judgments (New York Times, July 13, 1985). And in China a wide-ranging series of reforms was announced that "would replace China's traditional methods of teaching by drill and memorization with approaches designed to encourage independent thinking and analytical skills." (Chronicle of Higher Education, June 21, 1985). The recognition of the problem on such an international scale is in itself striking and serves to underline the gravity of the situation.

Among the many programs that have been developed in the United States over the past several years in response to this demand for renewed emphasis on critical thinking, one should be of particular interest to Chinese educators. It has already enjoyed success internationally, and some of its materials are already available in Chinese translation. This program, called "Philosophy for Children," was developed by Professor Matthew Lipman and his associates at the Institute for the Advancement of Philosophy for Children at Montclair State College, in Upper Montclair, New Jersey. Philosophy for Children is an integrated program in reasoning skills and philosophical inquiry covering approximately the first ten years of formal schooling. It consists in a series of highly unique teaching instruments, six novels, written at grade-appropriate reading levels, in which children discover fundamental logical principles, largely through cooperative dialogue with each other and with adults. In a natural, free and vivid way, the children, both those in the novels, and those in the classroom, raise a broad range of fundamental philosophical issues concerning human nature, the physical universe, moral obligation, the criteria of knowledge, and practical issues concerning social organization, economic justice and the philosophy of law.

A very broad range of thinking skills is covered in the Philosophy for Children program. Children learn to classify and categorize, to define terms and develop concepts. They analyze and evaluate simple inferences, as well as more complex arguments involving two or more premises. They are introduced to hypothetical and categorical syllogisms, learn to formulate causal explanations and to distinguish these from other forms of rational account. They develop relational arguments, evaluate analogies and grasp the logic of part-whole relationships. They deal with the limits of argument from authority and other less formal modes of argumentation. They explore the logic embedded in ordinary language. At the same time, the program is more than a course in logic. It is a genuine introduction to philosophical inquiry, free, however, of the jargon of technical, "adult" philosophy, and free too of any historical allusions to great philosophers of the past or present. The program focuses on philosophical issues as these emerge in the developing experience and language of the child. In aim and implementation, too, it differs from many college and university courses in philosophy. It aims not so much to acquaint children with philosophical opinion, as to produce in them habits of discovery and inquiry. The goal is to maintain the child's native curiosity and evoke or elicit from the child issues of ultimate human importance. Similarly the method of instruction is communitarian, democratic and dialogical.

The lecture method is never employed. Instead the teacher, sitting in a circle with the children, becomes a partner in inquiry with the children themselves, through a series of skillful questions, joining in their conversation and encouraging the development of a community of inquiring young persons in the classroom. The geography of this experience is all-important. The children do not sit in rows facing the teacher, but in a circle facing each other. No one sees the back of anyone else's head. This facilitates eye contact, direct speech and careful listening, all additional goals of the program. The class is ideally a small one, rarely exceeding twenty or twenty-five students.

The Philosophy for Children program has not been implemented in the People's Republic of China, and it was my pleasant responsibility to demonstrate it at the Shanxi conference. To...
describe the demonstration briefly, nine Chinese youngsters, six girls and three boys, all of whom were fifteen or sixteen years of age, joined me in a reading and discussion of the first chapter of *Harry Stottlemeier's Discovery*, the basic middle school text in the program. Although this book is intended for somewhat younger children than the ones I worked with, it was necessary to use older children who could handle English with some fluency. The demonstration was performed in a fashion typical of an American classroom. We read the chapter orally, discussed a variety of issues the children themselves found interesting or important, and concluded the session with a short exercise designed to reinforce the basic logical operation emphasized in the chapter, conversion of sentences beginning with the word "all" or the word "no."

The dialogue was surprisingly similar to a classroom experience with American children. The Chinese children were impressed with Harry's ability to learn from his errors. Lisa's friendship and helpfulness were likewise attractive to them, and they discussed the nature of friendship with great animation. Interestingly they approved of daydreaming, insisting that good ideas frequently emerge from such experiences. And, somewhat surprisingly, given certain Western preconceptions of the place of authority in Chinese society, they also insisted that, when adults are in error, it is perfectly acceptable for children to correct them. The children were articulate, open and expressive. There was none of the shyness and passivity some of my colleagues thought would characterize them. There was also a powerful sense of cooperation and mutual support in the group, particularly in the concluding logical exercise, and, of course, in the oral reading. The only striking dissimilarity between the group and a standard American response was the degree of approval the Chinese expressed for Harry himself. They found him "clever" and liked him. Many American children find him "weird" and don't like him. It is unwise to generalize from such a small sample, but it is tempting to infer that Chinese children would find attractive the emphasis on intellectual activity and logical discovery so much a part of the program. More generally, the great similarities between the response of this group and that of the typical American class prompt one to suppose that something in human nature itself responds to the philosophical content of *Harry*. The demonstration reinforced my conviction that the Philosophy for Children program has great international and transcultural value.

China's modernization program, until now focused chiefly on agriculture, industry and technology, is clearly moving into education as well. Philosophy for Children can play a very important role in this modernization effort. In concept, aim and implementation it embodies many of the central themes of educational modernization—the release of individual initiative, creativity and vitality, the training of logical and analytical skills, the democratic partnership of teacher and students in a common learning project, the development of moral ideals of cooperation, mutual assistance, respect for others and truthfulness. Similarly it can remedy some of the perceived shortcomings of the present system, such as student passivity, teacher-centeredness and authoritarianism, rote memory and "duck-stuffing," dogmatism in ideological and political education, the predominance of the lecture method and boredom with studies.

The Philosophy for Children program can also assist China in its efforts to modernize higher education. This, of course, was the theme of the Shanxi conference, and it will be noticed that the title of my paper omits the word "higher." Although the Chinese delegates to the conference found the program significant and interesting, some felt it was irrelevant to the problems of higher education, and even if relevant, practically impossible to implement at the moment, such are the problems with the present state of Chinese education at all levels. Still others argued that higher education is the key to improvements in elementary and secondary education. Colleges and universities produce the teachers. Improvements in higher education, therefore, are most likely to have
ameliorative effects in the schools. Some discussion of these points is in order.

One great principle dominates the theory that philosophy should be extended into the pre-collegiate curriculum: the principle of continuity. There is a ready tendency in philosophical thinking to dichotomize human experience, itself possibly the result of the apparently obvious distinction between immediate and reflective thought. This dichotomizing and polarizing habit of mind leads us to much of the dominant dualism and alienation so characteristic of modern experience. Theory is opposed to practice, individuals to society, work to play, youth to adulthood, school to the family and virtually every other social institution. The principle of continuity insists that experience is more of a fabric, and that its various strands are interconnected in a single whole. Continuity focuses on interrelatedness and interaction, rather than on isolation and solitude. When applied to the psychology of growth and development, the principle of continuity asks us to notice anticipations of mature experience and skill in our earliest learning experiences, rather than to fix on the sudden and mysterious appearance of "stages" of development, inexplicably associated with chronological age. It is the principle of continuity that makes philosophy a curriculum subject for the young child as well as for the young adult.

Similar continuities make Philosophy for Children germane to the concerns of the Shanxi conference. Higher education has always been invested with an aura of inaccessibility, and perceived as a quantum leap from all subordinate levels of education. Only those with great powers of mind and character, demonstrated by many years of docility, ought to be permitted to enter our colleges and universities. A rigid examination system, both of aptitude and of achievement, separates the few sheep from all subordinate goats. It is by and large expensive, and the costs should be lavished only on a few. Finally, and perhaps most importantly, it is higher education which traditionally determines who shall rule, politically, economically and socially. Proponents of an aristocratic system of education will argue ultimately that the many cannot rule, that they should be ruled, and that therefore they should be educated only to a relatively secondary level. Where philosophy is by design or tradition isolated to institutions of higher education, it is by equal necessity extended to a very few, a well-trained, well-financed, fortunate elite. It becomes the arcane wisdom of a ruling class rather than the common educational property of a self-governing people. The political dimension of discontinuity in education should be apparent. A truly self-governing, democratic people will be granted life-long opportunities for continuous intellectual growth, not in the interests of their own atomic individuality, but in the interests of the common welfare. As such the extension of the reasoned search for wisdom into all levels of education seems necessary to the full democratic aims of modern post-feudal societies. And it follows that any consideration of the content or methodology of higher education must attend to relevant considerations emerging from elementary and secondary education.

Continuity in studies, then, requires some link between higher education and lower, and between philosophy, so much identified with higher studies, and rudimentary philosophy for children. The practical difficulties of implementing such a program must be conceded, in China, as elsewhere. But a warning is necessary for those who think that higher education, if reformed, will immediately entail the improvement of elementary and secondary schools. There is a subtle illusion in the belief that there is any single "key" to the reformation of educational policy and practice. Many will claim that improvements in higher education will produce more effective teachers and policy makers, thereby insuring the improvement of the schools. But it is from the schools that candidates for higher degrees emerge. Unless some equal attention has been given their preparation, improved higher educational opportunities will have little effect. At the same time, this is not to argue that exclusive attention has to be paid to early...
childhood, again on some supposition that better schools will produce better college students. Here the earlier hypothesis has its own grain of truth. Improvements in the schools will not occur until the personnel responsible for administration and instruction are themselves better qualified, and this means improvements in higher education. The lesson is that reforms in education must proceed on a broad front, with no segment of institutional education ignored. Education is of a piece, from grade one to the Ph.D. Indeed it is equally continuous with society so that improvements in social organization will improve the schools, and reforms in the schools will improve social organization. The principle of continuity comes into play once again. Education resists "tinkering," as does any human activity with such comprehensive and long-range goals. A conference, then, dealing with higher education must attend to the problems of the schools, and philosophy must be extended beyond its traditional limits to elementary and secondary education.

The Philosophy for Children program suggests several recommendations, some of them practical, others more theoretical, but all of them germane to the concerns of this conference. The Philosophy for Children program demands dialogue experiences. These must take place in rather small groups. The traditional size of the Chinese classroom will make this goal very difficult to realize. Again, Philosophy for Children has a way of addressing our attention to more general educational problems. Here the problem of class size seems a very great one, and deserves urgent attention. At a time when Chinese education is vastly understaffed, and the extension of lower and middle schooling to an increasingly greater population is a national priority, class size may be an insurmountable obstacle. But it must be remembered that many of the goals of modernization, particularly attention to individual needs, aspirations and ambitions, with the concomitant release of initiative and creativity implied by those goals, will be very difficult to attain unless classes are made smaller.

Three more general remarks can serve to underscore some central philosophical and pedagogical points. First, there is an ever-present danger of elitism in educational reform. The modernization of Chinese higher education, if it increases the competition for university places, and decreases the opportunities of all the people to engage in life-long learning possibilities, will intensify the dangers of elitism. One way to combat elitism is to distribute more broadly the one discipline that has traditionally been associated with an elite—philosophy. If this is done it will be more likely that the specialized training of university graduates will always be subject to the critical scrutiny of an enlightened general public. Some such belief has always attended efforts to popularize literacy. Critical thinking is every bit as necessary to a democracy as literacy, and it should by the same token be extended to the widest range of citizens as possible.

Secondly, the release of individual powers invariably entails risks. Creative expression is rarely understood or appreciated in its own time. But the risks are necessary if initiative, creativity and vitality, so often spoken of as values of modernized education, are to be fostered in our schools. It may happen from time to time that these values will conflict with an equally often expressed insistence on the subordination of individual ambitions to the needs of society. "Serve modernized society" has become the imperative of a modernized educational program, and, while theoretically speaking there ought to be no conflict between social aims and individual aspirations, the history of individuality shows otherwise. In face of this circumstance, it would be wise first of all to distinguish egoism from individualism. They are not the same, not even the same type of theory. Egoism is a moral hypothesis, that the self ought to be its own end. But individualism is a theory about the constitution of reality, not a theory about its moral goals. It is necessary, in order to release the powers of the individual, to lay stress upon uniqueness and to develop that uniqueness as far as possible. In this process we must advance individuals, but tolerate occasional instances of egoism, the great accompanying risk. Too great efforts to eliminate selfishness may destroy individuality in the process.

Finally, moral education too often becomes indoctrination. Early training and habituation, if not tempered by critical analysis, becomes moral dogmatism. Chinese reformers are keenly aware of the moral dimension of the modernization program, and they are particularly eager to avoid the "Westernization" that modernization may entail. But the communication of social goals to children, and to adults as well, for that matter, may run counter to some of the methodological elements of the modernization program, particularly what is frequently called the "method of elicitation." We must continually be vigilant that programs of moral instruction in the schools be harmonious with the openness of true inquiry, and that, while it is important to raise moral issues with children, both in schools and outside, the outcome of such questions must not be prejudiced by dogmatism, official or adult. At the same time, it is useful to notice that universalized public instruction embodies social and moral goals that are communicated by the process of education itself. Among these are commitment to the truth, respect for other persons, toleration of disagreement, cooperation in the search for knowledge and community. These are meta-values, fundamental to any social organization worthy of the name. They need not be indoctrinated, only evoked as necessary to all other educational and social values.

The extension of philosophical inquiry to the pre-collegiate curriculum, then, epitomizes many of the central goals and values of modernized Chinese education, elementary, secondary and higher. It is a program squarely centered on the acquisition of independent, creative and critical thinking. It is fully compatible with the community-centered traditions of Chinese social theory, although it is in no way necessarily linked with a particular social or political ideology. It can aid in the modification and reform of the perceived shortcomings of traditional Chinese educational methodology. Most importantly it can aid in the development of thoughtful, productive and happy people, surely the high ideal of all teaching.
The Effect of the Pixie Program on Logical and Moral Reasoning

Michael Schleifer, Pierre Lebuis and Anita Caron, The Effect of the Pixie Program on Logical and Moral Reasoning

In 1985-86, 100 children (aged 8 and 9 in grades three and four), enrolled in a “Philosophy for Children” program were assessed in their grasp of logic, using the New Jersey Test of Reasoning Aptitude (a reduced, modified version, in French translation). One Hundred (100) children not enrolled in this program, matched for sex, age, and academic progress, were also pretested in the autumn and posttested in the spring after a six-month interval. The particular episodes used by teachers during this period were from the novelette called “Pixie”. All but one of the teachers in the study were experienced in teaching moral education. This was the first time, however, that they were using “Pixie” as an educational instrument. They attended nine one-day sessions on the material, but received little additional supervision.
One quarter of the children were also randomly chosen from both control and experimental groups for in-depth interviews. Part of these were to assess progress in the quality of their reasoning concerning the moral concepts of friendship and truth-telling. The interview was partly open-ended, asking general questions about friendship and discussing a dilemma about friendship used by Selman (1980) and Keller (1984). These interviews were recorded verbatim and later analysed by two independent raters on a three-point scale. A score of three was given for use of related-moral concepts (justice, reciprocity, trust and loyalty). A score of one was given for behavior (e.g. "I like him" or "we play together"). A score of two was given for some awareness of dispositions ("He could be there to help me"). We also used a scale adapted from Furman (1982, 1984). This scale is also scored on a one-two, three-basis. One is for no distinction between friendship and other relationships (such as a classmate); a score of two was for some attempt to distinguish friendship relations from others. A score of three was for a consistent, complete distinction friendship from other relationships. Truth-telling was assessed by presenting well-intentioned and bad-intentioned lies with good and bad consequences, according to earlier researches (Piaget, 1932).

In addition, the interview was used to assess the justifications given by the children for their responses, whether correct or incorrect, to the free-choices of the moral reasoning test. This is in accordance with both Piaget's insistence on seeking justifications, and the consensus of the anti-Piagetians (Ennis 1971, 1975, Hawkins, Pea, Glick & Scribner, 1984) that these justifications are necessary.

All children were also administered a test of reasoning on analogies (Ontario Institute for Studies in Education) and the Piers-Harris self-concept questionnaire. These tests, as well as the reasoning test were administered by the teachers themselves. The interviews were held by a research assistant who was ignorant of the main hypotheses of the study. This interview took place after the children had made their choices in the reasoning test. The scoring for justifications were 1 (no consideration of premises) 2 (some consideration of premises) 3 (a full, relevant consideration of premises). Interrater reliability for the three judges was 95 and 98%.

Analysis of variance on our abridged New Jersey reasoning test (F = 3.9 p≤.01) as well as a chi-square analysis (x² = 6.9 ≤.05) of the progress in justifications from the interviews indicate that a significant number of children in the experimental group as compared to the control group improved their scores in both cases.

"...of special interest is the finding that children as young as 8 can be seen coping with 'If...then' and succeeding at between 35 and 45% success...[and] they show that they have learned better justifications; that is, they refer to premises, and they ignore irrelevant questions about reality."

We had hypothesized in accordance with Piagetian theory and research with university students (Markovitz, 1985) that more improvement would take place in children of 8 or 9 years on a block of questions which were "pre-logical" more than those tapping deductive if-then, and syllogistic reasoning. We did separate analyses, therefore, for each block of questions on the New Jersey test. In accordance with our expectations, we found marked improvement on the "pre-logical" block (ability to demonstrate transitivity, awareness of ambiguity, inductive reasoning and reasoning with relationships). Contrary to our expectations, we also found some significant gains on the more difficult items of deductive reasoning.

In keeping with previous research findings, we found significantly more of the children in the program progressing than in the control group. We did also find a number of children regressing in their scores and justifications. Most of these children were in the experimental group. It may be that the exposure to philosophy has led to an intermediary stage in which new questions are asked. Perhaps some children got the wrong answers on posttesting because they look more deeply into the problem than the test questions warrant.

What is of special interest is the finding that children as young as 8 can be seen coping with if-then, and succeeding at between 35 and 40% success. While most do give adequate justifications in pretesting; many at posttesting show that they have learned better justifications; that is, they refer to premises, and they ignore irrelevant questions about reality. Example number twelve (about the Panda) was found very difficult, and answers were often given in terms of what the child considered true. On post-testing, an examination of the quality of response demonstrates definite progress for many children in this respect. This example concerns inductive reasoning, and the dangers of overgeneralisation. We paid particular attention to these questions to see what progress, if any, might be made. Several such questions concerning reasoning with relationships, and inductive reasoning showed almost 100% improvement for the experimental group (7, 15, and 16). Thus, the efficacy of training is in accordance with predictions based on developmental norms.

Many of the questions on the New Jersey test concern deducting reasoning. Here again improvement for the experimental group was significant. Yet, the improvement seems to be more an improvement merely in score, as our data shows an inadequate grasp of the logical
TABLE 1
Means for reasoning test by group and by school: pre and post

<table>
<thead>
<tr>
<th>School</th>
<th>Exp</th>
<th>Pre</th>
<th>Post</th>
<th>Pre</th>
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<th>Pre</th>
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<th>Pre</th>
<th>Post</th>
<th>Pre</th>
<th>Post</th>
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<tbody>
<tr>
<td>School 1</td>
<td>5.45</td>
<td>12.5</td>
<td>4.21</td>
<td>4.42</td>
<td>8.73</td>
<td>8.86</td>
<td>5.87</td>
<td>8.04</td>
<td>5.3</td>
<td>9.65</td>
<td>6.14</td>
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<tr>
<td>School 2</td>
<td>5.32</td>
<td>5.7</td>
<td>5.21</td>
<td>5.0</td>
<td>7.59</td>
<td>8.09</td>
<td>6.77</td>
<td>9.30</td>
<td>5.8</td>
<td>6.55</td>
<td>6.13</td>
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<tr>
<td>School 3</td>
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<td>School 4</td>
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<td>All Schools</td>
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</table>

The significant school and group result indicates that some schools have greater improvement than others on different types of questions. Most gains occurred primarily on questions about reasoning with relationships and induction. The most significant improvements for logical reasoning occurred for schools 1 and 5. Schools 2 and 3 showed a small improvement. One school (School 4) showed no greater improvement in the experimental than the control group for these questions. On the question of transitivity, however, this school showed the experimental group having greater progress than the control group. This may be accounted for, however, by the low scores for this school on pre-testing.

The Analogy Test results on the analogies test were left unanalysed because initial scores were too high in all the schools.

The Test of Moral Reasoning found evidence of a slight shift upwards in the quality of response about friendship for many of the experimental as well as control children. There were no statistical differences between the two groups, although both improved over time. We are continuing to study this dimension in subsequent research with larger samples.

Tests of Lying and Truth-Telling were based on Piaget's (1932) notions concerning intentions and consequences. We found that most children, contrary to Piaget, succeeded with the tests on pre-testing. They judged moral responsibility of a lie in terms of intention as well as consequences. There was no possibility, therefore, of judging the progress of children, since the initial scores were already too high.

The analysis of the Self-Concept Questionnaire yielded very interesting results (see Table 2).

Analysis of variance yielded a signifi-

TABLE II
Comparison of means on self-concept test for five school:
Pre and Post

|----------|-----|------|--------|-----|------|--------|-----|------|--------|-----|------|--------|-----|------|--------|-----|------|--------|-----|------|--------|-----|------|--------|-----|------|--------|-----|------|--------|-----|------|--------|-----|------|--------|-----|------|--------|-----|------|--------|-----|------|--------|-----|------|--------|-----|------|--------|-----|------|--------|-----|------|--------|-----|------|--------|-----|------|--------|-----|------|
Fac 2 = Intelligence & school status
Fac 3 = Physical appearance & attitudes
Fac 4 = Anxiety
Fac 5 = Popularity
Fac 6 = Happiness & satisfaction
structure. Perhaps, the children have learned what to do without yet knowing how to articulate what they have done. Further analysis reveals that the greatest improvement occurred in regard to one form of if-then reasoning (question 13).

One important point concerns content. We included many of the same items in pre-testing and posttesting, but also included slightly differing contexts. Our results show that imaginary contexts are easier for children to cope with in their syllogistic reasoning than situations close to reality. This result is similar to that obtained by Hawkins, et. al., (1984) in their work with 4 and 5 year olds. It is different from the results obtained with older subjects who seem to cope better with more familiar, and more real contexts (Markovitz, 1984, 1985). In any case, our results count against Piaget's (1928) claim that children find it impossible to suppose things as true which they do not believe.
cant group-by-school interaction effect (F = 3.42 p < .01). Children in the experimental group gained significantly in self-concept as compared to the control group in two schools (School 1, School 5). This was true for overall self-esteem, and particularly for the factors of physical appearance (Factor 3), and decreased anxiety (Factor 4). It is interesting to compare these results on self-concept with the results discussed above on reasoning. School no. 1 also showed the most dramatic improvement for the progress in logical reasoning of its experimental group. It is of note that one school increased anxiety significantly for the experimental group. This school had a large number of ethnic minority children with language difficulties. Perhaps in that school "Philosophy for Children" made them more confused, more wary, and less self-confident.

We believe that the efficacy of the program is very often a function of the teacher. We are presently focusing upon the qualities and competence of the teacher as well as the teacher-training needed for best results in Philosophy for Children. Although we did not focus upon the question of teacher-competence and teacher-training in the present study, there are nevertheless some indications of its importance. As already noted, the results from the five schools were not balanced. The teacher of the school showing the most improvement (in logical reasoning and self-concept) was most experienced in philosophy-discussions. Moreover, he/she was the only teacher in this study without previous experience as a moral educator. We had also asked all the teachers to make "internal" evaluations of their pupils' progress, and to pick 3 to 5 children they estimated had advanced the most. This same teacher mentioned above showed the best ability at this kind of prediction, a prediction which is extremely difficult for many teachers. The children mentioned as having improved did so on the reasoning test (22 to 28%) as well as in the quality of the justifications they offered in the interview. Furthermore, all these five children improved in the quality of their responses concerning friendship.

Our results confirm previous studies demonstrating the efficacy of the Philosophy for Children program in fostering logical reasoning. The present findings also provide evidence of increased self-esteem for some children.

There are two points in Piagetian theory which our results seem to validate. First of all, training, it would seem, as in many other studies, follows development, it does not supplant it. Analogies were mastered even in pre-testing by most children. Transitivity problems were found easier than others by children in our out of the five schools. Use of language, reasoning with relationships, and inductive reasoning improved more obviously and completely than did success on conditional reasoning. Finally, syllogistic reasoning and most if-then forms improved only for a small number of children. Improvement, furthermore, on these difficult deductive tasks, follows developmental predictions. Children first have some awareness of the right answers although they cannot articulate it. Even when they do give a justification, they cannot give the highest type. The improvement in their level of justification is from no justification at all (or an irrelevant one), to a justification with some relevance, but not judged quite high enough for the highest category.

The second point is that none of the children trained to cope with these problems have shows that they have really or entirely grasped the structure of logical reasoning. The "really" here is the total grasp of logic, which comes from having considered its form, and is evidenced by the ability to meet all problems, whatever the form, and whatever the content. There is no evidence that we can see, from either our study, or that of others which shows Piaget to be wrong here. Children may have many of the notions of logic in an intuitive way, but they cannot yet articulate these. This is partly a question of language, but it is not entirely a question of language. Children are very far from having the kind of universal representation which can consider all the possibilities and all the transformations. They are not yet truly "formal" much less at the post-formal stage which many have suggested is needed for logical problems.

We still must deal with the dilemma posed by Ennis (1971, 1975): "If children don’t really have logic, then many adolescents and adults don’t either." Our findings grasp one horn of the dilemma and other research grasps the offer: Many adolescents and adults do lack a grasp of the total structure of logic (Wason, 1968; Wason & Green). Perhaps this is what being at a stage of formal reasoning is all about. Many of the problems posed in logical terms are difficult because they create an illusion (that is, they are not in the children’s everyday language) and fool the children who may have previously grasped the principle. This seems exactly the same for people at any age whatsoever. The "real" grasp of logic gives one the ability to cope with an unlimited set of problems, and an immunity to being fooled by the illusion. This stage comes only through development. As we have argued above, training procedures cannot supplant, but must follow this development.

FOOTNOTES
L'ÉPREUVE D'APTITUDE DE RAISONNEMENT

DIRECTIVES: Ne rien écrire sur la questionnaire.
Utilisez le feuillet réponse ci-joint.
Pour chaque question, entourer la lettre qui selon vous, désigne la meilleure réponse.
Si vous ne savez quelle des réponses est la bonne, choisissez celle qui vous paraît la plus probable.
Si vous avez de la difficulté à lire certaines notes, n'hésitez pas à demander de l'aide.

EXEMPLE: Christian est plus grand que David, donc...
   a. David est plus grand que Christian.
   b. vous ne pouvez savoir si Christian est ou n'est pas de la même taille que David.
   c. David est plus petit que Christian.
La réponse est c. Sur votre feuillet de réponses, répondre en entourant la lettre appropriée.
Exemple: a. b. c.

1. Linda dit: "L'eau bout et ce liquide bout. Donc ce liquide est de l'eau." 
   a. Linda a raison.
   b. Linda a tort, parce que l'eau ne bout pas toujours.
   c. Linda a tort, parce que beaucoup de liquides bouillent.

2. Patrice dit: "Seule la eau est des eaux." Une autre façon de dire cela serait:
   a. tous les eaux sont de l'eau.
   b. tous les eaux sont des eaux.
   c. quelques eaux sont des eaux.

3. Jean se demande: "La famille de Robert a payé combien pour ce chien?"
   Jean suppose que...
   a. la famille de Robert ne s'est pas fait donner le chien en cadeau.
   b. la famille de Robert s'est fait donner le chien en cadeau.
   c. la famille de Robert n'a pas acheté le chien.

4. Louis dit: "Aucun panda n'a dans un zoo s'il survit." 
   Michel réprend: "Il y a aussi des pandas qui s'habituent à leur monde et survivent.
   Si Louis et Michel ont tous les deux raison, alors l'animal dont Michel a entendant parler...
   a. ne peut pas être un panda.
   b. ne survivra pas toujours.
   c. n'est pas dans un zoo.

5. Jean pense moins que l'importance que de la classe de 5e.
   Alfred pense plus que l'importance que de la classe de 3e.
   Donc...
   a. Jean pense plus qu'Alfred.
   b. Alfred pense plus que Jean.
   c. on ne peut savoir lequel des deux pense le plus.

   François reprend: "C'est la même chose de dire que toutes les truites sont des poissons.
   a. François a raison: "chaque" veut dire "tout".
   b. François a tort: ce que Bruno dit, c'est que seules les truites sont des poissons.
   c. François a tort: Bruno dit que certaines truites sont des poissons.

   a. Georges doit être grand.
   b. on ne peut savoir si Georges est grand.
   c. Georges ne peut pas être grand.

8. Pierre dit: "j'ai triste chats. Du abale plus fort que Prince et Rabe abale plus fort que Dole." 
   Donc...
   a. Rex abale le plus fort.
   b. Prince abale plus fort que Rex.
   c. Dole abale le plus fort.

9. Christine dit: "Tous ceux qui balisent les chats dans notre école sont de troisième année."
   Janine reprend: "Non, et tous les élèves de troisième année dans notre école aiment les chats."
   A partir de cette information, il n'est pas sûr que...
   a. tous ceux qui balisent les chats dans notre école aiment les chats.
   b. tous ceux qui aiment les chats dans notre école sont de troisième année.
   c. tous ceux qui aiment les chats sont de troisième année dans notre école.

10. Pauline a remarqué: "Les élèves de 4e année ont souvent des chats, mais les élèves de 5e sont plus gentils que les élèves de 4e."
   De ce que Pauline dit, il n'en suit que...
   a. les élèves de 4e sont plus gentils que ceux de 5e.
   b. les élèves de 5e sont plus gentils que les élèves de 4e.
   c. les élèves de 6e sont plus gentils que ceux de 4e.

11. Pascal dit: "De toutes les maisons en briques au monde, celle-ci est la plus grande." 
   Nadine ajoute: "Elle doit être faite des briques les plus grosses au monde." 
   Donc...
   a. Nadine a tort: une grande maison peut être faite de petites ou de grosses briques.
   b. Nadine a raison: les grosses maisons sont toujours faites de grosses briques.
   c. Nadine a tort: les maisons grosses sont toujours faites de petites briques.

   Est-ce une bonne raison pour que Jérôme ne prenne pas cet autobus?
   a. Oui, parce que plusieurs conducteurs sont de bons conducteurs.
   b. Non, parce que plusieurs gâcheurs sont de bons conducteurs.
   c. Oui, parce que certains gâcheurs sont de mauvais conducteurs.

13. Si les étudiants sont allés à l'école en autobus hier, ils sont arrivés en retard. Berthe n'est pas allée à l'école en autobus hier. Donc...
   a. Berthe est arrivée en retard.
   b. Berthe n'a pas arrivé en retard.
   c. on ne peut pas savoir si Berthe est arrivée ou non en retard.

   Est-ce que cela veut dire qu'elle a nagé mardi?
   a. oui, il est dû nager.
   b. on ne peut savoir s'il a nagé ou non.
   c. non, il ne peut pas avoir nagé.

15. Jeannette et Anne ont écrit des histoires sur des phrases voisines. Puisque Jeanette a aimé l'histoire écrite par Anne...
   a. Anne a dû aimer l'histoire écrite par Jeanette.
   b. Anne a pas aimé l'histoire écrite par Jeanette.
   c. on ne peut savoir si Anne a aimé ou non l'histoire de Jeanette.

   Denis reprend: "Cela veut dire que le soleil est très loin de la lune." 
   a. Denis a raison.
   b. Denis a tort, parce que le soleil est près de la lune.
   c. Denis a tort, parce que ce qu'il a dit ne décale pas de ce que Gustave a dit.

17. René voit, sur une carte, qu'un pays touche deux autres pays.
   Celui veut dire...
   a. les deux autres pays se touchent l'un et l'autre.
   b. les deux autres pays ne se touchent pas l'un et l'autre.
   c. Un ou l'autre pays peut être vert.

18. Tous ces livres sont des choses dans cette classe qui appartiennent à Michel. Toutes ces choses dans cette classe qui appartiennent à Michel sont marquées d'une étiquette rouge.
   Donc...
   a. Toutes les choses marquées d'une étiquette rouge sont des livres dans cette classe.
   b. Tout ces livres sont marquées d'une étiquette rouge.
   c. Toutes les choses marquées d'une étiquette rouge sont des choses dans cette classe qui appartiennent à Michel.

19. Les Ronjols n'ont pas de champignons. 
   Les animaux qui n'ont pas de champignons sont ceux qui se sont habillés.
   Est-ce que les Ronjols aiment les champignons?
   a. Les Ronjols aiment les champignons.
   b. Les Ronjols n'aiment pas les champignons.
   c. On ne peut le savoir.

20. Quelques habitants de la ville de Québec étaient français. 
   Tous les français de la ville de Québec sont morts à la guerre.
   Reste-t-il des habitants à Québec?
   a. il ne reste pas d'habitants à Québec.
   b. Il reste des habitants à Québec.
   c. On ne peut le savoir.
Fulbright Scholar Challenges
Guatemalan Teachers, Children

Paul M. McInerny
Dr. Albert Thompson left Guatemala in July with a Diploma de Honor al Merito, presented to him by the University of San Carlos, and with memories of many new friends and of a beautiful country and its rich cultural heritage. But the real story of Thompson's year as a Fulbright scholar in Guatemala is what he and Marquette University left behind.

As a Fulbright Professor, the Marquette professor of education taught courses in education at the graduate level at the University of San Carlos. Perhaps more significantly, he helped to establish a Philosophy for Children program in Guatemala with the aid of a grant from Marquette's Religious Commitment Fund. He considers the initiation of the philosophy program the major accomplishment of his stay in Guatemala.

The program introduces philosophy to a school's curriculum. It does not promulgate a particular philosophy or a set of beliefs — religious, economic or political — but strives to foster independent thinking among children.

In a nationally televised broadcast on Guatemala's cultural/educational television channel, Thompson explained: "The Philosophy for Children program demonstrates the relationship between thinking and human behavior, and the role of consequence when evaluating thinking and behavior. (It) . . . is an experience-opportunity which provides children the time to explore their own thinking power as both a human and a natural resource, as well as the thinking power of others."

The program's challenge rested in having children ponder questions and learn to think independently in a country which generally does not encourage such activity. However, Thompson had faced this problem previously in implementing Philosophy for Children programs in the US and in Mexico, where he spent 1979 on a previous Fulbright award. He had less parental resistance in Guatemala because parents have far less involvement in curriculum formation than their counterparts in this country.

While in Guatemala, Thompson witnessed its recent presidential election and the new effort to create a model democracy for Central America. This political venture is a major reason Thompson believes the introduction of Philosophy for Children was welcomed warmly.

"There is a need to educate a massive number of young people to learn the difference between reality and what's fake. Many fall prey to religious and political evangelizers," Thompson said in a recent interview.

Implementation of the program was begun shortly after it had gained the approval of the minister of education. Initially, Thompson's work included 12 workshops for more than 400 teachers, curriculum supervisors and education students in selected cities; three, 45-minute, nationally televised programs; and two one-hour radio broadcasts.

Getting to the workshop locations was an adventure in itself, Thompson said. "One workshop, at a place called Popotun, necessitated a five-hour bus trip and a four-hour jeep ride into the heart of the Mayan jungle. My body still hasn't
forgiven me for that trip.’’

At another session for English-speaking children who live in El Bananero at the headquarters of the former United Fruit Company, Thompson was surprised when told by a boy, in the demonstration class, that his father had attended Marquette. At first, he wondered at the story but later met the boy’s father, John A. Dwyer, Arts ’69, an agricultural operations manager for Del Monte Co.

To help launch the philosophy program and to ensure its continuation, Thompson used funds supplied by MU to send two educators to the Institute for the Advancement of Philosophy for Children in New Jersey for a three-week intensive training session on conducting the program. They were the director of teacher education at the University of San Carlos, who also works for the Ministry of Education as secretary for private education, and a professor of philosophy from Landivar University.

After Thompson met with the rector, dean of humanities and other administrators from Landivar University, a Jesuit institution, the school agreed to sponsor the Philosophy for Children program as a cooperative venture with Marquette. The focus of the program became Jesuit-operated elementary schools.

“The nine Jesuit schools, called ‘Fe y Alegria’ (Faith and Happiness), serve nearly 10,000 of the poorest-of-the poor children in Guatemala City. They have been the major focus of our efforts,” Thompson said. “The Jesuit director of these schools wants to make Philosophy for Children the unifying thread in his educational tapestry.’’

The Fe y Alegria schools consist of nine institutions that serve children from ages five to seventeen. For these children, there is little chance for education beyond the elementary level. However, Thompson explained: “The Jesuits at Landivar hope to use the philosophy program as a means to identify children of truly exceptional ability and to promote the continuity of formal education.’’

Because of the quick acceptance of the program, he believes Marquette’s name has become well-known throughout the country. “Literally ‘everyone’ is talking about Marquette University and the Philosophy for Children program in Guatemala,” he said.

Thompson hopes the working relationship between Marquette and Landivar will continue to grow and expand beyond the philosophy program. He also plans to return to Guatemala soon to further assist in the program’s development. However, the Guatemalan program is already at the level achieved by its six-year-old counterpart in Mexico, according to Thompson. He attributes this progress to a deeper sense of interest and to Marquette’s financial support in launching the project.

Both programs started by Thompson will receive additional support when plans by a Washington, D.C., group come to fruition. The organization is forming a foundation with the sole purpose of furthering Philosophy for Children programs in Central and South America. Initially, they have targeted five countries for aid — Chile, Argentina and Brazil as well as Guatemala and Mexico.

Thompson’s work with the philosophy program complemented his graduate education courses at the University of San Carlos. The first Fulbright scholar in education accepted by the Guatemalan government in five years, Thompson taught in a newly designed master’s program aimed at improving university teaching.

In Guatemala, from the elementary level through college, simple memorization by the student is central to education. The teacher is an unquestioned authority. This practice in higher education naturally can be frustrating and discouraging to bright students who seek free inquiry and discussion, according to Thompson. Compounding this is the fact that Guatemalan university professors are underpaid and frequently unprepared to teach.

“It is rare that university teaching in Guatemala is a full-time job, even though the professor may have three or four classes a day, or more,” he noted.

Thompson’s graduate students were from many disciplines including medicine, law, engineering, dentistry and the humanities. They are faculty members either at San Carlos or Landivar universities. Some are renowned educators in Guatemala, and all have jobs in addition to their teaching responsibilities.

Thompson said he achieved his goal of an open class within his own courses, which pleased him. For many of his students, it was their first such experience, either as a student or as a faculty member. Thompson felt confident his pupils would in turn strive for a freer and more stimulating atmosphere in the courses they taught.

“As a professor of education, I have said numerous times that a teacher must first be a learner and then an instructor in order to be effective,” he said.

The master’s program for improvement of teaching was an attempt to help bring back to San Carlos the reputation it once had as a university, according to Thompson. Founded in 1676, San Carlos earned international acclaim during its first hundred years in such areas as philosophy, theology and medicine. He credited its demise in prestige to the severing of ties with Spain and to deliberate cultural suppression.

The lack of library facilities is one readily apparent difference between higher education in Guatemala and the US, Thompson said. “In addition, reading material is very expensive. Newspapers and magazines are very expensive even for those students who are professionals. Therefore, their reading is limited.”

One aspect of US presence in Guatemala Thompson did not like to see was defective or out-of-date American goods. He saw unsafe buses, out-of-date candy bars, unapproved medicines and drugs, unsafe toys and other obsolete US-made materials in use or on sale in Guatemala.

Thompson and his wife, Carolyn, left Guatemala with fond memories of friendly people, the century-old monasteries of Antigua, beautiful landscapes and the experience of the Mayan culture in smaller cities and markets that has changed little since the explorations of Cortes and Alvarado. For him, the cultural offerings of the Mayan heritage are as rich as those attributed to Egypt, Greece and Rome.

“I had no opportunity in all my years in education to learn about Central and South America. The children of today are not having an opportunity either to learn about that rich culture,” he said.

Hopefully, because of Thompson’s work, a linkage between the two cultures will continue.
It was in the Fall of 1984 that I first had the opportunity to make a close examination of the works of Professor Lipman. I was participating in a seminar dedicated to those works at the Collège Internationale de Philosophie in Paris. This seminar was conducted by Pierre Belaval, who had already translated Harry Stottlemeier's *Discovery* and in 1978 had it published by J. Vrin in the collection *Editions Philosophiques*.

It was thus that Pierre Belaval entrusted me with the 1979 edition of *Lisa* of which I translated all of Chapter 5. It was this translation which I presented to the seminar. William Hamrick, who attended these meetings regularly, was kind enough to help make some of my translations more precise, and to give me continual encouragement.

I was really excited about doing this translation of Chapter 5. I had recognized very interesting philosophical questions in it, and I had appreciated even more the emphasis placed on the relation between formal neces-
First of all, it articulated the relationship between logic and ethics in an explicit and exemplary way, showing how indispensable coherence and inference were. This made it possible for logic to be recognized and practised in concrete situations. Lisa thus brought to children those first elements of logic which we observe to be missing when we read the dissertations in philosophy which our students write in their last year of the Lycée.

The second advantage of the ethical questioning in Lisa was that it established itself in the reader’s perspective of moral anxiety and ethical inference. Here again was a question which had been neglected, indeed overshadowed, as much in practice as in theory. For it is precisely this kind of questioning which today tends to have become, once again, one of the major themes of philosophy at work in France. It is this questioning which is condensed into the slightly journalistic expression, “return to ethics”. Well, I found in Lisa a connection already established between this contemporary event influenced by philosophical research and, on the other hand, the practice of teaching philosophy through which the reality of this return to ethical awareness must operate.

Thus Lisa seemed to me to present at one and the same time, an exercise in logic and an exercise in ethical thinking, constituting two important points in the work of philosophy. Present efforts of research bear on these two points, in order to give them back their theoretical importance. Philosophy teaching that is aimed at remedying their lacunae, or indeed their total absence, does the same thing.

It was therefore on the basis of this double perspective that I concluded it would be in my interest to start to translate the whole of Lisa. But I must still point out that, apart from this primordial philosophical value, the eminently captivating quality of the characters in the story only worked to make the work of translating more attractive. In the course of my exploratory reading, this text of Professor Lipman made me share in turn the pain of Lisa at the death of her father and later the joy of the children at the announcement of the imminent happiness of Mr. Spence. Lisa, Harry, and all the others had such an authenticity that they had awakened in me what one could call a feeling of proximity of friendship. And that also, my forthcoming translation would be forced to reproduce.

In order to recall how my French version of Lisa was prepared, I will touch on, to begin with, methodological questions which I encountered in translating. These led me to a great many choices, and some of these still bother me.

This is particularly the case with regard to the French public, for which my version would be intended. From a certain point of view, I could have worked out a literal translation, following in the footsteps of Pierre Belaval, starting with Harry Stottlemeier’s Discovery. The objective in that case would have been to aim for an adult audience so as to continue to make the works of Professor Lipman known in France. However, since the American texts are specifically intended for use with children, the translation should be able to be accessible to French children of the same age bracket who are not ignorant of American standards. It was necessary, however, to make certain things more precise, and this I did in the form of explanatory notes. And it is there, certainly, that I shall shortly have to think more particularly about the delicate question of adaptation. In its present state, my French text has reproduced very accurately the conversations among the children in the story nor, even those among adults. The choice of language in the translation, therefore, had to be worked out between (2) and (3), and it was the former which was generally accepted. In effect, it is the everyday style of speaking which, while being the common language, also can be put into more formal language which at present is poorly mastered by children in France. Their grammatical deficiencies can also make us understand the difficulties and deficiencies of children at the level of coherence of thought, if one is willing to admit that language is a kind of natural logic. On the other hand, there is a “common language” which we should reinforce in our pupils if it exists at all.

Sometimes, however, in spite of these reasons, I have been led to infringe upon this rule with care when, in situations of anger, for example, or again where irony must make itself felt, only colloquial language could plausibly take account of the relational tonality in which the dialogue proceeded. For example, there is the case of passing from the ordinary interrogative form, “Do you think . . . ?” to “You think . . . ?” In the same way, expressions such as “to have guts,” since they belong to a low-class colloquial style of speech, in and of themselves can acceptably express the tone of the reply in that context. But the exceptional and precisely circumscribed character of these divergences only serves to underline the general, correct usage of the everyday level of language which the educator must install as the child’s habit of speaking and, consequently, of thinking.

This question of the plausibility of the dialogues contains also the problem of the reader’s familiarity with the situations in the book. Harry and his father
hold conversations in which the adult operates at a more carefully chosen level of language than that of a child. He thus expresses himself at a more elevated level, but the complicity of the two protagonists will lead Mr. Stottlemeyer to rejoin his son on a more ordinary linguistic level. By this reinforcing authenticity, these changes of levels of speech are the bearers of the variation of relational tonality which is at work as the dialogue moves along. Here must be underlined, moreover, the exemplary character of the relationships between children and adults which Professor Lipman presents.

To take care of this concern with plausibility, I was also led to distance myself scrupulously from the American plausibility, I was also led to distance restoration of the spirit of the text. This employed, in order to make a better from one language to another are not is so because the levels of vocabulary the same in all contexts. Thus there are situations in which "friends" must be rendered as "pals" [copains] instead of "friends" [amis], where "we" is better translated by "one" [on] than by "we" [nous], and "kids" preferably by "kids" [gosses] than by "children" [enfants]. On other occasions, I have added—and more rarely, subtracted—words such as in the following examples: "I'm not doing nothing" became "I am not harm-

ing anyone (or anything)", or "but you just have to remember"—which a French person in the situation at issue would rather translate as "but do not forget" than by "but you must simply remember". Finally, for certain images or comparisons, I have substituted for an American expression the French equivalent which is sometimes entirely different. This has insured the integrity of the French text. These are not cases, either, in which I have taken great liberties with the original text. Rather, they are very moderate transpositions required by respect for the idea that has been brought to light, so that the public translation earnestly demands, therefore, conserving and reproducing this universality in the passage from one language to another, of which we have just spoken, but even more essentially still in moving from one ensemble of socio-cultural references, that of America, to another, which is for me that of contemporary France. It is indeed this universal inquiry which constitutes the purpose of the original text, and this text presents us with an itinerary, an ensemble of paths of thought, to respond to this line of inquiry.

These paths are those chosen by Professor Lipman, and they contain precise reference points. But the latter seem to me to create a problem in and of themselves. The paths of thought express a concern which is proper to share with French children because this concern involves a properly human question. So it is a matter here of approaching the delicate problem of adaptation which gets expressed in the following alternative: to translate and adapt the text and remain on the paths of thought chosen by Professor Lipman—and that is what I understand by rewriting the text—or, starting with Lisa, to write a story entirely transposed and shifted to France. The latter is no longer a matter of rewriting, but rather writing something else, following along other paths of thought.

The present state of my French text can only be called a translation, while, however, being capable of adaptation. The most convincing example is without doubt the 14th episode, in Chapter 6, about the game of baseball. This game, in spite of its great popularity in the United States, is very little known in France. The problem for thought which the game exemplifies ties together the concepts of rules and of what is right, the latter in regard to a praxis according to which what is just and unjust are going to be considered by the characters in the episode. Within the framework of a reality about what is right which is both (a) accepted by all the characters—it is here the game which authorizes this measure of what is ideal—and (b) expressed by rules, is it just to go outside the rules for a unique pragmatic purpose? No, because what is right has an ethical primacy, expressing the principle which applies to everyone and thus
The second source, in what concerns matters of pedagogy, consists of a corps of inspectors from the Ministry of Education. Thus to shift and transpose Lisa to France, that is to say, to take out the American references in order to substitute those from an entirely French framework, would require omitting a number of irreplacable situations for questioning and reflection which constitute the raison d’etre for episodes 4, 7, 12, and 29. And this is to say nothing of what would have to be cut out of other passages where this problem lies in the background, as in episodes 20, 23, and 26.

Here it can no longer be correct to speak of rewriting the original text in accordance with the paths of thought that one might have recognized in it, because it is those very paths of thought that one must suppress. And what one will choose as a replacement will not be a rewriting, but purely and simply a writing for the first time. There will no longer be in it whatever there might have been of the author of Lisa. And one must again very clearly underline the fact that the possible elements of substitution, if they are to recover the questions that Professor Lipman had inserted in the episodes now suppressed, cannot be integrated into what the latter had written without irremediably ruining the unity and coherence of the original text.

If the framework of a French school is not appropriate for discussing the problems associated with Mr. Spence, how can we retain an approach to these problems in shifting them to this other framework—which is still to be invented—and in addition keep the general context of the original story, that is, in a school that really now would be French? It would be necessary in this case to recast and rethink everything, and write a new text—a new story inspired by the American original. But this new story would no longer be called Lisa by Matthew Lipman. And this would no longer involve a rewriting either, but would instead require starting another writing project altogether. This example would constitute in and of itself a formidable obstacle, and it is not the only one. Moreover, if we extend the preceding reflection to the translation of other stories by Professor Lipman, what should we say about the questions surrounding the daily ceremony of saluting the flag in Harry Stottlemeier’s Discovery, since this ceremony also has no equivalent in France?

These last remarks thus lead me to the following conclusions:

(1) That a line-by-line and literal translation is unsatisfactory, even sterile, seems henceforth firmly established.

(2) It is necessary to think in terms of adapting the text, that is to say, of rewriting. This is a rewriting (i) according to the formal rules adapted to the reality of a French public and corresponding to the demands which we have seen above; and (ii) which adapts certain situations to the meaningful references of French reality, narrowly controlled by the paths of thought marked out in the original American text.

(3) But rewriting is not a totally original creation of material. We are still at the stage at which it is a matter of making the works of Professor Lipman better known in France in terms of both their theory and practical usage. From this perspective, one can understand thus that rewriting is fully justified—in relation to translation—in order to provide texts which are usable in situ. But the creation of a text transposed and shifted to a new context, if we can go so far as to say that it is still really a question of the texts of Professor Lipman, represents a considerable amount of work, time, and skills which would only be justified if it was henceforth guaranteed of being circulated and used in a way comparable to this huge investment of effort. Well, we have not reached that point yet!

(4) I insist: what regulates rewriting is the original text and its paths of thought themselves that remain in their integrity. And that is why I think that rewriting the original text while adapting it in no way means writing something else that one would substitute for it.

It is Lisa, Harry Stottlemeier’s Discovery, or indeed Pixie which are the paths of thought that bring us together here, and not what one could invent out of a whole cloth starting with them, even if one is also inspired by them. Between translation and a totally original creation, it is the middle path of an adaptive rewriting that I for my part propose here to adopt.
Critical Children: Philosophy for the Young

Martin Coles

In different forms, beneath various disguises, philosophy is presently creeping into the school curriculum. Where it is taught explicitly as philosophy it is normally taught only in 6th-Forms. The idea that philosophy can be taught to young children has received very little scrutiny. Indeed philosophers in this country appear, by and large, to have ignored the whole question of philosophy for young children as a topic for discussion. The following short discussion therefore carries the plea that the notion of encouraging philosophical reflection among Primary school children should be accorded more attention.

Where the subject of philosophy for young children does receive notice from philosophers there is evident scepticism. Pat White, Senior Lecturer in Philosophy of Education at London University, is quoted in an article I Think Therefore I Add (T.E.S. 15.6.84), "I don’t think you can teach children thinking skills... Philosophy is very complex. It’s head-breakingly difficult." Mary Warnock, the Oxford philosopher, in the same article does not rule out teaching philosophy to children but says "on the whole I’m in favor of teaching philosophy to children by stealth," a difficult statement to interpret. Perhaps Warnock wishes to imply that certain philosophical concerns, e.g., for conceptual and logical clarity, should be a matter for all school subjects. Few would disagree. But to seriously attempt some conceptual analysis in, say, a science lesson would inevitably delay progress in the topic being studied, and demanding logical precision in a particular context is not the same as highlighting points of logic in an argument for its own sake. Robin Barrow makes this point clearly: "There is a distinction between stating clearly 'what I mean by democracy is one man one vote' in order to advance a discussion in a history lesson about whether Periclean Athens was or was not democratic, and attempting to analyze the concept of democracy which would involve one in a more painstaking task which would have nothing specifically to do with Athens" (R. Barrow, The Philosophy of Schooling, Brighton, 1981, p.135).

Mrs. White’s view, that philosophy is difficult, is shared by many, but one ought to be wary of assuming that any difficulty experienced in presenting philosophy to young children necessarily lies in the inherent complexity of the subject or its forbidding abstractness. This view leads to efforts to make the subject simpler and one can only go so far down that road, which is perhaps one reason why the toe-hold that philosophy does have in schools is in 6th-Forms with the academically able. Since we see so few young children avidly reading Aristotle or Kant, since we might despair at the possibility of conveying the major tenets of existentialism to a young child, we are as Matthew Lipman puts it, "led to draw the irresistible inference that there is an unbridgeable chasm between the disciplined reflection that is philosophy and the unbridled wondering characteristic of childhood." (M. Lipman et al, Philosophy in the Classroom,

Such an inference, though, would be founded on an assumption about education which sees the learning process as the transmission of the contents of human knowledge from the old to the young. It ignores that alternative theory—the theory which gave rise to Bruner’s famous dictum that any subject can be fruitfully taught to a child of any age—which has it that the educational process must generate that thinking characteristic of different studies among those taught. Accordingly the proper teaching of mathematics generates mathematical thinking, of science scientific thinking, and on this view proponents of philosophy for young children would assume there is a clear distinction between thinking about a subject and thinking in a subject.

Perhaps then the traditional reluctance to discuss matters philosophical with young children is the product of a reliance upon an archaic view of education, and if this is the case then the inherent difficulty of the subject should be regarded as an issue for creative consideration; not as a handy argument against attempting any philosophy with young children. There are however other concerns that encourage the belief that children and philosophy should be sequestered from one another, concerns which have their roots in certain remarks of Plato in Book 4 of The Republic.

Plato argues that children not be exposed to dialectic for “it fills people with indiscipline.” He gives an example of the way that dialectic might subvert and corrupt young people:

“What happens when he is confronted with the question, ‘What do you mean by fair?’ When he gives the answer tradition has taught him, he is refuted in argument, and when that has happened many times and on many different grounds, he is driven to think that there’s no difference between fair and foul, and so on with all the other moral values, like right and good, that he used to revere.” (The Republic, Book 8 (337), Penguin, 1973, p. 307).

But prohibiting philosophy for children is not done only for their protection, it seems from Plato, but also in order to protect philosophy, for if children are allowed to make a mockery of the activity it will appear unworthy of adults:

“You might have noticed how young men, after their first taste of argument, are always contradicting people just for the fun of it . . . like puppies who love to pull and tear at anyone within reach . . . So when they have proved a lot of people wrong and been proved wrong often themselves, they soon slip into the belief that nothing they believed before was true; with the result that they discredit themselves and the whole business of philosophy in the eyes of the world.” (Loc cit p. 309).

Certainly these concerns must be taken seriously. It is possible for children to misunderstand the point of philosophy and use its techniques in a cynical fashion. However it would seem reasonable to suggest that the way to cure the problem of an inadequate grasp of philosophy is to encourage a more adequate grasp of it.

It may be, in any case, that to interpret Plato’s comments in The Republic strictly as forbidding doing any philosophy with children at all is a misinterpretation. Certainly in earlier dialogues Socrates talks to young and old alike. Perhaps it is just that “you must be very careful how you introduce them to such discussions.” (Loc cit p. 309).

It may be that what Plato was condemning in The Republic was not the practice of philosophy by children as such, but the reduction of philosophy to sophistical exercises in dialectic or rhetoric, the effects of which upon children could be particularly demoralizing. To suggest that any belief is as defensible as any other, that not insight or reasoning but argumentative victory determines what is right is a recipe for immorality and we must agree with Plato that if this is how philosophy is to be made available to children better to have none of it. But it should be possible to introduce philosophy to children in a different way; so that discussions are seen as co-operative ventures, so that dialogue is seen, not as a battle, but as a way of fostering a community of inquiry.

In America ‘creative consideration’ has been given to the possibilities of evolving suitable schemes for introducing young children to philosophy in this way. The Institute for the Advancement of Philosophy for Children (I.A.P.C.) has been pioneering the development of curriculum materials and teaching methods suitable for young children.

Lane and Lane effectively summarize the nature of the American program which is:

“based on (the fact) that discussion skills and listening skills are effective foundations to thinking/reasoning skills. It points to the value of inquiry, encourages the development of alternative modes of thought and imagination, and suggests how children are able to learn profitably from one another. It is based firstly on a series of novels for children which illustrate different ‘philosophical’ problems and modes of reasoning, and secondly on instructional manuals for the teacher.

The program uses a teaching model that is both non-authoritarian and anti-doctrinal . . . A teacher-centered approach in which the teacher imposes his or her ideas and views on the discussion rather than allowing the children to develop their own is considered to inhibit the development of reasoning skills . . . However . . . (the program) requires the teacher, albeit in a subtle manner, relentlessly to ‘feed’ rationality into the discussion . . . the teacher should, within the framework of neutrality, “encourage children to build on one another’s ideas;” “try to get students to see the implications of what they say;” “try to get students to become aware of their own assumptions;” “try to encourage students to find reasons to justify their own beliefs.” (N.R. Lane & S.A. Lane, Oxford Review of Education, Vol. 12, No. 3, p.263-275).

So the I.A.P.C. program asks children to engage in the kind of serious conversation which encourages them to rehearse in their minds what others have said and assess the relevance and significance of those remarks; to recognize other perspectives than their own and to explore possibilities in collaborative conversation.

The teacher’s job is to foster a community of inquiry and a co-operative search for greater understanding so that conversation is passed from child to child, so that children learn to value their own thoughts as well as those of others, and so that they learn to subject all ideas, including their own, to careful scrutiny. Of course it would be foolish to pretend that eliciting the kind of philosophical discussion where all these details are achieved is easy, but that fact should
I was recently engaged in an animated discussion with a class of ten-year-olds. We were discussing what is real and what is not. The discussion was fast-moving. The children found it difficult to take turns in debate and it was not easy persuading them to follow one line of argument through as ideas bounced back and forth. At times though the group did become totally involved.

"What about a reflection in a mirror. Is that real?" I asked. "Only when you are looking in the mirror," said Andrew. "Yes," added Robert, partly echoing the doctrine of the 18th-century philosopher, Berkeley, "something is only real if you know it's there." "But a reflection is still there even if I am not looking into it," said Louise. Rupert disagreed. "Not if it is a totally black room or room that is all one color, like all yellows." "Yes I can still imagine a reflection even if I am not looking in the mirror, so it must be real," said Louise. "A reflection is something that doesn't seem to be real but is real!"

The discussion came to no conclusion but continued to explore the area of 'things that don't seem to be real but are real'—an artificial flower and a photograph were items discussed in some detail.

There are other recent accounts which suggest that philosophical thinking among young children can take place in the terms and concepts of the ordinary language with which they are familiar. Every week for a year Gareth Matthews and eight children in Edinburgh aged between 8 and 11 years old met together. Matthews would begin a story that raised some interesting philosophical question and would ask the children to help him finish the story. They discussed such questions as whether a flower could be happy, what sort of things words were, and whether we could know that time travel was impossible. Matthews contends that in the course of this exercise the children demonstrated a remarkable ability for observation and philosophical reflection and analysis (Gareth Matthews, Dialogues with Children, London, 1985). And Olive Stevens has demonstrated that children, if stimulated by the right sort of talk, can develop complex constructions of concepts and are able to hold, defend and extend their ideas (Olive Stevens, Children Talking Politics, Oxford, 1982).

Such accounts confront the interpretation of Piaget which maintains that Primary school children cannot make hypothetical and relational deductions about abstract concepts. Indeed it has been pointed out that most children already have sophisticated reasoning skills by the time they enter school (Frederick Oscanyan, The Role of Logic in Education, in M. Lipman and A. Sharp, Growing Up with Philosophy, Philadelphia, 1978). For example, Oscanyan suggests that even very young children understand the meaning of 'if-then' logical forms even though they may know nothing of the formal rules that govern these forms. Children understand that the statement, "If you let go, you will fall," means that to avoid falling (denying the consequence) necessitates not letting go (denying the antecedent). While children may not understand the rules that govern such patterns, they do understand the patterns.

The arguments for including philosophy in the school curriculum are compelling, especially as they are framed by Barrow who suggests that few things could be more useful and educationally relevant. Barrow argues that philosophy alone can get people into the habit of substituting thought for rhetoric, of articulating coherent ideas and arguments . . . and above all of critically questioning their assumptions." And if, he argues, people were encouraged to be powerful critical thinkers they would be less likely to be "the dupe of advertising, politics, professionals and other assorted groups who have a vested interest in putting conviction before truth. It is a question to some extent of ordinary people calling the Emperor's bluff." (Barrow, Loc cit, p. 134).

There do not appear to be any convincing arguments against teaching philosophy to young children. Or is it that we have yet to hear them? Why is it so difficult to find anything but desultory discussion among British philosophers interested in education concerning the possibility of introducing philosophy to Primary school children. Are there good reasons? Or is it simply that philosophers in higher education ignore the topic for fear of having children messing around with their subject?
Mental Phenomena

Mental phenomena may initially be divided into three broad categories: mental states, mental dispositions, and mental activities.

Mental states are episodic or transient phenomena. They occur at a time. More than one mental state may occur in the same mind at the same time, but there are very real limits of load on the mind, and in the case of certain types of mental state (for instance, thoughts) there cannot ordinarily be more than one such state at the same time in the same mind. The occurrence of a mental state is one example of what in the last lecture I spoke of as an event in a person’s life. Examples of mental states other than thoughts are perceptual experiences, attacks of dizziness, dreams, and moments of terror, amusement, lust, or despair. Alongside mental states we should think of partly mental states, which are events in a person’s life that include but are not identical with a mental state of his: examples of partly mental states are actions and painful injuries.

Mental dispositions, by contrast, are persistent phenomena, which manifest themselves intermittently. They do not occur, nor are they events. They are mutable. Dispositions have histories, which are made up of events, and these histories are varied. Dispositions differ from one another in their beginnings, in their ends, and in what lies in between. Dispositions differ in their beginnings, for some are innate, some arise in the mind, and some are acquired. They persist in different ways, for some remain constant and some change, and they may mature or decline or fluctuate. And dispositions differ in their ends, for some last out the person and some come to an end within his life, and they may do so through decay, or through consummation, or they may be eradicated. Different kinds of history go with different kinds of disposition. And a word on the word ‘disposition’ itself. By calling a mental phenomenon a disposition I am not in any way impugning its reality: I am not suggesting that a dispositional property is less than a categorical property, or that the logical form of sentences attributing dispositions to persons is conditional. Examples of mental dispositions are knowledge and belief, emotions, desires, habits, virtues and vices, and skills.

Mental activities are activities by means of which we bring about mental states or bring mental dispositions into being or initiate bodily movements. They are not necessarily free, nor does it necessarily make sense to ask whether they are voluntary or intentional. Examples of mental activity are thinking a thought, volition or trying to perform in action, attention, repression, introjection.

If these lists of examples of the different mental phenomena seem heterogeneous, this is so because they are, and they are so, in part, for a reason worth considering. In compiling them I have mixed up, as happens in taxonomies of the mind, formal and concrete mental concepts. Formal mental concepts don’t pick out actual mental entities at all but serve as cross-headings in a more extended classification: they classify mental concepts rather than mental entities. Examples of formal mental concepts are ‘mental state’, ‘mental disposition’, and ‘mental activity’; also ‘virtue’, ‘emotion’, and, on the normal understanding, ‘perception’. Concrete mental concepts pick out determinable mental entities. Examples would be ‘pain’, ‘desire’, ‘thought’, ‘introjection’. And determinate mental entities are then arrived at by adding to these concrete concepts a term for an object. Examples would be ‘pain in the ankle’, ‘the desire to burn down the library’, ‘the belief that winter is upon us’, ‘introjecting a parental figure’. We do not reach determinate mental entities by adding a term for an object to a formal mental concept, such as ‘emotion’ or ‘virtue’.


“That dog is my father”

At least some natural languages have grammars which are not logically perspicuous, in the sense that sentences of the same grammatical form have different logical forms. Thus, for example, there follows from the premises that “That dog is mine” and “That dog is a spaniel” the conclusion that “That dog is mine” and “That dog is a spaniel” but from the premises that “That dog is mine” and “That dog is a father” it does not follow that “That dog is my father”. (Cf. Plato’s Euthydemus 298d-e.) In general, however, such apparent counter-examples to the definition involve the substitution of a different category; in the example, “spaniel” signifies a kind of entity but “father” a relationship.

Here are some replies to this question from Ethel Smith's Grade 3 class in the Harriett Tubman School, Newark, N.J.

Reflections 
childhood . . . education . . . philosophy . . .

What do you wonder about?

Morris: I wonder why I can hear when I move my finger. And I wonder how birds can fly. I wish I was a bird. But when I am about to die turn to a boy. And when times get bad turn into a bird.

Malik: I wonder why the planet is round and the people are not round. Because god did not want the people to be round.

Lorenzo: I wonder if a cat is really scared of a dog. I think they should stand up to them bullies. Because the dog's always scared.

Stanley: I wonder why so many people have to fight. I wonder why. I wonder why people have to kill each other. I wonder why people take drugs. And I wonder why people steal.

Gladys: I wonder who made gravity. If we did not have gravity we would not be able to stay on the ground. We would be flowing around. We would not be able to ride our bikes. Our houses, builds, libraries, schools, stores would be floating. I would be like space. I wish I knew who made gravity.

Shareef: I wonder why did the world change by killing each other and using drugs. Let the world be peaceful and safe don't let people stay on the street past 10:00 pm and have playground. Let bums live in houses and destroy the drugs.

Rasheedah: What I wonder about, my brother said I used his toothbrush to clean my shoes. I didn't do it. He must have done it. I don't remember doint it! I wonder if I did?

Fatimah: Have you ever wondered about something? Well I have, I wonder why black people are always being ignorant? I want black people to stop fighting each other and get along with each other because they're hurting each other and they are their kind. Good-by.

Shagitrah: I wonder what will happen when the birds start to die and rats start to come alive, I wonder. I wonder how do people know when all ants have babies.

Wadeeah: I wonder why does my mother and her friend fight most of the time. Why does trees leaves fall off the trees. Why do people stop growing and why is grass green. Why do people polute their neighborhood. They polute their neighborhood because they do not think about it.

Juanita: Things Puzzle me a lot because I think I could get a good grade in school and I got a bad grade. And when I forgot my math book at home but luckily we didn't do math. And when I left my Social Studies home and I got scared that time luckily we didn't do Social Studies. And when I got lost down town and into bloomingdale's and my mother was in Youngworld.

Dennis: Sometimes I wonder when I ride to school. I think about my work, and about the students too. But most of all about my work.

Shawon: Sometimes I wonder about where the rain comes, and when the stars start to sprakkle, and I Love it.
Strategy as derivative rather than primary

The general approach I am proposing points out that the child acts (or is made to act) as if he or she had a plan or strategy before it is possible to devise and carry out that strategy independently. The child does not first master a strategy that guides action and then begin to act, but first acts and then begins to master the strategy that guides the action. Undoubtedly, some form of self-awareness is involved in the transition from other-regulation to self-regulation. That is, the child begins to regulate his or her own activity by becoming aware of what has already been going on for some time under the direction of others.

Only future research will tell us how strong a claim we can make in this area, but it must be pointed out that this general framework for examining the problem of metacognitive development calls for a specific approach to the ontogenetic analysis of concepts, strategies, etc. Rather than assuming that a child first develops a strategy and then begins behaving as if he or she had that strategy, we should look for instances in which a child first behaves (or is made to behave) as if he/she had a strategy (through other-regulation) and then begins to acquire that strategy. At early stages, this may even mean that the child carries out activities based on various strategies before even realizing that there are such things as strategies, let alone before realizing the nature of particular strategies.

This has important implications for choosing starting points in our developmental analyses. Under the approach proposed here, we would not take the mastery of a concept or strategy as the crucial point in our analyses. Rather, our starting point would be when the child begins to be led through a task that will eventually be mastered in the realm of self-regulation.


How stories complement philosophy

Yet we cannot endure the feeling of the lack of integrity, for the higher vision too is part of our human nature. “It is impossible for a soul that has never seen the truth to enter into our human shape; it takes a man to understand by the use of universals, and to collect out of the multiplicity of sense-impressions a unity arrived at by a process of reason” (Phdr. 249b). “Beauty was once ours to see in all its brightness . . . Whole were we who celebrated that festival” (250bc). So memory revives our yearning for the past. Yet the doubts too will revive. And that is where ordinary reasoning must be assisted. Certainty about the unseen world must be secured, and the soul must be charmed or lulled into unconcern with anything else; assurance must be given that the certainty will last. The story suits these purposes. It arises from the same source as philosophy, and it aims at the same end. Its source is wonder, puzzlement, or amazement that things could be so. This was something that Plato was well aware of and which Aristotle repeated after him. For Plato the whole world and all that was in it was a source of wonder. He wants to grasp it in its entirety, to be, again according to the Republic, a spectator of all time and all being. The philosopher seeks after the meaning of the universe just as someone hearing a mysterious story for the first time tries to grasp its meaning. Suddenly, in Plato’s account, the meaning strikes him and the pieces fall into place. The revelation is like that which is talked about in the Symposium or the Seventh letter: “the man who has been guided thus far in the mysteries of love . . . will suddenly have revealed to him a beauty whose nature is marvellous indeed, the final goal of all his previous efforts.” “The truth flashes upon the soul, like a flame kindled by a leaping spark.” Everything that had been hinted at and merely foreshadowed beforehand is revealed in the end, suddenly as in a flash of light.

So the proper story in Plato is no longer a story just about the world: it is no longer an image of the world and of man’s place in the world. Our world is thereby seen to have a beginning, middle, and end, going from God to God, with the middle portion we call life the process of becoming like to God. The story of life often seems disjointed and unsatisfactory, rough and unfinished like Eros himself in the Symposium or as Socrates would have appeared to the casual observer. But in such cases only the surface is seen. In the life of a man like Socrates there is a hidden unity and completeness which changes of hair and flesh do not affect, and which cannot be improved by a hundred reincarnations. The revelation of that hidden meaning provides the conviction no other experience can shake. His fate may look like a tragedy; in fact, his story has a happy ending with his descent into the cave to point his fellow citizens once more towards the light.

Educational Reform through Philosophy for Children

Laurance J. Splitter

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Educational Reform through Philosophy for Children

A familiar question: Do we need a special subject for teaching thinking? A corollary of the orthodox view is that children do not need specific lessons on learning to think, reason or inquire, because these competences will inevitably flow from the study of traditional school-based disciplines, including science, mathematics, language, literature, social science, etc. Here it would help to distinguish between theory and practice, between the various statements of aims and objectives found in numerous government curriculum policy documents, and the day-to-day reality in schools. A defender of the theory could point proudly to documents such as "Investigating: Science (K-6)" and "Investigating: Social Studies (K-6)", which are peppered throughout with references to inquiry-based learning, developing thinking and reasoning processes (covering more or less those skills listed on the accompanying sheet), encouraging independent thought and responsible action, and (for the teacher) developing a repertoire of teaching skills which support an active learning role. This terminology represents a straightforward but commendable extension of the general statements of Aims of Primary and Secondary Education (in circulation in their present form since 1973 in N.S.W.), which refer to guiding individual development towards "perceptive understanding, responsible self-direction and moral autonomy." The theoretical connection between the teaching of school-based disciplines and these noble objectives lies in the implicit suggestion that through teaching science and social studies, etc., the child's capacity to inquire, reason and criticize will expand through a process of transferal.

A long way for the rigid, strait-jacketed orthodox view perhaps. Enough to make us feel proud and secure in the knowledge that we are doing the right thing by our children. Yet even the most casual observer cannot help but notice the enormous gulf between the rhetoric and the reality. For what we actually observe are teacher-centered classrooms, passive rather than active learning, a spirit of inquiry which diminishes rather than expands over time (in inverse proportion to the emphasis on content-based assessment), and a classroom environment in which responsibility for what is said and done remains overwhelmingly the province of the teacher. And what we actually get as a result are generations of school graduates who lack perceptive understanding, do not live responsibly and who certainly are not morally autonomous. To explain the discrepancy, we need to understand why the transfer described above does not take place.

I think that there are at least four factors worth highlighting. The first is the class and school environment, the second is the curriculum in primary and secondary schools and the timetable which supports it. The third is the role and expertise of the teacher, and the fourth is the expectation of, and support from, the external community to which schools are accountable. I shall not comment further on the last factor, save for making the point that our society is far from unanimous about the idea of teaching inquiry and thinking skills, for a variety of sinister reasons to do with preserving the social and economic status quo. It is very clever of a nation which does not, in practice, value sound thinking and reasonableness, to delude casual observers through the jargon of educational rhetoric.

The contrast between (most) primary and (most) secondary schools, in respect of their physical and emotional environments, is striking. The primary classroom is often the venue for much creative and joyous activity, with enough space to permit a variety of seating arrangements. But secondary schools—particularly in the state system—are joyless places, with long, uncarpeted, noisy corridors filled with students who try very hard to appear, sound and behave alike (for fear of being isolated by the peer group), and who spend much of their day moving from one room and teacher to another.

It has been amply observed that the sudden and drastic change from year six to year seven does little for the emotional well-being of children. It is not, after all, difficult to comprehend why high school students lose their sense of joy and wonderment. The classic "rows of desks" arrangement, for example, is virtually guaranteed to ensure that there is no student-student communication (except illegally) and that the teacher remains the focus for all activities. At least in these environmental respects, primary classes appear to win out. But let us not be too hasty here, for the openness and child/group focus in the primary classroom are misleading: they by no means guarantee that the activities taking place there are intellectually valuable or worthwhile. In particular, they do not guarantee that genuine child-centered inquiry is a predominant feature. In fact, it is not, because other crucial factors are missing.

Let us turn then to the issue of curriculum and timetable. It is still the case that most school subjects are identified primarily by their content. Further, the links and interconnections that do exist among different subjects—which are fundamentally to do with processes (investigating, inquiring, forming hypotheses, reasoning, analyzing, etc.) rather than content—are largely obscured by the school timetable which misleads students into believing that these subjects have little to do with each other. The traditional primary school curriculum was able, in part, to overcome these difficulties by means of a timetable which did not stress subject boundaries, except for some specialized areas such as sport. Recently, however, the growing trend toward specialization in all areas has led to a gradual takeover of the primary timetable by the secondary timetable. Some primary teachers are with their "home" class for less than one hour per day, with the rest of the day divided up, secondary style, among specialist teachers in languages, art, music, math, etc. The popular defense is that contemporary knowledge just is
more specialized and more complex and so the school timetable must reflect this. But this reply simply begs the question by its assumption—which is specifically denied in the rhetoric of Aims and Objectives—that school time should be dominated by the transmission of specialist knowledge (over, say, basic skills and processes.)

I shall offer some comments below on the "sacred cows" of the curriculum: the math, languages and sciences which claim to hold a monopoly in the area of academic excellence. But it is necessary now to move on to examine the remaining factor which stands between the theory and the practice of education. There can be no doubt whatsoever that this factor—the role and expertise of the teacher—represents the most serious obstacle in the battle to focus attention on the teaching of thinking and inquiry skills.

In this respect, the teacher-training institutions have a lot to answer for. But the real problem is that the traditional teacher role is reinforced over and over by the teachers' earliest teachers, by their lecturers at college or university, and finally by the teachers in their own classrooms. The prospect of realizing inquiry-based teaching and learning in our schools depends entirely upon breaking into and radically altering this cycle. It does not depend upon rewriting educational aims and objectives.

The teacher role to which I am alluding is only too well known. It pictures teachers as experts in their field of specialized knowledge, in the context of a curriculum in which the transmission of that knowledge is seen as the primary objective. True, it does carry some methodological or process-oriented baggage, but only that which is necessary to the task of transmission. Actually, it is arguable that what is transmitted is not knowledge but something cruder (information? facts?) because genuine knowledge—if it exists—presumes understanding and understanding, in turn, takes us back to processes, not to content. And these processes, not surprisingly, include inquiry, analysis, discovery, inference, induction, etc., etc., which are not within the expertise of most teachers (or teacher trainers.)

In this discussion, I am trying to avoid any specific political framework. But nothing is value-free, and it must now be said that it is, above all, the desire by the teacher (as society's representative in the classroom), to retain power, which ensures that the cycle continues unbroken. Where knowledge and information are perceived to be the currency which matter, the prevailing classroom environment virtually guarantees that at best, only the teacher ever tastes real power. But the (intellectual) empowerment of each and every individual is supposed to be among the chief aims of education! It is time to ask teachers who are not interested in thus empowering their students to take a good, hard look at what they are doing. Genuine intellectual empowerment—like meaning and understanding—cannot simply be handed to students. But it can be acquired by them. All it takes (!!) is a teacher and a classroom environment which encourage and assist students to discover their own power as unique human beings, with all sorts of wonderful ideas and valuable skills just waiting to find release. (I am not saying that children can never learn anything new, simply that whatever they do learn should build upon what they already are, and can do.)

The key to enabling children to gain intellectual empowerment from their education lies in the emphasis on pro-
cess, rather than content, learning. It is the teacher as coinquirer, not as all-knowing expert, who will inspire children to explore and extend their own capacities. This shift does not mean that teachers will lose control of their classes, except for that control which rightly belongs in the hands of students (see below.) Responsibility and autonomy will not result from giving children facts and information which they did not, hitherto, possess. It will result from teaching children to build on the cognitive skills which they do already possess. Given all this, it should be the burden of teacher-training institutions to encourage teachers to redefine their roles and to gain a mastery of those cognitive and metacognitive skills which constitute inquiry-based learning.

Let me try to be more specific about the connection between the factors I have been discussing and the tendency to avoid inquiry in the classroom. What teachers and students alike find difficult to cope with is the conceptual point that inquiry-based learning is process—rather than content—oriented. I call inquiry the missing dimension because it is simply not part of the disciplines, as perceived by teachers and students. When children ask questions or express puzzles which go beyond the teacher's perceived limits of his/her discipline, they are often told that the interjections are irrelevant. It is these perceived limits—whose origins can be traced to teacher role and teacher expertise—which block the road to genuine child-centered inquiry (in other words, inquiry skills are not discipline-relative.) It is quite probable that the teacher's scientific and historic knowledge extend beyond that of most or all students. But the issues touched upon as a result of inquiry, reflection, puzzlement, etc., may go beyond the perceived syllabus or lesson plan, extending into areas beyond the teacher's own understanding. (In fact, the issues involved may not even be scientific or historic, but philosophical—see below.)

By the time children reach the middle secondary years, they are delving into subject areas of reasonable complexity. Problems will occur where a proper understanding of the conceptual content involved at these levels requires mastery of cognitive skills which were never taught. Far from the syllabus for these subjects teaching these skills, the latter are presupposed by and incorporated in the former. And the plain fact is that one cannot perform a task effectively unless one has some kind of mastery of the skills and concepts presupposed by the task itself. It follows that because thinking skills are not mastered at an early age, the learning of the disciplines in schools is not nearly as effective as it might be.

Here are two examples from my own recent discussions with teachers. Literature teachers may expect their students to empathise with an heroic character with a view to comprehending the nature of her actions. But there is no guarantee that these students have either a prior or a concurrent grasp of the nature of empathy as a fundamental relation in moral reasoning. And a history teacher recently conceded that although a proper understanding of history requires students to be able to form hypotheses as putative explanations of human behavior, he could not assume that his students understood what it was to form an hypothesis in the first place. Both empathy and hypothesis-formation are examples of (philosophical) concepts or processes that teachers ought to be able to come to terms with. What I am suggesting is that by directly focusing attention on such concepts, teachers will assist students to understand them and to appreciate their significance.

The general point here is that a mastery of thinking skills can assist students to come to terms with other school subjects. Secondary students who have this mastery as primary school graduates will more effectively understand and appreciate their studies. So there is no real conflict between teaching thinking and teaching the disciplines. There is, however, one remaining and large question:

2. How do we actually set about teaching thinking?

An appropriate environment for the teaching of thinking and the development of personal growth is the classroom community of inquiry. To understand this concept, notice first that the key to inquiry at whatever level is structured, organized thinking. By bringing this structure to bear on classroom activity, the teacher can transform ordinary discussion into dialogue. And by engaging children in dialogue, we transform the classroom into a community of inquiry. Sowing the seeds of this transformation has been my major concern over the last several years.

Participants in a community of inquiry assume a large measure of responsibility for the thoughtful development of their own ideas. They learn to build upon the ideas of other participants, criticizing and assessing, but never abusing. Indeed respect for personhood is an essential ingredient, and it comes, in large part, with the realization that my ideas and yours are valuable and precious. This does not, of course, mean that they are therefore true, or immune from criticism; it means that every idea is a potential source of truth. How different from the familiar classroom where only the teacher's ideas are valued, or even listened to.

The notion of a community is meant to be taken literally. The bonds of respect, caring and trust which it connotes can legitimately be extended into the classroom, where they resurface as demands for tolerance, empathy and cooperative inquiry. A high regard for self and others is an essential feature of a community of inquiry. The classroom environment must encourage all students to value the ideas that come forth, which means listening carefully, seeking clarification, and searching for reasons and counterarguments. The members of a community of inquiry do indeed become responsible for the development of their own ideas, and it is this burden of responsibility—so sorely lacking in many of our public institutions (think of parliament and talk-back radio!?)—which guarantees rigor.

I have maintained that teacher role and expertise account, in large part, for the absence of inquiry-based teaching in our schools. This point can be elucidated by highlighting the special role of the teacher in forming a community of inquiry. Remembering the central place that inquiry and related concepts have in the rhetoric of educational objectives, we are talking here about the proper role of the teacher, as it should be practiced across the school.
It is the teacher’s responsibility to ensure that the class focuses on activities and procedures which are rigorous and directed towards building thinking skills. And like any other teacher-sensitive role, this requires practice and a certain expertise. It is easy to spot teachers who are well-suited to directing a community of inquiry. They see teaching as an opportunity to empower and enrich their students, rather than to exploit their own considerable power. They are aware of the extent and limits of their own knowledge and understanding, and they are not afraid to share these honestly. They have the skill—whether naturally or acquired—of leading a discussion which is both rigorous and child-centered, allowing time for students to express and defend their views, making links and connections that might have gone undetected, understanding when and when not to intervene in student activity, etc. Perhaps above all, they have retained—or rediscovered—their own childlike sense of wonder about the world. They are perceived by their students as being intensely interested in thinking about their thinking, i.e., as models of inquiry.

My own experience has confirmed that children will internalize aspects of teacher behavior and attitude, over anything that the teacher says or prescribes. Far better that they should become careful thinkers because their teachers are careful thinkers, than that they should display good manners and etiquette for the same reason. Far better, too, than clinging to beliefs and values simply because their teachers (and parents) do. Members of a community of inquiry will have discovered that it is more important to know why someone believes a certain thing than to insist that they believe it.

Ultimately, teachers who have helped students build a community of inquiry need not feel that they have given up significant power or betrayed their role. Indeed—and this conforms to my experience—they can experience delight in the knowledge that they are functioning as genuine educators.

3. The role of philosophy informing a community of inquiry.

I have argued that the teaching of
thinking should be incorporated into the curriculum. I have also given reasons why this crucial task should not be left until secondary school, nor placed in the sole care of the traditional school disciplines. Finally, I have tied the teaching of thinking to the formation of a classroom community of inquiry. Hence, we are looking for a thinking skills syllabus, the teaching of which involves transforming the (primary) classroom into a community of inquiry.

I have certainly not ruled out the idea that familiar subject areas be taught through the medium of the community of inquiry—indeed, it is one of my fundamental beliefs that in all classes, at all levels, teachers and students together must find ways to integrate the dimensions of inquiry and discovery into their activities (and so work towards maximizing self esteem and respect for others across the entire curriculum.) Nevertheless, my objective here is to make out a case for focusing the classroom community of inquiry around the discipline of philosophy.

There are important connections between philosophy, thinking and inquiry—connections which professional philosophers and students will readily discern but which are not apparent to teachers or the public at large. Suppose we begin by asking, "What makes an activity or issue philosophical?" One answer, already alluded to, is that philosophy deals with the metacognitive domain, in which we reflect upon our experiences, or, more generally, think about our thoughts. It is this feature which makes philosophy accessible to anyone who has thoughts and is capable of reflection (i.e., to any person.) And it is this feature also which connects philosophy to the business of teaching thinking: in thinking about their thoughts, children will build their own thinking skills. I also indicated above that the motivation to think about one’s thoughts stems largely from the human need to make sense of—give meaning to—one’s experiences. And so we might fairly characterize philosophy as that discipline which investigates and discovers meanings. Thus the absence of philosophy—as an identified discipline in the core curriculum—helps explain why so many children fail to find sense and meaning in their activities (a sobering illustration may be found in the incidence of suicide and general distress among very intelligent children—the "gifted and talented"—who, perhaps more than other children, are deeply involved in the search for meaning.)

Matthew Lipman, founder of Philosophy for Children, has identified the special connection between philosophy and thinking. He explains that thinking is internal to philosophy, where it is external to other disciplines. This means that the methodology of philosophy, like mathematics, is a priori or conceptual, rather than a posteriori or empirical (which is why it is so important that teachers be skilled in identifying philosophical questions and developing strategies for dealing with them.) It also means that the things we think about (ideas, thoughts, concepts) constitute the very subject matter of philosophy. Lipman goes on to say that philosophy is also essentially problematic and difficulty-seeking, and here again we see in schools the results of ignoring the philosophical dimension. For much of what is taught is remote from students’ experiences and frames of reference, and is presented to students as a series of self-contained packages, sealed off from exploration and critical investigation (this applies to the practice, rather than the theory.) The implications for thinking are clear. Lipman again: “When a subject is presented as known and complete, the student is not invited to think; rather, the invitation is clearly not to think.” It is here that the contrast between the theory and the practice of education is most striking, in my experience. Under the heading of “academic discipline,” and with vague and unsubstantiated appeals to rigor and excellence, we teach subjects and use methods which deliberately avoid issues which students may find genuinely puzzling and problematic in their lives.

I am not supposing that the purpose of philosophical inquiry is to be controversial, polemical or confusing. The point is rather that aspects of our lives and the world we live in are controversial and confusing, and young people deserve the opportunity to identify, understand and resolve them.

Popular debates in education are vulnerable to what I shall call “Clayton’s Dilemmas” (they also have respectable Latin names.) A Clayton’s Dilemma is what you have when you don’t really have a dilemma at all. For example, do we teach for content or for process? Do we teach for rigor and excellence, or for relevance? Do we aim for quality or equality?, etc., etc. Now it is really quite remarkable that philosophy has the power to expose these false dilemmas for what they are—destructive, divisive and unnecessary. For example, I have tried to spell out the process orientation of philosophy—that which legitimizes it as a discipline suited to the teaching of thinking skills. But the sceptic will ask: Does it have any content or is it all process? (whatever that might mean.) The answer is that the discipline of philosophy exemplifies “content-as-process” (thinking about thinking.) It has a content stretching back more that two thousand years (in Western culture) but this content becomes incomprehensible once we divorce it from the thinking processes which motivated people to ask questions, to reflect, to inquire, to criticize, to hypothesize, etc.

Let me clarify this by focusing on some of the characteristics of five-year-olds I have known. By and large, they are open-minded and curious, with a sense of wonderment about the world and how it all fits together. This sense is the forerunner of their capacity to inquire and reflect—the deterioration of which leaves schools with a lot to answer for. Now as I have already remarked, no one, five-year-old children included, can wonder about, reflect upon, or puzzle over, nothing. Well before the age of compulsory school attendance, children possess a collection of beliefs, ideas, feelings and attitudes—a perspective on the world—which is precious to them. If we adults take the time to tune in to their thoughts and conversations (especially those of us fortunate to be in touch with children who constantly ask questions), we observe that they care about such timeless concepts as friendship and fairness, freedom, goodness and truth, reality and dreams, thoughts and feelings, being a person, beauty, infinity and the universe, space, death, what makes sense, what follows from what, and so on. They are especially
fascinated by the power of their own minds, and enjoy investigating/articulating/connecting/sharing/extending their thoughts.

We recognize the concepts listed here as among those that have exercised the minds of curious people for thousands of years. In a community of inquiry, children will continue to explore these issues, moving back and forth between what is known and what is possible, with a view to a clearer understanding and even resolution (albeit tentative.) The process and the content of philosophy are now well in place.

In a classroom community of inquiry, children can begin a discussion by considering a range of ideas and thoughts which are important to them. With the teacher's support, they can proceed to make connections among one another's thoughts, constructing criteria which take them beyond the realm of their own subjective experiences—the world of here, I and now—to principles, rules and criteria which are more objective and more universally applicable. It is one of the trademarks of good teachers of philosophy that they can assist students to make this transition from the subjective to the objective. And it is one of the trademarks of philosophy itself that it makes this transition—so crucial if education is to be both rigorous and relevant—possible. (Students empowered with a range of concepts and thinking skills can subsequently make the converse move themselves, relating these general schemata to aspects of their own lives and experiences. This interaction between the subjective and the objective is the linchpin of moral education.)

Questions such as "What is space?" "What are thoughts?" "How do we know about other minds?" "What makes something right?" etc., are philosophical questions because although they are generated out of our experience of the world, they cannot be answered merely by appealing to features of that experience. Children are capable of asking such questions, because they raise issues which are important to them.

I was once accused of preaching "disciplinary imperialism," but I have never claimed that philosophy is the only discipline worth teaching. Nor is it the only key to genuine inquiry in the classroom. But it is a vital key nevertheless, and it plays a role that other subjects simply cannot play. I believe that the time has come to expose some sacred cows of the so-called core curriculum in this country. Who, for example, can justify the prominence and effort (seven periods per week and more) given to the teaching of mathematics in Australian schools? I do not deny for a moment that a small minority (myself included) are "turned on" by the subject but for each of them there are hundreds who loathe and detest it (one writer refers to mathematics as the "austere discipline that shuns delight and lives laborious days"). Nor do I question the importance of basic numeracy. But what have quadratic equations and analytic geometry to do with a skill which should be well and truly in place before the end of the primary years? We listen to defenders of the faith struggling to connect mathematics to rules and principles of good thinking (logic) but the connection is simply not established. Indeed, there are reasons for doubting that mathematical skills are directly related to logical skills, despite their common abstract character. Incidentally, no such doubt exists in relation to philosophy which is the proper home of logic. Philosophy generates the same degree of rigor as mathematics but its language is ordinary language and its situations are ones to which children can readily relate.

I am aware that the subdisciplines of mathematics are of the utmost importance in many areas of human endeavor. But I am concerned with the essential ingredients of a core curriculum, rather than with areas of knowledge and competence which could be tackled more effectively by older students with more specific career objectives. (I recently read a report on a project aimed at changing teaching methodology in mathematics, which pointed out that for most children, mathematics is boring, poorly understood and pointless, and that, consequently, "children who receive high marks for mathematics can be considered to have proved to the world, and to prospective employers, that they can put up with boring work [and even find some satisfaction in it] and that they can get on with tasks they do not really understand or see any relevance for." [Cooper and Meyenn 1984].)

The persistence of Latin, and the gradual encroachment of foreign languages and ever more specialist teachers upon the primary curriculum are, at best, contentious issues. There may be good reasons for having these subjects around, but I remain unconvinced that a propensity to teach clear thinking is one of them. True, subjects such as Latin might teach a certain kind of rigor, as with the rote learning of mathematical tables and French verbs. But this is the old-fashioned rigor of doing what you are told with unquestioning obedience, not the self-directing rigor that comes with a genuine mastery of thinking skills.

The extent to which inquiry skills are embedded in the science syllabus has already been noted—as has the extent to which this relationship is lost in the practice of teaching science. Crucial concepts of refutability, testability, etc.,—whose proper home is the Philosophy of Science—are largely ignored by teachers, with the inevitable result that for most students, science is akin to a religion of nature: immutable and beyond all question. (It is this misunderstanding of the nature of scientific theory that lends credibility to people such as the "Creationists" who trade on the fact that evolutionary theory remains open to question: of course it does; that's what makes it science!). Once again, we have a good example of the harm done by failing to identify common processes (the forming and testing of hypotheses, etc.) across the curriculum.

It is important at least to raise the issue of these sacred cows, if only because an inflexible timetable is sometimes offered—even in the primary school—as a reason against introducing philosophy and inquiry into the curriculum. On the other hand, there are schools whose principals and teachers have found ways to incorporate these areas, making the necessary adjustments because they see the need to do something.

An understanding of the relationship between philosophy and other disciplines should assist both those who still cannot see the point of including philo-
sophy in the curriculum (whether as a separate, identified subject or not), as well as those who still suspect that I am a disciplinary imperialist. My own observations and discussions with teachers indicate a "spilling over" (transfer) effect from philosophy into other subject areas. This is especially evident in primary school where group activities and discussions are increasingly punctuated with remarks like "Hang on a minute; that doesn't make sense: remember what we discovered in philosophy last week?"

Outside the classroom, the role of philosophy as conceptually underpinning other areas is gradually being recognized—most notably in the fields of medicine and health where ethical issues connected with patient rights, in vitro fertilization, etc., are especially prominent. My own research in the Philosophy of Biology has permitted me to witness an expanding cooperative network between scientists and philosophers. Arguably, this network is but one aspect of a much larger framework in which many of the artificial and limiting barriers between the disciplines are breaking down, to the immense benefit of all of them.

Unfortunately, this unifying tendency remains hidden from school students, whose conception of human knowledge remains pigeon-holed into forty minute blocks, separated by bells, different teachers, separate examinations, etc. One role that philosophy traditionally plays consists in laying bare the foundations of the disciplines. This is of no small moment to students who perceive in the curriculum fragmentation instead of coherence and connectedness. Matthew Lipman has commented on the complementary relationship between philosophy and other school subjects. He remarks that including philosophy "... does not represent the addition of new and unrelated areas of study to the existing curriculum; it represents instead the development in students of an awareness of the logical, aesthetic, ethical and epistemological aspects already present in the subjects they now study, but which are presently neglected because of the lack of philosophy in the curriculum."
The year 1968 was a time of critical (in both senses of the word) anguish in both the United States and in France. A wave of bitterness, both potent and impotent, swept over both countries, albeit for different reasons. On this side of the Atlantic, one effect of the resulting social upheavals was that they provided Matthew Lipman with the decisive motivation for establishing the Philosophy for Children program. In France, the same year also saw the publication of Gabriel Marcel’s *Pour une sagesse tragique et son au-delà,* a richly insightful book full of the author’s own anguish and with which the Philosophy for Children program is in some ways interestingly similar. It is these similarities which I wish to outline here by concentrating on the text, *Kio and Gus.* The latter, I will maintain, consists of a positive and beneficial response to certain problems which worried Marcel, and about which he was right to be worried.
I

The part of Marcel's text which is of most interest here is the chapter entitled "La Vie et le sacré." Unfortunately, we do not have time this afternoon to examine in detail all the arguments which this very rich chapter contains. Consequently, we will be limited to only a glimpse of the major outcroppings of the structures of experience which Marcel describes so painstakingly, rather than the finer details buried below the surface.²

To begin with, Marcel tells us that it is abstract, and therefore philosophically unsatisfactory to speak of "la vie" without also articulating the implied reference to ma vie. The biologist does this when he suppresses all reference to this "communication ou de cette articulation" (ST 157) between the "I" and "life," and "l'homme de la rue" who naively follows the former, "il en viendra lui-même à aborder la communication en question et à oublier, en parlant ou en croyant parler de la vie, sa condition de vivant!" (ST 157). It falls to phenomenological reflection, therefore, to call into question this state of affairs and the "dualisme de toute manière absurde qu'elle impique": "Ce que le phénoménologue s'interdit à coup sûr, c'est de dévaluer a priori cette expérience de ma vie qui reste en réalité et restera toujours au départ de tout savoir considéré concrètement" (ST 158-58).

Perhaps, however, "l'expérience de ma vie" is something that never will be able to be taught, and for this very reason it can provide me with an opening onto the sacred. Conversely, "le développement de ce qu'on pourrait appeler pour simplifier une biologie sans ma vie." This, Marcel opposes to the attitude of the "pure technicien" is "en réalité la prétention de maitriser pour exploiter" (ST 166). We can see today, Marcel tells us, "que ce sont les mêmes forces qui s'exercent en faveur de la désacralisation ou même simplement de la dévaluation de la vie, et qui tend à l'humilier devant les produits de sa propre technique" (ST 166).

The dehumanizing tendency of contemporary technology forms a major fils conducteur in Marcel's philosophy. It is not that technology is itself degrading. It can, in fact, be used creatively to further human freedom. Thus, Marcel points out, "dans la mesure où la technique est ou implice une création elle n'est aucunement une dégradation."² For example, James Burke's wonderful BBC programs on the history of scientific discovery and the wood processor that saves me hours of sheer drudgery are surely cases in point. But by and large, Marcel did not find the contemporary use of, or obedience to, technology so liberating. On the contrary, he wrote, even before the beginning of the nuclear age, that "À la question: que peut l'homme? nous répondons encore: l'homme peut ce que peut sa technique; mais en même temps nous devons reconnaître que cette technique se révèle incapable de le sauver de lui-même, et se montre même susceptible de conclure avec l'ennemi qu'il porte au fond de soi les plus redoutables alliances. Livré à la technique, ai-je dit: il faut entendre par là, de plus en plus incapable de la maitriser ou encore de maîtriser sa propre maîtrise."⁴

There is not space here to illustrate Marcel's claim with even some among many examples one could cite. But these are already familiar enough, whether one thinks of acid rain, of Chernobyl where a 45-second accident will have a hundred years (or more) of frightful consequences, or of certain applications within genetic engineering today. All these are new contexts for meditating on the truth of the old French proverb, "Le vin est tiré, il faut le boire."

What is essential here, though, is that Marcel opposes to the attitude of the pure technician the Heideggerean attitude of Gelassenheit. This is a participation in being which is "un don de soi ou peut-être plus exactement une attitude révérentielle que désigne le terme de piété" (ST 166). Thus Kenneth T. Gallagher points out that "If there is any sense in saying that there is being, that sense must, as all affirmations, be founded on participation. Only so far as I participate in being can I affirm that there is being; and to affirm this participation is to affirm that I am not only a being-in but a being-beyond my situation."⁵

Participation is more a matter of celebration rather than of cerebration, of hope rather than technological calculation, and from such a perspective "Il y a d'ailleurs tout lieu de penser qu'à une époque déjà assez lointaine, le poète et le naturaliste ont pu parfois se trouver confondus" (ST 166). Being is, then, far less an idea, an abstraction, or what can be expressed in technical language than it is—another key Marcellian word—a presence.

A third example Marcel gives of our relationships with nature, and of our participation in being, concerns the naturalist herself or himself. We might take certain life forms to be insignificant or even disgusting, but for the naturalist the word insignificant has no sense at all: "le vivant qu'il considère se présente à lui dans une dimension d'être a laquelle nous autres profanes avons difficilement accès. Même en décalée toute croyance à un Dieu créateur, le naturaliste éprouve une sorte d'émerveillement devant la finesse et la crete examples.

First, he considers the sacred woods at the Temple of Ise. He rejects the notion that he can appreciate the sacred character of the woods only because of his previous acquaintance with the sociological reality of Shintoism. Rather, "parlant ici encore en phénoménologue, qu'en s'exprimant ainsi on renverse l'ordre réel des termes: c'est à partir de cette expérience du sacré qu'il m'a donné de faire aux approches d'Ise que j'ai cru... entrevoir ce que peut être la shintoïsme appréhendé du dedans" (ST 161).

Second, Marcel calls our attention to the fact that technological forces at work in the world today militate against appreciating Blake's phrase. Reliance solely on "techniques" and technical "know-how" tends to deliver us over to despair instead of liberation. For the attitude of "le pur technicien" is "en réalité la prétention de maîtriser pour exploiter" (ST 166). We can see today, Marcel tells us, "que ce sont les mêmes forces qui s'exercent en faveur de la désacralisation ou même simplement de la dévaluation de la vie, et qui tend à l'humilier devant les produits de sa propre technique" (ST 166).

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complexité de la structure qu’il observe” (ST 171). Marcel goes so far as to call such a person a “saint,” not in any moral sense, but rather on an ontological plane in which the saint is “celui qui a accédé à un mode de l’être excluant la séparation courante entre l’homme et la nature” (ST 171).

Marcel finds much more success in overcoming the alienation of human beings from nature in countries such as Japan than in Western nations. He recalls, for example, that a certain Japanese landscape “était de telle façon accordé au contemplateur qu’entre tous deux s’établissait un échange vivant; notons bien ici l’importance de ce mot de contemplation, car il faut certainement reconnaître que c’est au niveau de la contemplation—celle aussi du poète—que la phrase de Blake citée au commencement prend un sens” (ST 171).

By contrast with this participatory contemplation, “Dans ce monde dépersonnalisé où les animaux eux-mêmes ne peuvent plus être vus que dans des cages, c’est-à-dire hors de leur contexte naturel, il est tout à fait clair que la phrase de Blake . . . ne présente plus rigoureusement aucun sens” (ST 172).

II

Such are, in brief outline, some main features of Marcel’s contrasts between the sanctity of the naturalist and a soulless biology which suppresses all reference to my life, between a hope-full participation in being and living in a desacralized and self-destructive world centered on a misplaced faith in technology, and between a contemplative, poetic appreciation of nature and a cold alienation from it.

Now let us consider such contrasts in the light of the Philosophy for Children program, and particularly Kio and Gus, which is (so far) its earliest entry point. (It is intended for children roughly 7 + -9 years of age.) Kio and Gus is about a sense of wonder in the face of nature, and the teacher’s manual, published just this Summer, is called Wondering at the
World. The aim of the program is, in part, to serve as an aid to science education, chiefly in terms of zoology and ecology.

Marcel would clearly find this program illuminating in several respects, as he also would the kind of science education for which it prepares. First, (some) animals are here encountered in their natural contexts rather than in cages, for the dramatic setting is "the summer of the farm and all the animals. It was the summer of the big whale—Grandpa's wonderful whale, named Leviathan" (p. 1).

Second, the kind of wonder at issue here is very much like that of Marcel's naturalist. It is not an attitude which vanishes with the acquisition of knowledge—as when, for instance, I say "I wonder what time it is?" It is, rather, an attitude that funds curiosity, scientific and otherwise, with a kind of amazement that the world is there at all. For example, consider the way that Suki, Kio's older sister, tells Kio's unsighted friend Gus that the wonders of touch are too easily overlooked by those who can look over them: "People who see often don't think about what it is to touch. It's like, they see a peach, and right away they eat it. They never get to feel the weight of it in their hands, or to grip the roundness of it, or to touch the soft fuzz on its skin. And yet, even if it were only a stone, it would still be marvellous to hold. And mysterious too: What's more silent than a stone?" (p. 35)? Does this not compare well with Marcel's discussion of the attitude of the pure technician as against that of the naturalist-poet? And Suki is indeed a poet, as readers of the book which bears her name know well. I shall come back to this.

Third, so far from there being a separation between the characters in the story and nature, it is probably true to say that participation is the connecting thread that runs throughout all the episodes of the book. As a first mode of participation, it is not unimportant to note that Kio and Gus are telling us a story about their summer on the farm, and they take turns telling this story. They implicitly form a community of two as the story becomes the vehicle for participating in this community. In Marcel's technical language, they are "recollecting" themselves at the same time as they are recollecting the details of the story.

Another important form of participation consists of the various attitudes taken toward animals. For instance, the children play certain animals—Kio's cat, Roger; moles, bats, fireflies (pp. 2, 3, 29, 55-56)—and imaginatively play others—Gus' family's horse, Tchaikovsky (p. 9).

A third mode of participation consists of calling reality into question so that the characters, and through them, real-life children in classrooms, can reconstitute it. This is done by means of comparing and contrasting the ways in which the sighted and the unsighted (Gus) come to know what they call real. For example, analogical reasoning is employed about sights, on the one hand, and tastes and sounds on the other (pp. 12-13, 15, and 36). So Kio tells Gus that "honey looks just like it tastes: the taste of honey is like the color of gold" (p. 15) and that orange is "a bright color, just like it's a bright taste" (p. 36). "Mrowr," answers Gus. "Bright mind" (p. 36). Similarly, analogical reasoning is used to explain the Milky Way. Gus says "Maybe I can just think of the sky as being filled with stars the way my mind is filled with thoughts." Kio responds, "Right!" "And maybe you can think of your mind giving off thoughts the way a fire gives off sparks" (p. 61).

As another example, the possibility of hats and coats left on restaurant coatracks disappearing if their owners do not keep a sharp eye on them is contrasted with the world of Gus who has no problem with disappearing because nothing has ever appeared. The example is quickly widened to the possibility of the whole world disappearing when we do not watch it (pp. 34-35), and finally to Gus' wondering "where the night goes when it's day, or where the cold goes when your ice cream melts, or where the flavor comes from when your grandmother bakes bread. You tell me that grass is green, but is it green all through the night or does it stop being green in the evening and start in again in the morning?" (p. 34)?

Another intriguing way Kio and Gus consider reality questions is in terms of making a cat or a peach out of modeling clay. Kio, relying solely on external visual appearance, starts from the outside in, while Gus works tactiley from the inside out. Gus tells Kio, "you know that what I made is really like a peach and yours isn't. Mine's a peach all the way through" (p. 14)?

A fifth, and very different mode of participation in nature emerges with the themes of killing and ecology. Kio's grandfather sends chickens to the market to be killed. Kio worries about Roger meeting a similar fate, but Grandfather can't imagine anyone eating a cat. But, Kio persists, if people did eat cats, would Roger be shipped out? Grandfather's response is illuminating:

"No, of course not. We know Roger personally."

"I don't understand."

"Roger has a name—his own name. He's Roger. He's not just a cat. He's one of the family" (p. 27).

Naming, therefore, adds a crucial dimension of reality to what is named. Well, says Kio, if we named all the chickens, would that keep them from being sent off to market? Grandfather's answer is negative, as he goes on effectively to point out that naming is a necessary, but not sufficient, condition of family membership. The boundaries are, however, somewhat fluid inasmuch as Kio might adopt a pet hen and name her.

Naming is also important as far as the Grandfather is concerned, and I shall return to this below. Here, however, let us look at the end of his discussion with Kio. It involves the fact that, although millions of people all over the world eat chickens, the latter are not apt to become extinct. Grandfather says, "What I worry about are the animals that are being killed off even though they can't be replaced" (p. 27). He specifies that he does not mean animals of which only certain kinds are being done in, but rather all of them. And his main example, indeed, idle fixe, is whales.

However, it is not Grandfather here who tolls the ecological bell. It is, rather, his wife. She tells us that whales are not the animal most in danger because that unhappy distinction falls to us: "One more war and just about everything will
disappear. There won't be a single person left" (p. 28). It is left to Kio to try to divert us from recognizing this hollow and fearful feeling when he concludes, "Gee, we're even worse off than chickens" (p. 28)!

It is also worth noting, when contemplating the extinction of entire species, that the theme of cruelty to animals surfaces in Kio and Gus in an entirely different context. Kio encounters two older boys, one of whom (Tom) is throwing rocks at a turtle. His companion, Benjy, reproaches him as follows: "Hey, cut that out! What's that turtle doing to you" (p. 36)? Tom refuses to answer, but instead "turns around and says, 'Kio, have you been down to the house by the lake yet'" (p. 36)? This passage invites children's discussions of moral responsibility to individual animals, just as the previously cited text did for whole species. (Later, at p. 51, Gus tells us that it's wrong to hurt animals if they don't hurt us.)

The sixth and last way that the children in the story participate in nature is through interpreting animal behavior in order to understand how they are like and unlike us. There are numerous instances of this as Kio and Gus speculate about (i) reasons and purposes for Roger acting the way he does (p. 3), about (ii) whether the whale that saved Grandfather's life when the latter was a sailor did so by accident or on purpose (pp. 17-18), and about (iii) how the same distinction applies to Tchaikovsky when he threw off Kio after having been terrified by the ambulance siren (p. 40). Kio and Gus also contemplate (iv) how a mother squirrel can know she has got all her babies out of the next if she does not know how to count (p. 20), and finally (v) how the engineering behavior of moles and beavers is like and unlike that of human beings (p. 44).

It comes out in the ensuing discussion of (v) that there are some animals—such as bees and birds—which make their own homes, while there are others—such as fish—that do not. But there is also a third kind, as Gus points out. "There are animals that aren't satisfied with living in the world the way they find it. They try to change it to suit themselves" (p. 45). Examples of such animals are beavers and human beings.
So saying, we again confront the question of technology.

Technology is further connected with the discussion of (v) when Kio’s grandfather shows Gus’ father all the beaver dams on the farm which have backed up water into a swamp. Gus points out that “beavers cut down trees to make their homes,” “But so do we. And they’ve got a right to live too” (p. 53). Grandfather responds that it doesn’t matter anyway, because the water is getting continually more polluted owing to rusting and leaking barrels of chemicals left over from a chemical factory formerly nearby. The conversation then widens to include polluting factories and acid rain as well as towns that dump raw sewage directly into rivers. Gus says, “I can imagine how the fish like that!” and concludes, “If we ruin the water, and we ruin the air, and we ruin the earth, where will we live?” (p. 54) Grandfather answers, “Isn’t it just like us to take this beautiful planet and ruin it, and then treat it like a piece of junk?” (p. 54)²

Up to this point, we have been considering the children’s relationships with nature while the adult characters have been left on the fringes of the discussion. To conclude, I would like to reverse the focal-point and background and consider briefly Kio’s grandparents from the point of view of Marcel’s notion of participating in being.

The grandmother becomes interesting in this context in terms of what she reveals about the wider family context, permanence and change, thought and nature. Through her we learn that Suki writes poetry, as had her mother, Hope, before she died, and that both Suki and Kio treasured having her poems which grandmother had given them two years earlier because “They’re Mama’s thoughts, and nothing will change them” (p. 63).

The grandmother also provides the children with helpful information about her husband which is important to them, and us, for interpreting his behavior. For in many ways, he is the most interesting animal in the book, and his curious behavior serves as the fulcrum on which the dramatic action of the novel turns. She reveals that he had most loved his barn, which burned, and his daughter, who died. (In Suki, we learn that he had sawed and plane ed every board of the barn himself.) There is an allusion here (at p. 63) to what is more fully presented in Suki, namely that he seeks to achieve the victory of permanence over the betrayal of change by not rebuilding out the wood, but—if perchance it should be rebuilt at all—out of stone.

But this does not describe adequately his struggles to participate in being. For the latter is correlated not to his family or neighbors, but to the whale referred to above which he named Leviathan (p. 17). In contrast with Tchaikovsky’s throwing off Kio, Leviathan in his view saved his life on purpose (p. 18). Thus Grandfather is presented as brooding (pp. 21-11) and desirous of seeing whales again—and particularly Leviathan—before . . . something not fully articulated (but it has to be this summer) (p. 47).

And so the idée fixe motivates a quest which is at least quasi-religious in character. There are obvious (to adults, anyway) overtones of Melville here, and even of Rudolf Otto’s conception of the “myšerium tremendum” in the way in which Leviathan first appeared to grandfather. As a young sailor stranded in the motorboat with the jammed rudder, he suddenly “heard a roar, like an approaching train. And then it broke out with a great splash, like a locomotive coming up from the bottom of the sea” (p. 17).

At the conclusion of the book which is also the conclusion of the quest, all the characters in the novel reach the Newfoundland sea and sail out in a boat named the Hope—the significance of which Marcel would not have missed—to search for whales. Suki describes the fateful encounter: “Oh, Gus, oh, oh, there’s something enormous rising out of the water right in front of us! It’s the biggest whale—and our boat seems so tiny against it! Look at the seawater pour off its back! We’re still heading straight for it! If we keep on, we’re going to smash right into it” (p. 73)

After the whale eventually slips beneath the waves, Kio and his grandfather have the following exchange:

“Grandpa, it was your whale! It was Leviathan!” I say. “He saw you again!”

“That he did, Kio,” says Grandpa. “He recognized you! He saw you steer away from him!”

“Maybe,” says Grandpa. “I’d like to think so.”

“He grinned at you! I saw him!”

“It just seemed that way” (p. 76).

The tremendum has remained, but not the mysterium. Well, not quite: Leviathan was recognized by a very special birthmark, but in keeping with the spirit of both Marcel’s philosophy as well as the world of childhood (and adult) wonder, I will leave the mystery unrevealed.

FOOTNOTES
(Paris: Plon, 1969). This work will be abbreviated hereafter in the text as “ST”.
²For a further treatment of some of the finer details of Marcel’s philosophizing and an application of them to social concerns similar to those dealt with in the Philosophy for Children program, see William S. Hamrick, “Redeeming the Earth: Tragic Wisdom and the Plains Indian,” Journal of the British Society for Phenomenology, Vol. 15, No. 1 (January 1983), pp. 36-54.
⁴Ibid., p. 72.
⁶Kio and Gus were written chiefly by Matthew Lipman, and was first published in 1982. It was revised in 1986. All references to this text will be taken from the revised edition and cited in the text by page number only.
⁷Gus may be right! In my classes of second-graders (ages 7 + ), we have done experiments in which the local teacher and I left the room while the children made peaches out of clay in either Kio or Gus’ way. When we came back, we tried to guess which was which. There is a tactile difference, and in most cases, we were able to detect which were done in Gus’ fashion because they felt more like real peaches.
⁸Better: to understand the similarities and differences between human and other animals. I recently asked my second-grade class why children such as Kio and Gus would like to play animals. There were several different answers, but one young man sharply corrected my terminology by observing that we are already animals and so it was natural that we have something in common with other animals.
⁹This makes one recall Aleksandr Solzhenitsyn’s remark that even the simplest village graybeard in Russia knows that you cannot go on coring the same apple forever.
Science Begins with Everyday Thinking

Suppose that someone wished to give his whole life to science. Suppose that he therefore sat down, pencil in hand, and for the next twenty, thirty, forty years recorded in notebook after notebook everything that he could observe. . . Would the Royal Society thank him for the treasure of a lifetime of observation? It would not. It would refuse to open his notebooks at all, because it would know without looking that they contain only a jumble of disorderly and meaningless items.

Ron Royer

In making this bold assertion, Bronowski (1956, p. 24) is making the point that science cannot be considered merely an aggregate of factual data. As he goes on to say, "science finds order and meaning in our experience." That this is accomplished not merely through observation but that it is essentially a creative process he leaves little doubt:

All science is the search for unity in hidden likenesses . . . The scientist looks for order in the appearances of nature by exploring such likenesses. For order does not display itself of itself; if it can be said to be there at all, it is not there for the mere looking. There is no way of pointing a finger or a camera at it; order must be discovered and, in a deep sense, it must be created. (1956, p. 13).

This creative demand for unity is to be found at the root of every scientific endeavor, from the quest for a unified field theory in physics, to Newton’s hope of explaining what links the falling apple and the orbiting moon, to the biologist’s search to explain the hairstreak butterfly’s association with ants. The educator’s principal questions, on the other hand, are not of this sort at all. The educator seeks to know how this sort of creative demand is most productively to be cultivated in young minds. "How," the educator asks, "can this quest for explanation be systematically nurtured in the mind of the growing child placed in my charge?"

It is clear that Bronowski rules out facts as the motivator. As he says, it is not in the facts themselves that interest is sustained and meaning found, but in their creative relation to what is already known. In light of this, it should not be surprising that Einstein (1956) has said that "the whole of science is nothing more than a refinement of everyday thinking." Meaning resides not in the isolated data of experience, but in their relationships. That apples fall and that the moon orbits the earth are facts which have no meaning in isolation. It was in the possibility of their causal relationship
that Newton's interest lay. In science, as in everyday thinking, the mind is on a quest for meaning. This cannot be less true for the child, however young he may be. We must infer from Einstein's statement that every child is a scientist, asking for meaning in his experience. And, just like Newton, every child must work with the material of his own experience in his search for meaning. Dry facts alone cannot be expected to make an impression unless the child is given the freedom to create his own understanding of their relationship to what he has already experienced, to discover his own meaning for them.

Wittrock (1974) and Osborne and Wittrock (1983) have carefully outlined the learning of science as just such a "generative process." As they say, "to learn with understanding a learner must actively construct meaning" (Osborne and Wittrock, 1983). Along with a host of other workers, they have demonstrated that children construct definitive views about science topics like light, friction, force and gravity, long before these topics have been introduced formally in school. These workers have further demonstrated that such ideas are parts of well-structured conceptual schemata that have been generated by the child in order to make sense of his world, and that later formal instruction in school is often at odds with these earlier developed schemata, so that "if children's ideas are changed by science teaching, the changes are sometimes quite different from those intended" (Osborne and Wittrock, 1983).

What I have in mind to argue here is simply that if we are intelligently to approach the task of helping young people toward what we call "scientific literacy," we must look first to the child's everyday experience, not to the established facts of science, to formulate our approach. Why this is the only sensible approach I hope first to show. Then I wish to propose some broad premises upon which this approach must be founded.

Children's nature writer Thornton W. Burgess, whose career spanned half a century and whose Mother West Wind Stories are still aired on National Public Radio, used a formulaic system for which he was sometimes criticized by children's literature specialists. In earlier research (Royer, 1982), I demonstrated that more than a mere literary expedient, Burgess' formula constituted a premeditated application of precisely the principle I am here considering. Here is an example, drawn from a passage in Old Mother West Wind, his first of more than seventy books for children, to illustrate:

When they had all gathered around the Great Pine, Old Mother West Wind pointed to the old nest way up in the top of it. "Is that your nest?" she asked Blacky the Crow.

"It was, but I gave it to my cousin, Sammy Jay," said Blacky the Crow.

"Is that your nest, and may I have a stick out of it?" asked Old Mother West Wind of Sammy Jay.

"It is," said Sammy Jay, with his politest bow, "and you are welcome to a stick of it." To himself he thought, "She will only take one from the top and that won't matter."

Old Mother West Wind suddenly puffed out her cheeks and blew so hard that she blew a big stick right out of the bottom of the old nest. Down it fell bumpity-bump on the branches of the Great Pine, After it fell — what do you think? Why, hickory nuts and chestnuts and acorns and hazelnuts, such a lot of them!

"Why, why-e-e!" cried Happy Jack (Squirrel). "There are all my stolen nuts." (Burgess, 1910)

In terms of essential form, there is little difference between this passage and one written by Bronowski about Isaac Newton:

In this eager, boyish mood, sitting one day in the garden of his widowed mother, he saw an apple fall... What struck the young Newton at the sight was not the thought that the apple must be drawn to the earth by gravity; that conception was older than Newton. What struck him was the conjecture that the same force of gravity, which reaches to the top of the tree, might go on reaching out beyond the earth and its air, endlessly into space. Gravity might reach the moon: this was Newton's new thought; and it might be gravity which holds the moon in her orbit. There and then he calculated what force from the earth would hold the moon, and compared it with the known force of gravity at tree height, The forces agreed... (1956, p. 26)

Any scientist immediately will recognize the formal similarity in the two episodes. The difference lies in the content. In each case, subject matter of "everyday" interest to a particular individual is subjected to a definite rigor involving hypothesis, test, verification and conclusion. Replace Newton with the child reader of Old Mother West Wind, the question of what holds the moon in her orbit with that of who stole Happy Jack Squirrel's cache of nuts, and the conjecture that it is the force of gravity with that of the presence of those stolen nuts in the old nest; add a little calculation (remove a stick); and "Why, why-e-e! There are all my stolen nuts."

Given Einstein's statement that "science is nothing more than a refinement of everyday thinking," it should be clear that science education ought to aim at the refinement of the process, not merely at a manipulation of the contents, of everyday thinking. It should be equally clear to any adult that the everyday thinking of a child rarely has much to do with the subject matter of mature science, with such esoteric concepts as force, atom and gravity. Yet the ability to articulate such concepts appears to be the aim of nearly every elementary science curriculum produced in recent years.

Philosopher Ernst Cassirer (1955, 1957) gives us a clue which, if he is right, clearly demonstrates why this top-down approach to curriculum design is bound to fail. What he proposes [and in this he is clearly supported by Piaget (1966), among others] is that the thinking of children is at first essentially mythical. That is, the child is not interested in cause-and-effect explanations at all. Rather, the child strives to forge new meaning through the discovery of
the most meaningful connections among his new experiences and elements of his own prior experiences. Because the amount of prior experience is at first quite limited, the child’s first efforts are halting and the results often seem impossibly absurd to us. No degree of adult explanation will convince a very young child, for instance, that it is actually his grandfather who is talking to him on the telephone. To the child the telephone is a talking box. It is essentially magical. And it will be a long time before the child has had enough experience to make a straightforward cause-and-effect explanation of the telephone possible. Consequently, the child produces (and often will vehemently defend) self-generated “explanations” of the talking box that can be quite entertaining in their mythic inventiveness.

If learning is generative in this way, as Wittrock (1974) has proposed, there must be some earlier stage at which the shape of the generative process itself is generated as a result of experience. That is, unless there is some innate psycho-physiological mechanism with which the child will be able a priori to process all future information into meaning, then the newborn’s mind is in some degree a tabula rasa upon which a wide range of possible learning schemata may secondarily be inscribed. Wittrock has proposed the second case, and I think he is right.

Einstein (1956, p. 44) writes: “Science is the century-old endeavor to bring together by means of systematic thought the perceptible phenomena of this world into as thorough-going an association as possible.” If this is an acceptable definition of the scientific process (and I think it is), then the first task of the educator is clearly not to water down adult explanations of perceptible phenomena, but rather to focus attention on the development of that “means of systematic thought” whereby perceptible phenomena eventually may be carried by the child to the formation of his own unified conceptions. This development may be cultivated, indeed must be cultivated, long before the child is aware that the process is going on, and thus long before he is capable of understanding mature explanation—even, as Cassirer implies, of wishing to have it.

Progressively the child may be led to assume responsibility for application of systematic thought, but just as with Newton this must be accomplished in terms of his own everyday experience. If the child’s early thought is mythic, then mythic representation is the necessary medium of early instruction. The neglect of science teaching at this stage may have far-reaching effects, for as Cassirer (1955) thoroughly demonstrates, mythic thought is a necessary developmental precursor to scientific thought. It is not difficult to recognize that we have done little if any research or planning in this important area of education. Nevertheless, upon the basis of these principles alone it is possible to structure some fundamental premises for such research:

1. Beginning science instruction for children should represent nature as a unified whole. The function of such representation is that it conditions future creative inquiry as a search for similarly unified governance of meaning. Cassirer (1957, p. 476) has noted, “facts are valid not insofar as they reproduce a given rigid being, but insofar as they comprise a project for possible postulations of unity.” This clearly accords with Einstein’s description of the aim of mature science:

The aim of science is, on the one hand, a comprehension as complete as possible, of the connection between the sense experiences in their totality, and, on the other hand, the accomplishment of this aim by the use of a minimum of primary concepts and relations. (Seeking, as far as possible, logical unity in the world picture, i.e., paucity in logical elements.) (1950, p. 63, emphasis Einstein’s).

It likewise recalls Bronowski’s description of science as “the search for unity in hidden likenesses.”

The task of the earliest stages of science education must then be firmly to establish this idea of unity, for at such an idea all the child’s subsequent thought
necessarily will aim, and without such a target no science could be either coherent or possible.

2. Beginning science instruction should link such a unified formal representation to the child’s experience in terms that are already familiar to the child. That is, the unified whole must be defined in terms of relations already familiar in the child’s life (as, for example, in the parental representation of nature.) For the pre-logical (that is, the pre-operational) child, the form of this representation must be that of myth. If Einstein’s formula, \( E=mc^2 \) is taken to exemplify an adult’s unified formal representation of nature, then Old Mother West Wind is Burgess’ equivalent for his child reader. Contrary to the usual criticism, nature must be personified at this stage, for the pre-logical child, who is a mythic thinker, necessarily experiences nature as animated—as inherently personal.

3. Beginning science instruction should present within and about this unified representation a body of logical relations. While a unified representation sustains the creative potential of the child for later building unified conceptions of his own, internal logical consistency of the mythic whole (i.e., as seen from the adult’s perspective) assures future precision in judgments about cause-and-effect relationships among the elements of all subsequent experience. In mythic form, the fundamental model of logical consistency is that of justice. The preponderance of successful and enduring myths represent justice as the reconciliation of imbalance, as for example in the restoration of a prince to his rightful throne or the fitting of Cinderella’s slipper. Burgess accomplishes this balance through the plots of his later tales; in the frequent conciliatory assemblies of characters around The Great Pine or by Mother West Wind in the earlier stories.

In Western history, the earliest statements of philosophy similarly reflect a dawning of human recognition of this principle. Anaximander of Miletus (6th Century B.C.) declared: “Whence all things have their origin thereto they also pass away according to necessity, for they pay penalty to and exact recompense from one another for their injustice according to the ordering of time.” (Writer’s translation, italics are the portion generally accepted as authentic.) It is precisely this sense of the necessity of balance that underlies what will become a capacity for logic (as a justification of concepts into meaning), both in the culture and in the modern individual.

4. Subsequent science instruction should progressively transfer responsibility for determining these logical relations to the child himself. Just as the responsibility for judgment is ultimately to become the child’s own, the subject matter to be judged must accordingly become actual rather than mythical in nature. It is only at this stage that science instruction, as it is generally recognized, can begin. (This is the stage of ESS “Pattern Blocks” and the like.)

5. Subsequent science instruction eventually should lead the child toward skill in forming his own hypotheses about relationships within the whole of actual nature. This is at first accomplished through carefully guided instruction like that frequently demonstrated in Plato’s dialogues (see Royer, 1987). Increasingly freer inquiry under the progressively less directive coaching of a teacher (one who in effect ever more frequently asks, “What do you think?”) will lead to confidence in independent inquiry and finally to the truly creative intellectual freedom characteristic of the best science.

This is admittedly but a broad survey and idealized description of the early development of systematic thought, and it is not intended to suggest anything like a curriculum guideline. Three areas in particular would require thorough investigation before such a practical endeavor could even be possible:

1. It must be known what observable behaviors would indicate where a child’s development lies within this schema? There is reason to believe that Piaget and other child psychologists will offer at least some ground for initiating this investigation.

2. Behaviors that will serve to signal a lack of guidance along these lines also must be clearly identified. It is quite possible that without the above-described developmental passages a child’s natural predisposition toward science may permanently be hampered, although to be proven this would have to be demonstrated by research over a considerable span of time. The result of such study might offer us very keen insight into some of the most important reasons for student prejudices against science subjects and eventually into the best remedial avenues.

3. Specific curriculum guidelines must be set down. Myths, fairy tales, legends and modern stories that lend themselves to this scheme of development must be identified, created, and categorized according to the nature of their likely effect in these terms. Similarly, those kinds of activities in the preschool and early elementary grades that lend themselves to the early development of “systematic thought” must be identified and tested in preschool and primary level research projects.

**LITERATURE CITED**


