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# Thinking

APC

VOLUME 7, NUMBER 3

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PHILOSOPHY FOR CHILDREN



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*Cover photograph of Jeremy Bernstein and friend by Paul Tracy, permission of Jeremy Bernstein. Illustrations from *The Little Prince* by Antoine de St. Exupéry on pp. 2-5, 7. Photographs on pp. 8, 10, 11, 13, 15, 17, & 19 by Joseph D. Isaacson. Photographs on pp. 29-30 by A. Gray Thompson. Drawings on pp. 35 and 38 by Gustav Klimt. Paintings on pp. 44, 45, 45, and 49 by Augustus John. Pastel on p. 47 by Mary Cassatt.*

# THINKING IN STORIES

By Gareth Matthews

*Gareth Matthews teaches philosophy at the University of Massachusetts, Amherst.*



Frank R. Stockton, *The Bee-men of Orn*, pictures by Maurice Sendak, New York: Harper and Row, 1986.

In the ancient country of Orn there lived an old man, who, because he inhabited a house full of beehives, was called, quite appropriately, “the Bee-man.” The Bee-man moved freely about his house, ate his meals, and went to sleep, all without the least fear of being stung. In fact, so intimate was he with his bees that he allowed a swarm of them to make a hive in a pocket of his leather coat; he often reached into that pocket and took out a piece of honeycomb for a luncheon snack.

One day a young sorcerer arrived in Orn and informed the Bee-man that he had been transformed from some other kind of creature, though from what kind of creature the sorcerer did not know. Though he didn’t know the Bee-man’s exact origin, the sorcerer was quite sure that the Bee-man should be changed back into his old form, whatever it was.

This news from the young sorcerer greatly troubled the Bee-man. He wondered whether he had once been a giant, a prince, a horse, or a fiery dragon. Driven with curiosity, he promptly set out on a great journey to discover his original form. Confident he would recognize his old form by being drawn to it, the Bee-man wandered far and wide to try to find it. On his travels he met an unusual youth, a strange imp, and a ghostly dragon. The dragon was at that very moment preparing to devour a young baby when the Bee-man, sizing up the situation, rescued the baby and returned it to its mother.

Noticing that he was drawn to the form of the baby, the Bee-man announc-

ed his belief that he had been transformed from a baby and proclaimed his desire to be changed back. The sorcerer willingly satisfied the Bee-man’s desire. The rescued baby’s mother, grateful for what the Bee-man had done in saving her child, happily agreed to take the changed-back Bee-man as her second baby.

Years later the sorcerer, now old, returned to the country of Orn. There he found an old man in a leather coat eating honey. “Upon my word,” the sorcerer exclaimed, “he has grown up into the same thing again!”

\* \* \*

Transformations are hardly unusual in children’s literature. But this story presents us, not with a prince that is transformed into a frog, or a frog that is turned into a prince, but an adult who is changed back into a baby. Certainly, to be changed back into a baby would be quite remarkable. Yet becoming old is in itself, often anyway, like becoming a child again. There are diminished capacities and there is increasing dependence. And there is also, sometimes anyway, a remarkable simplicity and directness in a very old person that makes for a special bond of likeness between, say, a great-grandparent and a great grandchild.

In Stockton’s story the Bee-man-become-baby-again eventually grows up to be the Bee-man again. Is the point of the story that genetics determines all? Perhaps. But maybe the Bee-man was the result of all his free choices and, having no remorse about his choices the first

time around, he simply made all, or almost all, the same choices again.

In the story, the Bee-man’s second development is certainly a reaffirmation of his identity as the Bee-man. But then his identity was strikingly singular to begin with. Some people, by contrast, have relatively little individuality. Others seem to have many different identities—successively, perhaps, or even concurrently.

The second life of the Bee-man of Orn invites us to ask of others, and of ourselves, whether we could have turned out very differently from the way we, in fact, are. That question is particularly difficult, perhaps, when we ask it of ourselves.

I don’t have any trouble thinking of myself as speaking another language natively, having quite different friends and having a very different kind of job. But might I have had very different beliefs and desires and a very different character, as well as totally different memories?

Frank Stockton’s *Bee-man of Orn* doesn’t offer any answer to that intriguing question. But it gets us to ask it, and to reflect on what might help us answer it for ourselves. And that is philosophical contribution enough for a story that, particularly with its memorable illustrations by Maurice Sendak, is as much fun to look at, and to read, as it is to think about.

*Florence M. Hetzler is Professor of Philosophy at Fordham University. She is also president of the American Catholic Philosophical Association.*

# *The Person and The Little Prince of St. Exupéry*

**Florence M. Hetzler**

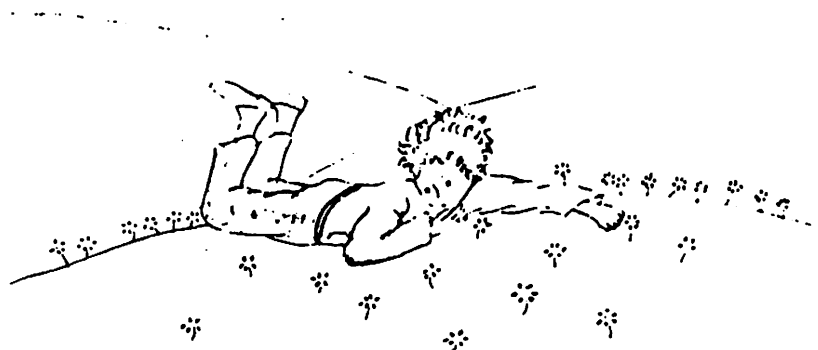
Philosophers interested in probing the meaning of man as a self would do well to turn to literature for help in this very important quest. An approach through the art of literature and its metaphors may be different from that of conventional philosophy. The philosophy of man as a philosophy of the person can be seen if we follow the process of the becoming of the person of the little prince in the book of the same name by Antoine de St.-Exupéry. I should like to show how philosophical a seemingly slender book of literature, a work of art, can be for our purpose.

Philosophy is a partial achieving of the awareness of who and where man is. St.-Exupéry made his book a symbol of who and where we are, what knowing is, what purpose we have and how we can achieve that purpose. Our goal as human beings is to become persons. The little book can have a hold on each of us when it deals with the kind of domain that we occupy. It is important in the light of our living in a space age; it is important to see that a philosophy of the self leads to a more valid philosophy of man, which according to some, including Professor E.A. Burtt, encompasses all branches of philosophy. This

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*“We have here philosophy that is palatable, clear and pleurably reflective.”*

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book indicates the lived experience of theory and the necessity to pinpoint theory in living. The concreteness of literature, and of this book in particular for our purpose, has a message for us who are not head only, but head and heart. We need not only be able to see problems, but solve them, and what is more, know and feel that we have solved them. Just as we have an ending of wonderment at the end of Plato's dialogue, the *Theaetetus*, we also have an aura of mystery at the end of *The Little Prince*, which is also a dialogue in a kind of cosmic polis. This search for the meaning of the person as a self continues on earth and in the heavens. The start will be shared for their light and sound, the sound of little bells that will remind the pilot and prince of where they live and of the sound of the rusty pulley that they shared at the well in the desert.

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*"...this book may be said to be John Dewey in fiction form."*

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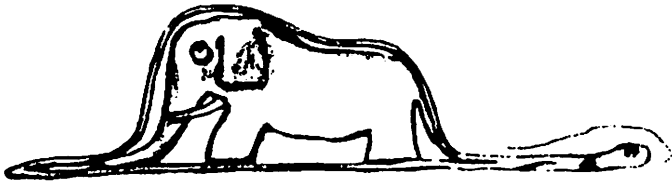
One of the reasons why Plato's dialogues are such delightful reading is precisely because they are dialogues. Conversation gives rise not only to the truth of theory but to what may be more important, the unrationalized truth of insight. The mystery of being is not revealed in theory but in insights. In this paper we shall use the tiny book, *The Little Prince* by Antoine de St.-Exupéry, as our focus.<sup>1</sup> This book may be said to be John Dewey in fiction form. It might also be said to be philosophy all tightly woven within a few poetic pages of distilled philosophy.

For those who have not read this four ounce book I present here a brief summary with the strong suggestion that philosophers of the person read it not only to themselves but also to their children and grandchildren. We have here philosophy that is palatable, clear and pleurably reflective. Actually the book is a kind of fable. The first scene presents a pilot alone in the desert in great need of help after a plane breakdown. He is in the process of repairing his machine when from seemingly nowhere he encounters a little prince who wants him to draw a lamb. The acciden-

tal encounter is an initiator of interpersonal becoming. The young prince lived on an asteroid so tiny that all he had to do was to move his chair in order to have another sunset. He had volcanoes to sweep out and a flower that appeared there to water and nourish. One day it was born with the sun, a beautiful rose all floppy like a poppy. She was a flower unique in the world. He even removed the caterpillars from her but saved one in order that she would know a butterfly. She was, however, a coy female and in seeking the prince's attention asked for a windshield screen because she said she was cold and that where she came from the temperature was warmer. But she came from the prince's asteroid. Hurt, since he believed that she lied, the prince left his asteroid to travel to seek friends. On his interplanetary travels he met people that were all wound up in themselves like a bobbin, but did meet a pilot, a fox and a serpent who changed his life and that he changed. The dialogue with the pilot was a kind of Platonic dialogue of intersubjectivity.

The fox gave the prince a secret that was very important, so important that it revolutionized his life, and he returned to his flower whom he had tamed. The ongoing living and the shared dialogue are a reflection upon what is given in experience. It is a reflection upon the disclosure of being which in a recent paper for Cracow, Poland, I called MYTH, not to be confused with the conventional meaning of myth. MYTH is the locus of all the disclosures of all being, of the given, given in experience. This little book gives a unique philosophy of intersubjectivity, a philosophy of the interpersonal which is the very basis for a philosophy of the person. In this day of the crisis of the personal, de St.-Exupéry has given us a gift.<sup>2</sup> He is in fiction what T.S. Eliot in his "Waste Land" may be in poetry and what Giacometti with his sculptures of people honed to the bone may be in sculpture.

There are various ways of defining philosophy. One of the best, it seems, is to say that it is putting order into one's experience, experience understood as one's encounter with the other, personal and impersonal. After all, that is all there is, and each of us can divide the world into the self and the other. What is



important is that all things, insects, fossils, people, etc., are included in my other. We include one another in this division much like a Venn diagram. The greater the philosopher, the more the order, the more unity he finds in the apparent endless heterogeneity of being. Plato, in his ordering of experience, found an answer to ontology and to epistemology. For the little prince, the unity of the order of being and knowing was found in the creativity of becoming a person. He unified the becoming and the being world. The being of the world was its becoming. Being in the world and being free to become are basic to the achievement of the human person. The act of *all being* and the act of the being of a *human* are uniquely united in the act of the being of the *human person*, as Edward Pols tells us.<sup>3</sup>

One might give as a definition of philosophy the achievement of the awareness of who and where you are. This definition also can be applied to the little prince. The who and the where were certainly intrinsically involved. In fact, it was the "where" of his flower that caused him so much trouble. Sometimes one becomes with problems and anguish. These cause reflection and choices. The misunderstanding of "where" caused him to go into voluntary exile. His going into exile, his standing back to take inventory of the self and the "where" was taking a creative stance, much like that taken by James Joyce who said that he would go into exile and there "would write books which would contain the moral history of the people who had driven him away." He said: "Amen. So be it. I go to encounter for the millionth time the reality of experience and to forge in the smithy of my soul the uncreated conscience of my race." By going into exile the little prince found out who and where he was. His "who" he found by his encounters and by his awareness that his responsibility to a rose was part of his very being and becoming. There is a

great deal of *ethics* throughout this book.

The becoming of a person and the meaning of a person may as philosophy be more available in this book, a piece of fiction, than in conventional philosophy books, partly because fiction is more commensurable with man as both head and heart. Art and philosophy for me seem to be the ideal complementarily. Also, I believe that art is philosophy and more than philosophy because in addition to using reason it uses mystery, myth, imagination and intuition.<sup>4</sup> To find out who he is the prince did not reason only. He had to intuit the meaning of some of his interpersonal relationships, for example, those with the

flower, the pilot, the fox, the serpent, and yes, even the weed in the desert that had seen some men go by, she thought. And she felt sorry for them, since they did not have any roots. The wind blew them, it seemed, and according to her, that must bother them a great deal.

The book is really a book of process philosophy as well as one of the pragmatism of Dewey, Peirce and Royce. In this work one sees tools as an extension of man. There are the feet of the birds to which the prince tied strings for his flight from his asteroid to earth. There is the venom of the snake that is going to be able to help return the prince to his flower after his voluntary exile after having "misunderheard" or misunderstood his rose. There are also symbols that are important. One is reminded of the second century work, *Psysiologus*, written in Greek in Alexandria and later translated into Ge'ez as *Fisalgwos* in Ethiopia.<sup>5</sup> This work with its bestiary and



the rusty pulley as well as the water. There is anguish. The prince tells the pilot that one risks weeping if one created ties. Actually, it is difficult to savour this book in English. It is so much better in the original French. "On risque de pleivier . . ." There is *epistemology*. Each sees reality from his own point of view. The fox, for example, and the weed in the desert make this clear. The fox said that if the prince became his friend, his life would not be so monotonous. As it was, hunters hunted him and he hunted chickens. Hunters all looked alike, and so did the chickens. If, however, the prince tamed him, even the color of the wheat would remind him of the yellow hair of the prince. He also said that if he knew at what time the prince would come to visit him, he would know when to dress up his heart to make ready for the arrival. He would be a man that did not fear. His whole life would be different. New experiences and new friends change everything.

There is also the mode of knowing of the pilot as contrasted with that of the prince. The pilot is busy trying to put a bolt on a plane. His outlook is that of one trying to repair a machine. The prince wants him to draw a lamb. The pilot does not know why. The prince may not yet know fully why either, for the flower that he wants to shelter from a lamb is really a mystery to him. His relationship with it is even a greater mystery to him than he could imagine.

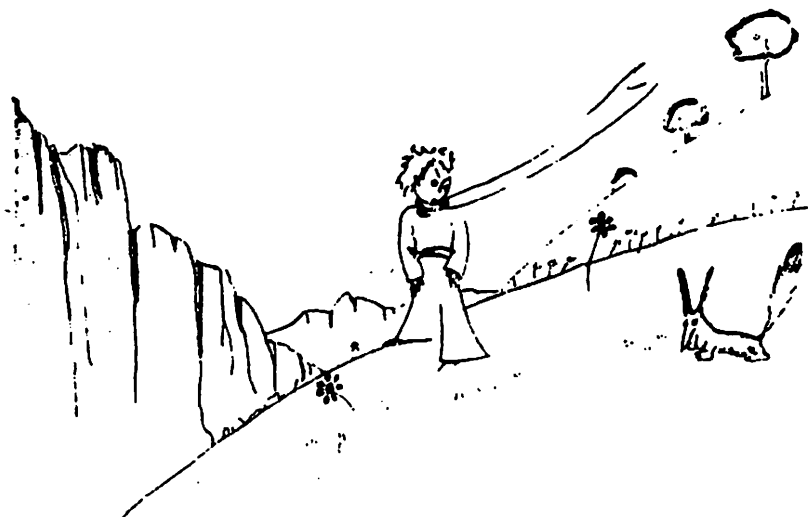
herbarium was an important source of much later animal and plant symbology in theology and literature. In *The Little Prince* the plants; the garden of roses; the unique rose; the weed in the desert; the maybug; the serpent; the wise fox; the drawing of the lamb; the drawing of the boa swallowing an elephant; the baobab; the volcano—all are symbols.

There is *cosmology* in the book. There are sunsets, many in 24 hours; there are asteroids and planets, there are mountains and rivers; there is the sand of the desert. There is even interplanetary living, or living on an asteroid with the voyage from planet to planet in search of friends. The book has a kind of interstellar background. There is matter ever in motion, and after all, this was the theme of the cosmology, the *Physics*, of Aristotle as well as the commentaries upon him and his work.<sup>6</sup> Instead of having satellites sent off the skin of the planet earth to explore outer space, we have in this book the reverse situation of a voyage from someone out there to here, to our earth, the voyage of someone who sees himself and his home for the first time and who goes home as a person achieved through encounters and suffering, perhaps through the encounters of suffering. There is *psychology* in the book. In fact, the philosophy of the person in this book is seen as philosophical psychology. The prince is starved for friendship. He is thirsty for shared experience, like that of drinking water from the well and sharing the sound of



The way that the pilot looks at the drawing of the lamb and the way the prince does are vastly different.

In conventional *epistemology* we are not told what the fox tells, namely that "we see well only with the heart or that what is essential cannot be seen by the eyes." When the prince travels from planet to planet in search of friends, he finds people all wrapped up in themselves. The vain man wants the prince to clap when he raises his hat. Enough of that the prince thought, because the man could not encounter the other as other. The drunkard was counting his bottles in order to forget and he had not time for the prince or for anyone else. In fact, he did not have time for himself as a self. The man who was counting stars because they were his since he saw them first was also in a rut. The geographer was too busy to look up to see the prince and too involved even to send explorers out into the field to check out the height of mountains or the place of rivers. The only person that the prince met that seemed to do anything outside of himself or to create anything outside of himself that did not previously exist was the lamplighter. Even though he lit the lamp





and then immediately unlit it because those were orders, at least he created something new. He did not do it as a person because he was not the source of any free initiative but more like a robot. At least there was a kind of drama of lamplighters around the world as evenings came and lamplighters went to work. The prince was also concerned with the people on the express trains who seemed to go one way and return, not knowing where they were going or why. What bothered him was the fact that only the children had their noses pressed against the windows. Adults were not aware, not curious, and not interested in what was out there, the other. They seemed not to know and not to know that they didn't know. Under the heading of *epistemology* we should mention that in this book there is an extraterrestrial viewpoint that meets a terrestrial one. We are reminded of the presidential address of Professor Lewis White Beck of the University of Rochester when he was President of the American Philosophical Association. After saying that he would not be allowed to speak about "Extraterrestrial Intelligent Life," were he not president, he said: "There are new sciences like exobiology whose foundations are in need of philosophical scrutiny."

We can speculate about the ramifications of the existence of extraterrestrial beings while reading *The Little Prince*. If other worlds do exist this makes a big difference in our *epistemology*, *cosmology*, *psychology*, *ethics*, etc. We have recently found such tribes as the Tasadays in the Philippines that we never knew existed before. The pilot in *The Little Prince* did not know that anyone lived on an asteroid nor did he know that asteroid B-612 existed.

In this book we also have the problem of believing only the conventional and of not accepting the new. Had he not changed from his Turkish clothes into conventional clothes, the Turkish astronomer would not have had any listeners. Galileo also proposed the novel. Even the theologians and scientists were rocked by revolutionary proposals. Beck says that if we do find other intelligences, we have no idea what the subsequent discoveries will be. He adds: "Compared to such advances in knowledge,

the Copernican and Darwinian Revolutions and the discovery of the New World would have been but minor preludes."

This paper of Beck is an important one. When he says that discoveries of the other are important for ourselves, he hits upon the whole theme of *The Little Prince*, namely the achievement of personhood through the other. The prince's other included the extraterrestrial.<sup>8</sup> The pilot was, indeed, amazed to meet someone from an asteroid and to do this in the Sahara, a thousand miles from anyone. It was partly the astonishment at the incredible novelty that kept this ongoing dialogue with the prince active. A similar surprise hit our planet earth when Galileo, continuing the theory of Aristarchus and Copernicus, stated that the universe was heliocentric instead of geocentric. Man was thrown off his an-

have certain awareness which, of course, is heightened in the very reciprocity of friendship. There is an analogy here between Socrates and the fox of *The Little Prince*. Theaetetus has the secret of wonderment just as the fox has the secret that one cannot see the essential with the eyes.

Existential ongoing inquiry is necessary for the achievement of the person, that is, of the one who is aware of who and where he is and who is also aware that he is aware of this. Situations are always unsettled and a new inquiry with wonderment is needed. Otherwise one cannot become a person. He is a mushroom. In *The Little Prince* we are told that the prince once met a red-faced person who had never smelled a flower. This man had not dealt with the pragmatic concrete world. The prince said he was not a man but a champion.<sup>11</sup>

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*“There is an analogy here between Socrates and the fox of The Little Prince. Theaetetus has the secret of wonderment just as the fox has the secret that one cannot see the essential with the eyes.”*

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thropocentric perch. What would the finding of extraterrestrial intelligences do to man in a heliocentric system to which he already has had to surrender after being king of the "geo-hill"?

This brings me to knowledge given in *The Little Prince* that can be included under both *epistemology* and *psychology*, and that is the philosophy of death, the loss of the self in the loss of the one loved. The philosophy of love and the philosophy of death are constitutive of the philosophy of the person. We have referred to the fact that the prince told the pilot that one risks weeping if one makes a friend and loses him. Yes, because if the friend goes, part of that interpersonal goes. Death is a kind of loss of ontic selfhood.<sup>9</sup> As we know, man is not an encapsulated bag of skin. Everything affects him, and the death of a personal other is an ultimate diminishment. John Macmurray has told us that "All meaningful knowledge is for the sake of action, and all meaningful action is for the sake of friendship."<sup>10</sup> Before one can go out to the other in friendship one has to

The gradual unfolding of the flower is like a man's gradual unfolding. The time it took for the pilot to know the prince and vice versa is like the unfolding of the person in friendship. It is always something gradual. One cannot become a person without a friend, that is without a you to make the other person an I. It is only in an I-you relationship that the I or you exists. There is sharing of the I and you in the presence of the I and you. There is even a sharing of the cosmic history that each person carries with him. In the case of the little prince, the significance of the search for friendship is the search for the self, the self who is a friend. If the larger orientation of man is not in order, the everyday details cannot be either. The little prince had to get the larger scale fixed first. he had to step back and see who and where he was. This was in large part determined by his flower and his relationship to that flower. Once that was established after a trip of anguish from planet to planet, he was able to take the necessary measures to return to his responsibility,



his flower. But he had to be open to the other, to the serpent, yes even to the garden of roses that he saw and who told him they were roses. He looked at them and said they were ordinary roses, not his rose. He had an at-homeness with his own rose, his rose that was *unique au monde* . . .

Coming to be as a person is theme, the whole theme, of *The Little Prince*. St.-Exupéry started out by saying he lived alone until he was awakened by the little prince. Before that there was no dialogue. The encounter with the little prince was his being touched by "a gleam of light in the impenetrable mystery of his presence." It was in the taming presence of the prince that the pilot came to be a person. Even the taming of the fox changed the fox. The prince wanted to know what to tame (apprivoiser) meant. It meant to create ties and the fox said that was a lost art. It is in creating ties, especially the tie of love, that we are. In loving me, you let me be myself. You let me be. This was true of the fox when the prince tamed him. Then, when the fox knew at what hour the prince would come, the friend-

ship would also be a dividend. He would dress up his heart. Rites are necessary, he said. They have been forgotten . . .

#### NOTES

1. Antoine de St.-Exupéry, *The Little Prince*, trans. from French by Katherine Woods (New York: Harcourt Brace Jovanovich, 1943).

2. Cf. Hetzler, "Death and *The Little Prince* of St.-Exupéry: The Face in the Mirror," in Hetzler, *Death and Creativity*, second edition (New York: Health Sciences Publishing Corporation, 1974) 1-20; Naomi Bliven, "Airborne," article of book review of Curtis Cate, *Antoine de St.-Exupéry* (New York: G.P. Putnam's Sons, 1970), *The New Yorker*, March 13, 1971, 133; Lewis Galantieri, "The Life of the Spirit is higher than the Life of the Mind," *The New York Times Book Review*, December 27, 1970, 8 and 18; Richard Arbelot, "Le Petit Prince," *Le Français dans le monde* (Paris: Librairies Hachette et Larousse, 36, October-November, 1965, 36; Adele Breaux, *St.-Exupéry in America, 1942-1943; A Memoir* (Madison, New Jersey: Fairleigh Dickinson University Press, 1971) 18-19, 81-84, 144-149.

Cf. also Pierre-Henri Simon, *L'Homme en Procès* (Boudry, Neuchatel: Baconniere, 1950) 132-133; Louis Monden, *Sin, Liberty and Law*, trans. Joseph Donceel (New York: Sheed and Ward, 1965) 22; George Pelissier, *Les Cinq visages de St.-Exupéry* (Paris: Flam-

marion, 1951) 21-25, 66-71, 89, 122-131, 152-153; F. Delbard Company, *Catalogue 1961* (Paris: G. Delbard, 1961) 16. In this catalogue the name of St.-Exupéry lives still in a unique blue rose dedicated June 20, 1960 at the G. Delbard company in the presence of the author's wife, sister and friend, Vanier, whose daughter, an Air France Hostess, took the "St.-Ex" roses to place them on the memorial in Buenos Aires to the 200 fellow aviators who died flying the Paris-Santiago run. Curtis Cate tells us: "The only thing we can reasonably be sure of is that this youthful interest in flying machines was greatly stimulated by his father's move to le Mans in 1909. In July of the previous year Wilbur Wright had crossed the ocean and set up shop in the Leon Bollée automobile works at le Mans."

3. Edward Pols, *The Acts of Our Being: A Reflection on Agency and Responsibility* (Amherst: U. Mass Press, 1982).

4. F. Hetzler, "Art is Philosophy and More than Philosophy," *Proceedings International Colloquium*, Fu Jen University, Taipei, Taiwan, December 1980, 197-210. Cf. Mircea Eliade, *La Colonne sans fin*, trans. Hetzler (Lanham, Maryland: University Press Of America, 1984).

5. Cf. Calude Sumner, *Ethiopian Philosophy: Fisalgwos, Volume V* (Addis Ababa: Commercial Printing Press, 1082).

6. Cf. Hetzler, *Commentary of St. Thomas Aquinas on Book I of Aristotle's Physics*, Ph.D. dissertation, microfilm, Harvard University, 1969).

7. New York City, December 28, 1971.

8. Cf. Hetzler, "Philosophy of the Person in the Cybernetic Age," *Proceedings of the VIIth International Congress of Aesthetics* (Bucharest, Romania: Academy Press, 1972) 124-126; Bernard de Fontenelle, *Entretiens sur la pluralité des mondes*, 1686; S.A. Kaplan, ed., *Extraterrestrial Civilizations* (Israel Program for Scientific Translations: Jerusalem, 1971) 257 n; A.G.W. Cameron, ed., *Inter-stellar Communication* (New York: Benjamin, 1963); Walter Sullivan, *We Are Not Alone* (New York: McGraw-Hill, 1964) ch. 13-15, 148-150.

9. Cf. Hetzler, ed., *Philosophical Aspects of Thanatology, I, II* (New York: Arno Press, 1977).

10. John Macmurray, *The Self as Agent* (New York: Harper & Row, 1957) 16.

11. Cf. John Dewey, *Logic: The Theory of Inquiry* (New York: Holt, Rinehart & Winston, 1938) 129; Lonergan, *Insight: A Study of Human Understanding* (New York: Philosophical Library, 1958) 348; John Dewey, *Experience and Nature* (New York: Dover, 1958) 135; Erazim Kohak, *The Embers and the Stars: A Philosophical Inquiry into the Moral Sense of Nature* (Chicago: University of Chicago Press, 1984); Hetzler, "Myth and Imagination in Galileo's Discovery," eds. George Coyne, S.J., Josef Zycinski and Michael Heller, *The Galileo Affair: A Meeting of Faith and Science* (Vatican city: Specola Vaticana, 1985 (167-174).

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# *THE FOLKLORE OF COMPUTERS AND THE TRUE ART OF THINKING*



Theodore Roszak

Information, even when it moves at the speed of light, is no more than it has ever been: discrete little bundles of fact, sometimes useful, sometimes trivial, and never the substance of thought. I offer this modest, common-sense notion of information in deliberate contradiction to the computer enthusiasts and information theorists who have suggested far more extravagant definitions. In the course of this chapter and the next, as this critique unfolds, it will be my purpose to challenge these ambitious efforts to extend the meaning of information to nearly global proportions. That project, I believe, can only end by distorting the natural order of intellectual priorities. And insofar as educators acquiesce in that distortion and agree to invest more of their limited resources in information technology, they may be undermining their students' ability to think significantly.

That is the great mischief done by the data merchants, the futurologists, and those in the schools who believe that computer literacy is the educational wave of the future: they lose sight of the paramount truth that *the mind thinks with ideas, not with information*. Information may helpfully illustrate or decorate an idea; it may, where it works under the guidance of a contrasting idea, help to call other ideas into question. But information does not create ideas; by itself, it does not validate or invalidate them. An idea can only be generated, revised, or unseated by another idea. A culture survives by the power, plasticity, and fer-

tility of its ideas. Ideas come first, because ideas define, contain, and eventually produce information. The principal task of education, therefore, is to teach young minds how to deal with ideas: how to evaluate them, extend them, adapt them to new uses. This can be done with the use of very little information, perhaps none at all. It certainly does not require data processing machinery of any kind. An excess of information may actually crowd out ideas, leaving the mind (young minds especially) distracted by sterile, disconnected facts, lost among shapeless heaps of data . . .

The facts are scattered, possibly ambiguous marks; the mind orders them one way or another by conforming them to a pattern of its own invention. *Ideas are integrating patterns* which satisfy the mind when it asks the question, What does this mean? What is this all about?

But, of course, an answer that satisfies me may not satisfy you. We may see different patterns in the same collection of facts. And then we disagree and seek to persuade one another that one or the other of these patterns is superior, meaning that it does more justice to the facts at hand. The argument may focus on this fact or that, so that we will seem to be disagreeing about particular facts—as to whether they really *are* facts, or as to their relative importance. But even then, we are probably disagreeing about ideas. For as I shall suggest further on, facts are themselves the creations of ideas.

Those who would grant information a high intellectual priority often like to assume that facts, all by themselves, can jar and unseat ideas. But that is rarely the case, except perhaps in certain turbulent periods when the general idea of “being skeptical” and “questioning authority” is in the air and attaches itself to any dissenting, new item that comes along. Otherwise, in the absence of a well-formulated, intellectually attractive, new idea, it is remarkable how much in the way of dissonance and contradiction a dominant idea can absorb. There are classic cases of this even in the sciences. The Ptolemaic cosmology that prevailed in ancient times and during the Middle Ages had been compromised by countless contradictory observations

over many generations. Still, it was an internally coherent, intellectually pleasing idea; therefore, keen minds stood by the familiar old system. Where there seemed to be any conflict, they simply adjusted and elaborated the idea, or restructured the observations in order to make them fit. If observations could not be made to fit, they might be allowed to stand along the cultural sidelines as curiosities, exceptions, freaks of nature. It was not until a highly imaginative constellation of ideas about celestial and terrestrial dynamics, replete with new concepts of gravitation, inertia, momentum, and matter, was created that the old system was retired. Through the eighteenth and nineteenth centuries, similar strategies of adjustment were used to save other inherited scientific ideas in the fields of chemistry, geology, and biology. None of these gave way until whole new paradigms were invented to replace them, sometimes with relatively few facts initially to support them. The minds that clung to the old concepts were not necessarily being stubborn or benighted; they simply needed a better idea to take hold of.

If there is an art of thinking which we would teach the young, it has much to do with showing how the mind may move along the spectrum of information, discriminating solid generalizations from hunches, hypotheses from reckless prejudices. But for our purposes here, I want to move to the far end of the spectrum, to that extreme point where the facts, growing thinner and thinner, finally vanish altogether. What do we find once we step beyond that point into the zone where facts are wholly absent?

There we discover the riskiest ideas of all. Yet they may also be the richest and most fruitful. For there we find what might be called the *master ideas*—the great moral, religious, and metaphysical teachings which are the foundations of culture. Most of the ideas that occupy our thinking from moment to moment are not master ideas; they are more modest generalizations. But from this point forward I will be emphasizing master ideas because they are always there in some form at the foundation of the mind, molding our thoughts below the level of awareness. I want to focus upon them because they bear a peculiar-

ly revealing relationship to information, which is our main subject of discussion. *Master ideas are based on no information whatever.* I will be using them, therefore, to emphasize the radical difference between ideas and data which the cult of information has done so much to obscure.

Let us take one of the master ideas of our society as an example: *All men are created equal.*

The power of this familiar idea will not be lost on any of us. From it, generations of legal and philosophical controversy have arisen, political movements and revolutions have taken their course . . .

literary. They can be rituals—as in many tribal societies, where the myths are embodied in festive ceremonies. Or they may be works of art, like the stained glass windows and statuary of medieval churches. Master ideas may be taught in many modes. In our society, television and the movies are among the most powerful means of instruction, often to the point of eclipsing the lackluster materials presented in school. Unhappily, these major media are for the most part in the hands of commercial opportunists for whom nobility of purpose is usually nowhere in sight. At best, a few tawdry images of heroism

sibility for one's choices. In short, taking charge of one's life in the presence of a noble standard. Young minds reach out for this guidance; they exercise their powers of imagination in working up fantasies of great quests, great battles, great deeds of cunning, daring, passion sacrifice. They craft their identities to the patterns of gods and goddesses, kings and queens, warriors, hunters, saints, ideal types of mother and father, friend and neighbor. And perhaps some among them aspire to become the bards and artists of the new generation who will carry forward the ideals of their culture. Education begins with giving the mind images—not data points or machines—to think with.

There is a problem, however, about teaching children their culture's heroic values. Left in the hands of parents and teachers, but especially of the Church and the state where these institutions become dominant, ideals easily become forms of indoctrination, idols of the tribe that can tyrannize the young mind. Heroism becomes chauvinism; high bright images become binding conventions. Master ideas are cheapened when they are placed in the keeping of small, timid minds that have grown away from their own childish exuberance.

In the hands of great artists like Homer, images never lose the redeeming complexity of real life. The heroes keep just enough of their human frailties to stay close to the flesh and blood. Achilles, the greatest warrior of them all, is nevertheless as vain and spoiled as a child, a tragically flawed figure. Odysseus can be more than a bit of a scoundrel, his "many devices" weakening toward simple piracy. It is the fullness of personality in these heroes that leaves their admirers balanced between adulation and uncertainty. The ideal has more than one side; the mind is nagged with the thought "yes, but..." Where such truth to life is lost, the images become shallow; they can then be used to manipulate rather than inspire.

The Greeks, who raised their children on a diet of Homeric themes, also produced Socrates, the philosophical gadfly whose mission was to sting his city into thoughtfulness. "Know thyself," Socrates insisted to his students. But where else can self-knowledge begin but



The substance of education in the early years is the learning of what I have called master ideas, the moral and metaphysical paradigms which lie at the heart of every culture. To choose a classic model in the history of Western pedagogy: in the ancient world, the Homeric epics (read or recited) were the texts from which children learned the values of their civilization. They learned from adventure tales and heroic exemplars which they could imitate by endless play in the roadways and fields. Every healthy culture puts its children through such a Homeric interlude when epic images, fairy tales, *chansons de geste*, Bible stories, fables, and legends summon the growing mind to high purpose. That interlude lays the foundations of thought. The "texts" need not be exclusively

and villainy may seep through to feed the hungry young mind. The rudiments of epic conduct can be found in a movie like *Star Wars*, but the imagery has been produced at a mediocre aesthetic and intellectual level, with more concern for "effects" than for character. At such hands, archetypes become stereotypes, and the great deeds done are skewed with an eye to merchandising as much of the work as possible.

Those cultures are blessed which can call upon Homer, or Biblical tales, or the Mahabharata to educate the young. Though the children's grasp of such literature may be simple and playful, they are in touch with material of high seriousness. From the heroic examples before them, they learn that growing up means making projects with full respon-

with the questioning of ancestral values, prescribed identities?

Here is the other significant use to ideas: to produce critical contrast and so to spark the mind to life. Homer offers towering examples of courage. Ah, but what is *true* courage? Socrates asks, offering other, conflicting images, some of which defy Homer. At once, idea is pitted against idea, and the students must make up their own minds, judge, and choose. Societies rarely honor their Socratic spirits. Athens, irritated beyond tolerance by his insistent criticism, sent its greatest philosopher to his death. Still, no educational theory that lacks such a Socratic counterpoint can hope to free the young to think new thoughts, to become new people, and so to renew the culture.

In a time when our schools are filling up with advanced educational technology, it may seem almost perverse to go in search of educational ideals in ancient and primitive societies that had little else to teach with than word of mouth. But it may take that strong a contrast to stimulate a properly critical view of the computer's role in educating the young. At least it reminds us that all societies, modern and traditional, have had to decide *what* to teach their children before they could ask *how* to teach them. Content before means, the message before the medium.

The schooling of the young has always been a mixture of basic skills (whether literacy and ciphering or hunting and harvesting) and high ideals. Even if our society were to decide that computer literacy (let us hope in some well-considered sense of that much-confused term) should be included among the skills we teach in the schools, that would leave us with the ideals of life still to be taught. Most educators surely recognize that fact, treating the computer as primarily a means of instruction. What they may overlook is the way in which the computer brings with it a hidden curriculum that impinges upon the ideals they would teach. For this is indeed a powerful teaching tool, a smart machine that brings with it certain deep assumptions about the nature of mentality. Embodied in the machine there is an idea of what the mind is and how it works. The idea is there because scien-

tists who purport to understand cognition and intelligence have put it there. No other teaching tool has ever brought intellectual luggage of so consequential a kind with it. A conception of mind—even if it is no better than a caricature—easily carries over into a prescription for character and value. When we grant anyone the power to teach us *how* to think, we may also be granting them the chance to teach us *what* to think, where to begin thinking, where to stop. At some level that underlies the texts and tests and lesson plans, education is an anatomy of the mind, its structure, its limits, its powers and proper application.

The subliminal lesson that is being taught whenever the computer is used (unless a careful effort is made to offset that effect) is the data processing model of the mind. This model, as we have seen, connects with a major transition in our economic life, one that brings us to a new stage of high tech industrialism, the so-called Information Age with its service-oriented economy. Behind that transition, powerful corporate interests are at work shaping a new social order. The government (especially the military) as a prime customer and user of information technology is allied to the corporations in building that order. Intertwined with both, a significant, well-financed segment of the technical and scientific community—the specialists in artificial intelligence and cognitive

science—has lent the computer model of the mind the sanction of a deep metaphysical proposition. All these forces, aided by the persuasive skills of the advertisers, have fixed upon the computer as an educational instrument; the machine brings that formidable constellation of social interests to the classrooms and the campus. The more room and status it is given there by educators, the greater the influence those interests will have.

Yet these are the interests that are making the most questionable use of the computer. At their hands, this promising technology—itsself a manifestation of prodigious human imagination and inventiveness—is being degraded into a means of surveillance and control, of financial and managerial centralization, of manipulating public opinion, of making war. The presence of personal computers in millions of homes, especially when they are used as little more than trivial amusements, does not in any meaningful way offset the power the machine brings to those who use it for these purposes.

Introducing students to the computer at an early age, creating the impression that their little exercises in programming and game playing are somehow giving them control over a powerful technology, can be a treacherous deception. It is not teaching them to think in some scientifically sound way; it is per-



suading them to acquiesce. It is ac-customing them to the presence of computers in every walk of life, and thus making them dependent on the machine's supposed necessity and superiority. Under these circumstances, the best approach to computer literacy might be to stress the limitations and abuses of the machine, showing the students how little they need it to develop their autonomous powers of thought.

There may even be a sound ecological justification for such a curriculum. It can remind children of their connection with the lively world of nature that lies beyond the industrial environment of machines and cities. Sherry Turkle observes that, in times past, children learned their human nature in large measure by comparing themselves to the animals. Now, increasingly, "computers with their interactivity, their psychology, with whatever fragments of intelligence they have . . . bid to take this place."<sup>1</sup> Yet it may mean far more at this juncture in history for children once again to find their kinship with the animals, every one of which, in its own articulate way, displays greater powers of mind than any computer can ever mimic well. It would indeed be a loss if children failed to see in the nesting birds and the hunting cat an intelligence as well as a dignity that belongs to the line of evolutionary advance from which their own mind emerges. It is not the least educational virtue of the traditional lore and legends that so much of it belongs to the preindustrial era, when the realities of the nonhuman world were more vividly present. How much ecological sense does it make to rush to close off what remains of that experience for children by thrusting still another mechanical device upon them?

There is a crucial early interval in the growth of young minds when they need the nourishment of value-bearing images and ideas, the sort of Homeric themes that open the adventure of life for them. They can wait indefinitely to learn as much as most schools will ever teach them about computers. The skills of unquestionable value which the technology makes available—word processing, rapid computation, data base searching—can certainly be saved for the later high school or even college

years. But once young minds have missed the fairy tales, the epic stories, the myths and legends, it is difficult to go back and recapture them with that fertile sense of naive wonder that belongs to childhood. Similarly, if the taste for Socratic inquiry is not enlivened somewhere in the adolescent years, the growing mind may form habits of acquiescence that make it difficult to get out from under the dead hand of parental dominance and social authority.

As things now stand, there is a strong consensus abroad that our schools are doing a poor to mediocre job of laying these intellectual foundations. The reasons for the malaise of the schools are many. Teachers are often overworked and underappreciated; many students come to them bored, rebellious, distracted, or demoralized. Some of the children in our inner cities are too disadvantaged and harassed by necessity to summon up an educative sense of wonder; others may have been turned prematurely cynical by the corrupted values of commercialism and cheap celebrity; many, even the fortunate and affluent, may be haunted by the pervasive fear of thermonuclear extinction that blights all our lives. The schools share and reflect all these troubles; perhaps, at times, the troubles overwhelm the best efforts of the best teachers, driving them back to a narrow focus on basic skills, job training, and competitive grading. But it is at least worth something to know where the big problems lie and to know there is no quick technological fix for them. Computers, even when we reach the point of having one on every desk for every student, will provide no cure for ills that are social and political in nature.

It may seem that the position I take here about the educational limits of the computer finishes with being a humanist's conservative appeal in behalf of the arts and letters. It is that. Scientists and technicians, whose professional interests tend to make them computer enthusiasts, may therefore see little room for their values in the sort of pedagogy I recommend. But as the story of Descartes's angel should remind us, science and technology at their highest creative level are no less connected with ideas, with imagination, with vision. They draw upon all the same resources

of the mind, both the Homeric and Socratic, as the arts and letters. We do not go far wrong from the viewpoint of any discipline by the general cultivation of the mind. The master ideas belong to every field of thought. It would surely be a sad mistake to intrude some small number of pedestrian computer skills upon the education of the young in ways that blocked out the inventive powers that created this astonishing technology in the first place. And what do we gain from any point of view by convincing children that their minds are inferior to a machine that dumbly mimics a mere fraction of their native talents?

In the education of the young, humanists and scientists share a common cause in resisting any theory that cheapens thought. That is what the data processing model does by closing itself to that quality of the mind which so many philosophers, prophets, and artists have dared to regard as godlike: its inexhaustible potentiality. In their search for "effective procedures" that can be universally applied to all aspects of culture, experts in artificial intelligence and cognitive science are forced to insist that there is nothing more to thought than a conventional mechanistic analysis will discover: data points shuffled through a small repertory of algorithms. In contrast, my argument in these pages has been that the mind thinks, not with data, but with ideas whose creation and elaboration cannot be reduced to a set of predictable rules. When we usher children into the realm of ideas, we bring them the gift of intellectual adventure. They begin to sense the dimensions of thought and the possibilities of original insight. Whether they take the form of words, images, numbers, gestures, ideas unfold. They reveal rooms within rooms within rooms; a constant opening out into larger, unexpected worlds of speculation.

The art of thinking is grounded in the mind's astonishing capacity to create beyond what it intends, beyond what it can foresee. We cannot begin to shape that capacity toward humane ends and to guard it from demonic misuse until we have first experienced the true size of the mind.

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#### Footnotes:

<sup>1</sup>. Turkle, *The Second Self*, p. 313.

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## Community as Inquiry

Glenn Tinder

**I**nquiry is simply the effort to elucidate and harmonize the modes of consciousness. It is the effort to enter by this means into the presence of being itself. The integration of consciousness would dissipate all doubt and spell the end of estrangement. Inquiry aims at overcoming the fragmentation of consciousness without illegitimately distorting or suppressing any of its modes.

We inquire, however, in two different ways. We inquire *about*, and we inquire *with*; we inquire *about* various objects of inquiry, and we inquire *with* fellow inquirers. In the former way we seek theoretical or aesthetic contemplation; in the latter way community. Both are efforts to harmonize the modes of consciousness and overcome estrangement. Through one, however, the individual strives to integrate consciousness through solitary effort, whereas through the other a cooperative effort occurs. Consequently, we may refer to one as individualistic inquiry and to the other as dialogical inquiry. The latter, as we shall see, is in itself community.

We shall begin by considering individualistic inquiry. Or rather, we shall begin by considering inquiry as *though* it were individualistic. If the aims of inquiry are to be fulfilled, individualistic and dialogical inquiry must be joined; consciousness can be unified only through dialogue. Solitary and dialogical effort, reflection and communication, are merely aspects of a single activity.

In actuality, we persistently try to carry on this activity in a purely individualistic manner. This stems from a desire to avoid the humbling and depen-





dent status implicit in dialogical inquiry. In pride, I try to master reality through my own independent mind. Only by overcoming pride, usually in response to necessities arising in the course of inquiry, do I recognize the inescapably dialogical character of inquiry—and thus prepare for entry into community. Here again, then, analytical order—considering inquiry first as though it were purely individualistic—corresponds with existential order.

What justifies the analytical order is that dialogical inquiry not only arises from individualistic inquiry but must retain an individualistic core: a sense of intellectual independence and responsibility on the part of each inquirer. Hence, to consider inquiry as though it were individualistic, and then to take account of the conditions that compel it to be dialogical, is an analytical convenience that does not distort the subject under examination.

The basic types of inquiry can be understood on the basis of, although not in strict correspondence with, the modes of consciousness.

#### Scientific Inquiry

Science is concerned with the invariable order implicit in experience. Hence it is directed toward relationships that are universal and are not identical with empirical relationships. Yet theories that have not been empirically validated, and are not implied by theories that have been, are unacceptable.

#### Historical Inquiry

Comprising not only history but also much that is presented as social science, historical inquiry is concerned with the actual order of experience. Its field is defined by experience and awareness together and thus includes not only all that falls within organized experience but also the particularities—the persons, the places, the events—that are not wholly reducible to universals.

#### Transcendental Inquiry

Picasso once said, "I never do a painting as a work of art. All of them are researches. I search constantly and there is a logical sequence in all this research."<sup>1</sup> This shows that inquiry can be carried on through art. Theological writing shows that it can be carried on through religion. Artistic and religious

inquiry is transcendental in the sense of being concerned not with the world and its objects but with the ultimate being that transcends the world. Whereas scientific inquiry deals primarily with experience, transcendental inquiry relies on vision and faith. The order of experience is subordinated to the disclosure of meaning and is often freely altered for this purpose, as in fiction and in myth.

#### Philosophical Inquiry

The comprehensive mode of inquiry is philosophy. The comprehensiveness of philosophy is not the same as sovereignty. Apart from scientific, historical, and transcendental inquiry, philosophy is empty. It has the unique function, nevertheless, of uniting all modes of consciousness in a single interpretation of being. Whereas other forms of inquiry depend on particular modes of consciousness, philosophical inquiry has its own unique foundation in reason—the supreme faculty, as Kant defines it, for reaching "the highest unity of thought."<sup>2</sup>

To say that inquiry may take the form of science, history, art, religion, or philosophy, is not to imply that these always, or even often, take the form of inquiry. Men again and again treat their conceptions as final and unquestionable. They do this in every form of inquiry. Scientific theories are made into changeless, all-inclusive views of being, as in the materialistic philosophy of Thomas Hobbes; history is conceived of as a total and inevitable order of events; cultural styles are frozen into orthodox aesthetic standards, as when supporters of academic painting in nineteenth-century France tried to suppress impressionism; religious faith is degraded into an objective explanation of the origin of the species; philosophy falls away from its classical definition as the *love* of wisdom and claims conclusive knowledge. In all of these ways inquiry is abandoned.

When this happens, however, I suggest that humanity itself is abandoned because it is of the human essence to ask after, but not to possess, the truth. Man is always, as Jaspers says, more than he knows about himself. Every definition that equates man with a fixed set of rationally comprehensible traits is necessarily false. A particular mode of con-

sciousness and a particular interpretation of its disclosures are taken as unquestionable. But the being who is supposedly encased in that definition—man himself—can invoke other modes of consciousness and other conceptions of reality. The questioning in itself is a sign of the inadequacy of the definition.

The principle that man is an inquirer implies not only that he *can* but also that he *must* inquire. Man is a being oriented toward being: this is an idea recurrent in philosophy from a time earlier than Socrates to the present. It is confirmed by traditional values. Beauty provides a feeling of the full, sensual presence of being; truth is its intellectual presence; most moral rules are commanded by respect for being; and the principal misdeeds—murder, robbery, deceit—are denials of being. And is not all fear, as of disease and death, fear of the loss of being? Freud at times saw the "death wish," an urge to destruction, as permanent and primal. But introspection, and consideration of nihilistic political regimes like Hitler's, suggest a less pessimistic hypothesis: that destructive inclinations arise from despair and that annihilation becomes an end in itself only for those who find a more basic impulse, that toward the realization of being, everywhere blocked and defeated. Nor can this impulse be reduced to the instinct of self-preservation, for it is not merely one's own being that is prized. To live securely, but everlastingly alone, as on a deserted planet, is no one's dream of life.

Someone may object that contact with being is not found in inquiry itself but only in the conclusions of inquiry. This would be so, however, only were we able to transcend being, objectifying it in changeless theories. What we call "matters of fact"—the year Julius Caesar was killed, the composition of water—can thus be objectified. But the supposition that man and all reality can be comes from thinking of consciousness as though it were nothing but experience. Being itself is conceived of as totally accessible to observation and theoretical comprehension. The only way to avoid such illusions is to subject every "complete and final truth" to inquiry, thus maintaining the principle that truth lies in inquiry as a whole, not



in its results alone.

One possible objection—that the idea of man as essentially an inquirer is too intellectualist an interpretation—was referred to earlier. It is true that inquiry presupposes involvement of the intellect. It does not follow, however, that inquiry is carried on only in libraries and seminar rooms. To recall the best accounts of farming, sexual love, sports, and other nonintellectual activities is to realize how large a part in those activities is played by trial, reflection, and other elements of inquiry. Indeed, it may be an inquiring attitude, and an underlying reverence for being, that saves activities of this kind from debasement by greed, lust, and other destructive passions.

Intellectualism is precluded wherever care is taken that inquiry is not stifled by its own conclusions. As an ideal of rational elucidation, the concept of inquiry expresses trust in the intellect; but as an ideal of elucidation that never ceases, it rules out the idolatry of intellect that substitutes theory for being.

The paradoxical nature of inquiry—that the truth is found in the search itself—is manifest in the life and dialogues of Socrates. The dialogues that presumably describe most accurately the conversations of Socrates himself end inconclusively. Socrates' whole life of dialogue, moreover, ends inconclusively, for in the trial that led to his

death Socrates claimed no wisdom except that inherent in the consciousness of his own ignorance. Yet he had devoted his life to inquiry, and his composure in approaching death—devoting his last hours to an inconclusive discussion of the immortality of the soul—showed that he was ignorant only in the sense that what he knew could not be embodied in theoretical conclusions.

Beyond exemplifying the paradoxical nature of inquiry, the figure of Socrates suggests why it is possible to say that man is an inquirer. Plato's picture of Socrates is of one engaged, simply and unaffectedly, yet with complete singleness of mind, in a lifetime of inquiry. He informed the jury that he would return, if released, to the kind of questioning that had led to his arrest. Sentenced to die, he pursued his efforts at clarifying consciousness until a few minutes before the end. Nothing whatever could deflect him from his ironic and imperturbable pursuit of truth.

One other quality of Socrates must attract our attention—one that brings us to the subject of dialogical, as distinguished from individualistic, inquiry. Although rejected by all but a handful of friends, Socrates always sought the truth by talking with others. He was infeasibly communal.

#### Community as Inquiry

I inquire with others because I must. I

discover that individualistic inquiry cannot deal with a disturbing kind of awareness—an awareness of strange minds, of minds that are not only unknown and unpredictable but that have the unsettling power of casting into doubt the order established in my own mind. We are such inveterate objectifiers that we have to guard against trying to unify consciousness by treating everything that enters into it as simply an object of experience. Doing this, we envision inquiry as solitary and truth as the possession of a single mind. But thus we falsify our consciousness. In awareness, we are conscious of realities that cannot be wholly objectified—of the self, for example, and of other selves. Consciousness therefore cannot be unified through systematic objectification. It can be unified only through harmonious intersubjectivity, through sharing and cooperatively questioning all interpretations of the contents of consciousness.

It may be asked at what stage in the process of inquiry do others enter in. When does the inquirer come under the necessity of leaving the sphere of his own mind in order to inquire in common with other minds? At the very outset, I suggest. Granted, this may not be recognized. The inquirer may persist indefinitely in the proud effort to master reality alone, without engaging in the humble act of consulting others. It is an illusion, however, to think that even organizing experience is a solitary activity. The simplest objective observation—taking note, for example of the weather—is implicitly communal, for the concept of objectivity is equivalent to that of absolutely reliable intersubjectivity. To suppose that valid inquiry is solitary in its initial, or objective, stages, and that it is necessarily communal only in other stages, is tacitly to accept an individualistic premise that is bound to inhibit understanding of the full identity of inquiry and community.

Others are present in the very state of estrangement that inquiry presupposes. It is not merely that human beings are peculiarly difficult to fit into any integrated scheme of consciousness. It is also that they disturb whatever scheme one person devises by propounding differing schemes of their own. They are

sources, not merely objects, of inquiry. Perhaps I am trying to understand human beings as psychological mechanisms. But I find not only that they are not as reliable as mechanisms should be, but that some of them understand human beings in a different way, perhaps as creatures of God. Others in these ways threaten my efforts at clarification; both by their behavior and their words they tend to keep me trammled by the uncertainties and confusions of a divided mind. I may of course try to ignore them, even to suppress them. But that is to strive for unity of consciousness through will and power rather than through reason. Persons who stand outside our interpretations, inexplicable and challenging, yet ignored or suppressed, are signs that the process of inquiry is incomplete and that we fear the venture of trying to complete it.

The discovery of our plurality comes about in a variety of ways. One way, for example, is through the disturbing realization that I am seen by someone else as a completely different sort of person than I think of myself as being; this realization comes in a particularly jarring form if I am attacked, physically or even verbally. We also discover our plurality simply when we differ in our interpretations of the realities about us. A field that for one person is a source of beauty is for another person a favorable commercial site; the plurality of minds is manifest. But I find other minds even in myself. The successive and incongruous states of my own consciousness, and the effort to harmonize them through inquiry, place me in a situation analogous to that created by a plurality of minds.

However it comes about, the discovery of plurality imposes the necessity of inquiring not only about, but with, other persons. Each one properly tries to formulate a unified interpretation of the contents of consciousness. But never does an interpretation become complete and unquestionable except by delusions and violence. The most valid interpretations are those that incorporate in themselves, like Platonic dialogues, recognition that they are fragmentary and tentative and take on truth only in a dialogical setting that denies them finality.

To encounter other persons is to en-

counter beings whom I can address and to whom I can offer attention. They are beings who can share and confirm explanations I devise, or can dispute and sometimes destroy such explanations, but cannot themselves be altogether explained. This is why the unification of consciousness must come about not simply through individual reasoning but through dialogical reasoning.

It is why the ideal of unified consciousness is an ideal of community. In discovering that man is an inquirer, we discover simultaneously that he is a communal being, a seeker of truth that is fully shared. More precisely, he is a seeker of truth that is *universally* shared. Just as a tyrant, trying to unify consciousness through violence, cannot tolerate a single dissenting voice, so man in his communal integrity, trying to unify consciousness through inquiry, cannot ignore a single questioning mind.

Inquiry, then, takes place through communication and in that way alone. In this sense, inquiry is community. Having reached this conclusion, we can move a step further by reversing the proposition and asserting that community is inquiry. The familiar idea that community consists in agreement of any kind, that it consists, for example, in common acceptance of a narrow and stifling set of customs inherited from the past, or in widespread acceptance of an advertising message, grossly distorts human nature and obscures the ideal of community. It tends to reconcile human beings to social conditions under which they are far less than they should be and are estranged from one another even though they may be totally united through whatever forms of truncated selfhood they have accepted. Community can live only if people insist again and again, by speech and occasionally by violent resistance, that not any kind of unity that habit, circumstances, or a momentary elite can induce everyone to accept is a community. Only cooperation in the most serious human concerns—and this means above all in the exploration of being—calls forth a community. It is moving testimony to the nature, as well as the value, of community when dissidents in a totalitarian regime risk their freedom and lives to

speak in defiance of the monolithic social and political unity that such regimes create. A solitary voice, speaking with utmost seriousness, is a far more decisive sign of community than is a national unified merely by force and propaganda, or by commercial convenience and advertising.

If community brings together human beings as they are in essence, then it is found in full measure only as we contend in common against the fragmentation of consciousness. Our one serious responsibility is that of understanding the truth as fully as possible and in that way becoming ourselves. We form a community only by being united in the acceptance of that responsibility. This is not a new theory, but rather the ancient premise of intellectual and artistic activity restated in opposition to the casual and destructive misuse of the communal ideal in recent times.

It will be clear by now why we must say that community is inquiry rather than the *result* of inquiry. It has already been suggested that truth is found in inquiry itself and not only at its end; to sever truth from the questions lying at its source is to objectify being and in this way to lose the truth. Community, presumably, lies in sharing the truth, and if this is so it must be inherent in the very process of searching for the truth.

The history of political thought reveals a strong tendency to think of community as realized only when the struggles of thought and history have been ended. Thus for Plato the kingship of philosophers was the center of an order superior to history; for Augustine, the City of God was established only with the end of all earthly events; in Marxism, capitalism prepares the way for communism economically but is meaningless spiritually and may as well be totally forgotten once communism is achieved. Of course we cannot simply assert the opposite, as though community were present in every moment of history. Should we not be wary, however, of too sharply separating the dangers and uncertainties of history from the communal finale for which we hope? Is there not sense of some kind in the Johannine idea that the end of history must be found and lived in the present moment? Community is surely a

state of life; and if that is so, it must in some way partake of movement, doubt, and insecurity.

To look again at another objection noted earlier in these reflections, a critic might say that inquiry is not essentially communal and that this is apparent in the lives of some of the most courageous seekers after truth—people who have been neglected, even scorned and persecuted, by their contemporaries. Socrates exemplifies this criticism; at the same time, he suggests a response.

Socrates was scorned and finally killed, yet in his own personal bearing he was thoroughly communal. This indicates that an inquirer may, by speaking and listening even to those who are inattentive and silent, place himself in a communal setting—beyond false absolutes and in the presence of persons. He may thus stand in the sphere of truth. It seems that there is such a state as solitary communality and that one person alone may establish inquiring relationships by assuming a stance of attentiveness and availability. Perhaps inquiry is greatly handicapped where mutuality is lacking. But the integrity of the inquirer is not

destroyed. Socrates was not less inquiring, nor less communal, because of the hostility of other Athenians.

The difference between community and social unity can now be clearly seen. True, community is entered into through communication, and communication depends on certain kinds of social unity, such as common language and similar values. But community is not equivalent to, is not assured by, and may come into conflict with, social unity. Man is shaped and confined by society, but not wholly. To a degree, he transcends society; he can use it, question it, change it, destroy it. Community brings together persons in their essential being and therefore cannot consist in the social unity that persons partially transcend.

This implies a view of tradition. Society as an inheritance comes into our hands in the form of tradition. The communal ideal is that tradition be wholly absorbed in inquiry, that it be examined rationally, and that it be accepted, revised, or repudiated in complete clarity of mind. In other words, our communality entails an effort to master society as

the collective past and to relate it, if only by consciously accepting it, to the living present. We can never succeed in doing this. We have no standpoint outside of tradition that would make it possible. To inquire into one aspect of tradition we must use standards and assumptions derived from other aspects of traditions. But there is nothing in tradition as such that is sacred or inviolable. There are sacred traditions but not things that are sacred because they are traditions. People joined by uncriticized traditions are not joined in community.

Community as inquiry often imperils social unity. Then society will be hostile to community. Just as the nature of community is visible in the life of Socrates, so the tragic antithesis of community and society is visible in the death of Socrates.

#### FOOTNOTES

<sup>1</sup>Quoted in Alexander Liberman, *The Artist in His Studio* (New York: Viking Press, 1960), 112.

<sup>2</sup>This concept of reason is developed in the "Transcendental Dialectic" in *The Critique of Pure Reason*, trans. Norman Kemp Smith (London: Macmillan & Co., 1958), 297-570. The quotation is to be found on p. 300.



# Mind and Brain on Bergen Street

## Ruth Silver

The class had already begun—I must have been a bit late—when I sat down in the fifth-grade classroom in Newark’s Bergen Street School. By March the children were familiar with procedure for *Harry* classes. They sat in an open square, the teacher among them. Discussion was general. Chapter 6—the inquiry into the nature of mind, at the girls’ sleepover—had been their starting point. The students were listening with interest to each other, but were inclining towards lurid tales of dreams and apparitions of the dead. The teacher acknowledged their interest, while working at having them abbreviate stories of dreams about dead relatives. She skillfully tried to direct them to the topic of what things may influence our minds, and to suggest various alternatives, different possibilities.

Now there was a reference to a previous discussion: are mind and brain the same? The children took off—seemingly all of them at once. If discussion had been general and lively before, it heated up astonishingly now. There were various positions, on the whole rather tentatively advanced and with a view towards seeing how they’d do. One frequent speaker, small but noisy, was very emphatic with his own opinion (I forget which side he favored) but almost all the children took the issue as undecided, and to be explored.

Their own resources were clearly not sufficient to decide the matter. There was a general rush to references. A couple of children huddled around a chart

on the wall—“The Brain.” Some looked back to *Harry* and read bits from here and there. One child, sitting near my place at the back of the room, turned to me: “Are you a *medical* doctor?” The negative reply clearly discouraged him. His face indicated that I certainly wasn’t much use in a crisis.

There was a consulting of books—health books, science books, dictionaries, readers—whatever the classroom offered. The children read out bits from these various sources, looking for support for one view or another. The books (not surprisingly) were a bit vague on the point at issue, but some were sufficiently clear to be claimed for one side or the other.

The teacher pointed out that the reading book and the health book didn’t seem to agree. When books differ, which should we believe—and why? she asked. The children were off on that new tack, equally involved. They made reference to publication dates, and began to check them. But, someone commented, some books are collections, and the articles in them could be written long before the publication date. And anyway, someone else offered, the important thing would be the date of the research or study, not the date the book happened to be published.

That the identity of the author might be a factor was another suggestion. They looked to covers, prefaces, introductions, postscripts, to see if they could determine the author’s age. Views were offered as to whether older or younger authors would

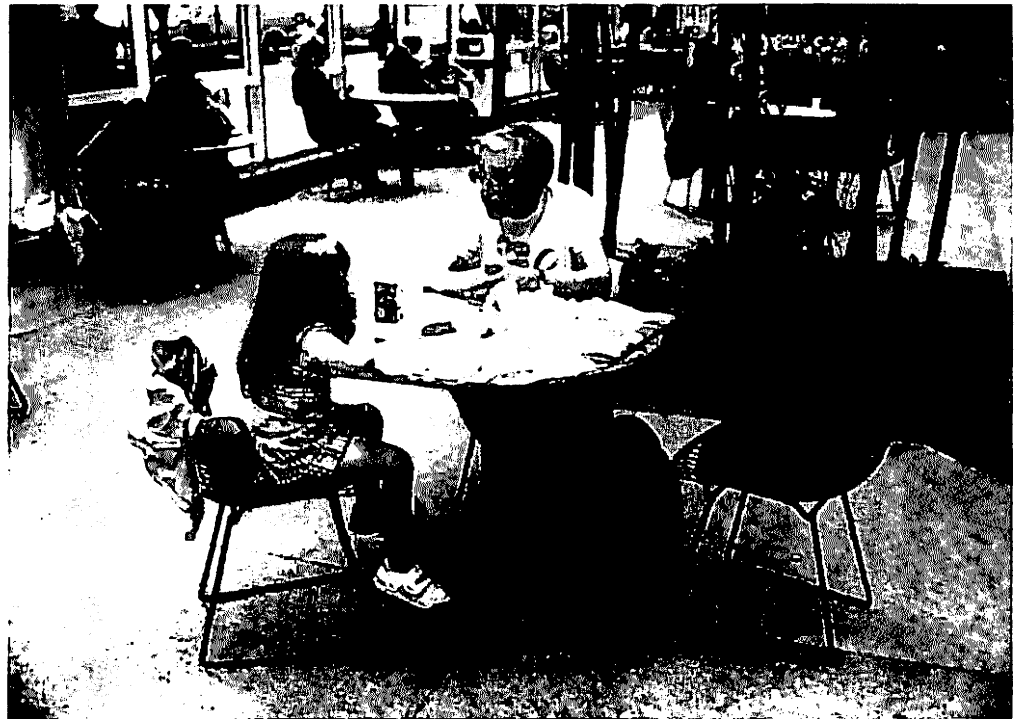
*Ruth Silver trained teachers in Philosophy for Children for a number of years. Now an administrator in a child care center, she is experimenting with discussion groups of pre-school children.*

be more reliable. And what was the experience of the authors—could that be determined? What kind of authorities did they rely on? We’d better, someone suggested, check the acknowledgements. One of the books being cited was a reading book. Some of the items in that book were fiction. Could we really rely on *anything* in that one?

Through all this fascinating hubbub, the teacher was admirably helpful, and non-partisan. She picked up threads—asked questions—related new comments to earlier ones—helped children interpret their ideas to each other. The end of the period was nearing. What could we do, what should we do, in a situation like this, she queried. No one was prepared for the small figure that leaped to his feet: “WAR!” he shouted, his arm upraised. It was the noisy, small, opinionated fellow who, from the start, had admitted of no changes of mind. The bell signalling the end of the school day saved us from taking that way out—or prevented us from finding a better.

The Bergen Street fifth-graders may not direct much attention to questions about mind and brain in the future. But surely for any problematic issue they may come across, they are better prepared to think about it seriously—to be aware of the possibility of disagreement, to examine the meanings and consequences of differing positions, to find sources of information and to use them critically—perhaps even to *avoid* physical combat through more effective verbal communication.

Susannah Sheffer edits *Growing Without Schooling* magazine and works to develop concrete experiments and exhibits through which adults and children can explore philosophical issues together.



## *Philosophy Outside Of Schools*

**Susannah Sheffer**

One of the legacies of the Museum of Philosophy, which introduced its visitors to philosophical issues through the presentation of experiments and exhibits suggesting specific concepts or questions, is the idea that philosophy is something people of any age can do together, anywhere, without need of classroom, syllabi, or prerequisite courses. Similarly, one of the legacies of the late author/educator John Holt, whose books, *How Children Learn*, and

*How Children Fail*, brought him to public attention during the late 1960s as one of the fiercest critics of contemporary schooling and who then began publishing the magazine, *Growing Without Schooling* in 1977, is the belief that “teaching” is what happens when people share their interests and concerns with others. Having worked at the Museum during its short season of operation, and having in the past year taken on the editing of *Growing Without School-*

*ing*, I find that both these legacies daily shape the course of my work. Taken together, they help me see what the teaching of philosophy might mean.

Several months ago, some friends wrote to ask me if I’d be interested in doing philosophy with them in some way. They had in mind an arrangement that would make use of cassette tapes (we live too far apart to make visiting practical) and the combined philosophical interests of the five of us—me, the

parents who'd make the request, and two of their home-educated children, aged 8 and 11. I readily agreed.

On the first tape I sent them, I recorded about 20 minutes of talk on the subject of identity, describing exhibits from the Museum and suggesting ways in which my friends might recreate these exhibits, and the ensuing discussions, for themselves. I posed several questions, making it clear from the start that I had no particular answers in mind that I hoped they'd give. I was quite literally inviting them to join me, and all the people who have throughout history taken up the question of identity, in the active and collaborative effort of philosophy.

My friends found a story I'd read from Jacob Needleman's *The Heart of Philosophy* particularly compelling. In the story, a tiger cub is raised with a herd of goats and lives as one of them until a grown tiger, by forcing the cub to eat red meat, shows him that he is a tiger. My friends responded with a tape of their own, on which they talked about whether this animal could more accurately be described as a goat or a tiger:

Rebecca: (adult) What will happen when the tiger leaves the goat herd that he was raised in?

John: (age 11) He'll kill the goats, because that's the nature of a tiger.

Rebecca: So he'll become fully a tiger, and that will override everything?

Lucy: (age 8) I don't think he'll kill them, because he remembers them, he lived with them and he likes them. How could he kill them? If he didn't live with them he probably would've killed them.

Rebecca: So where he lived changed his identity?

Lucy: Yeah, but then when he ate the meat his thoughts might've changed again.

Rebecca: I don't know whether I agree that he was a tiger.

John: Why not?

Rebecca: I don't know, I think part of your identity is shaped by what's around you. I'm not saying the whole thing is, but I don't think he would ever lose that entirely.

John: But he was being influenced by the older tiger)

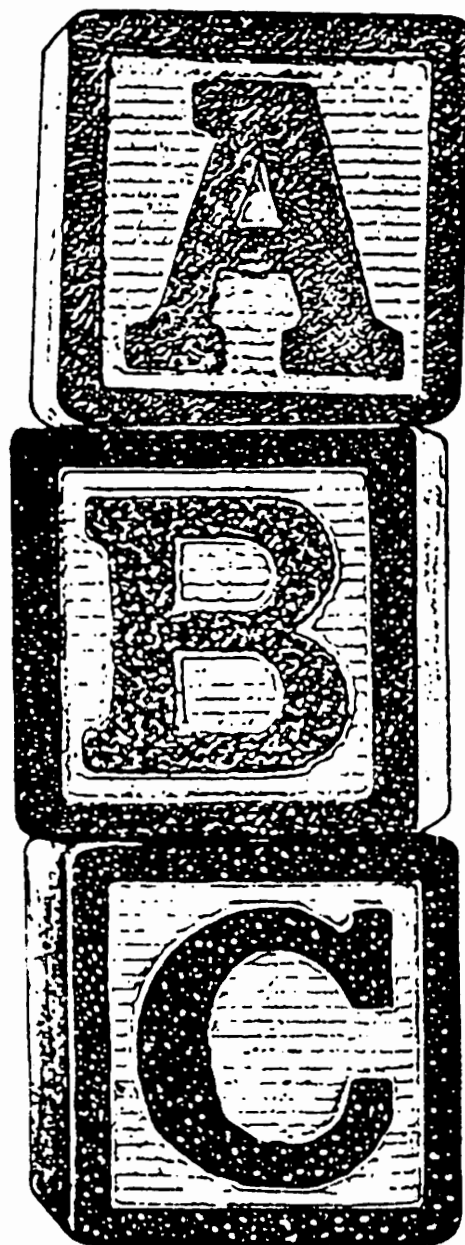
The discussion continued at some length, exploring several theories of identity and testing their application to the young cub. I was impressed by my friends' perseverance, and by their willingness to work together—children and adult—to explore the challenges and ramifications of a story that they obviously found gripping. The children's mother did not use her adult status as a justification for having the better argument. Nor had I used my greater familiarity with philosophical thinking to distance myself from my friends. As far as I was concerned, we were all in it together, all doing philosophy in our individual and sometimes collective ways. After receiving this tape I sent my friends another, on which I responded to their discussions of identity as I would have liked to had I been there in person—challenging them, in some instances, to take their questioning even further—and then began a discussion of our next topic, epistemology.

Gareth Matthews, in his *Dialogues With Children*, writes: "What has not been taken seriously, or even widely conceived, is the possibility of tackling with children, in a relationship of mutual respect, the naively profound questions of philosophy." John Holt would have called this tackling in a relationship of mutual respect, this letting children in on our real work and concerns, teaching in the truest sense of the word. Thus, what I do with my friends is teaching, and it is also philosophy. The two are inseparable. By loving philosophy and then letting my friends catch a glimpse of what I love about it, I am teaching it. We don't need schools to do this, and we don't need to know all the answers first. This is the spirit of *Growing Without Schooling*, and it is also, I like to think, the spirit of philosophy.

#### References

Gareth Matthews, *Dialogues With Children*, Cambridge: Harvard University Press, 1984.

Jacob Needleman, *The Heart of Philosophy*, New York: Alfred A. Knopf, 1982.



*The Museum of Philosophy*, created by Steven Rosenberg and Mark Ast, introduced visitors to philosophical thinking through hands-on experiments and exhibits, often supplemented by discussions with tour guides. The Museum was housed in Pace University in New York City during the Winter and Spring of 1981-82, and then in Hunter College, also in New York City, during the summer of that year.

*Marie-France Daniel is presently a doctoral student at the University of Quebec at Montreal, where she is writing a thesis on philosophy for children. She has a Master's degree in philosophy from the University of Montreal and a MAT in Philosophy for Children from Montclair State College.*

# *Thinking, mind, the existence of God, . . .*

## *Transcript of a classroom dialogue*

### *with first- and second-graders in Montreal*

by Marie-France Daniel

Since October 1985, I have been working with *Pixie* in groups of third- and fourth-graders. Last year, in 1986-1987, I wanted to try *Pixie* with a small group of first- and second-graders. The experience has been marvelous! It led me to realize that in school, the younger a child is, the more he/she is spontaneous, curious, and . . . philosophical.

Here is the translation of the transcript of a video tape recorded in French at l'école Saint-Jean-de-la-Lande (Montreal Catholic School Board), in May 1987. The following discussion took place after the group had read the fourth episode of Chapter Four of *Pixie*.

Facilitator: *Pixie* is wondering, at the end of the episode, what the difference is between animals who think and animals who do not think. I wonder what is the relationship between thinking and the mind? Is there a difference between thinking and the mind?

Marilou: Yes, there is a difference . . . (pause) . . . Well, yes and no. The mind is the one that makes the brain function and the brain is the one that serves the thinking. If we did not have a mind, we could not

think.

Facilitator: So, the mind serves the thinking?

Paule: Me, I agree with Marilou.

Facilitator: Why?

Paule: Because the mind is not the same as thinking. Thinking happens in the head and it is a serious feeling. The mind is not like that.

Facilitator: You said that thinking is a serious feeling. And so what is the mind?

Paule: Well, . . . it is something that is in the head, but when you die, it goes away in another body.

Facilitator: Dominic, you raised your hand. Then it will be Alexandre's turn.

Dominic: Well, as for me, I know what is the first thing that appeared on earth and I know who created it.

Facilitator: Yes, but now we are discussing the relationships there might be between the mind and thinking. Does what you are telling us have some like with our subject?

Dominic: (Negative shake of the head)

Facilitator: Do you want to try finding one?

Dominic: (Negative shake of the head)

Facilitator: Alexandre?

Alexandre: Personally, I do not think there is a difference because the mind does not exist! (Here, Alexandre uses the word "esprit." In French, the word "esprit" means either the "mind" or the "spirit" and the "soul.")

Facilitator: For you, the mind ("esprit") does not exist. So what is thinking for you if the mind does not exist? Does thinking exist?

Alexandre: Thinking is the brain. Thinking is made in the brain. It is a word which means "when you think." The brain is what makes us think.

Facilitator: The brain is a tool?

Alexandre: Well, there is no construction, but it is a tool of your body.

Samuel: As for me, I do not agree with Paule and I agree with Alexandre. The mind cannot get out of the head.

Dominic: Yes, it can: when you die!

Facilitator: Explain your point of view, Samuel.

Samuel: Well, when you are old, your brain gets smaller, but the mind will always be there.



- Facilitator: You said that when one gets old, his brain gets smaller?
- Samuel: Yes, but we will always be able to see the mind—not with eyes, but with a machine to see inside the skin.
- Facilitator: Does that happen only when one is old? When one is young, we cannot see it? (Pause) You, Samuel, do you have a brain?
- Samuel: Of course!
- Facilitator: Do you have a mind?
- Samuel: Of course!
- Facilitator: Do you have thoughts?
- Samuel: Yes.
- Facilitator: Do you have as many thoughts as an old person?
- Samuel: Yes, because the brain produces energy when we have a mind.
- Marilou: I do not agree with Alexandre. The mind exists because God is a mind (“esprit”). (Silence in the classroom.)
- Facilitator: Alexandre, do you want to react to that right away?
- Marilou: Hey, I did not finish talking! I do not agree with Alexandre because of the mind, but also because of the thinking: the brain cannot work all by itself, and neither does the mind. It is God who makes the mind work, it is the mind which makes the brain work and it is the brain which makes the body work. And I agree with Paule. The mind (“esprit”) goes away when you die because if the mind (“esprit”) is not any longer in your body, you cannot live any more . . . or I do not know . . . your mind cannot work then. So, the mind (“esprit”) can go away when you are dead. That is why I agree with Paule, because the mind (“esprit”) can go away.
- Alexandre: I do not agree with Marilou because . . . God does not exist neither!
- Marilou: Yes, he does!
- Alexandre: So, if God does not exist, the mind (“esprit”) cannot work. And it is not possible that any one mind (“esprit”) has come to life.
- Facilitator: If you follow a reasoning opposite to Marilou’s, God does not exist, so the mind does not exist, so the brain cannot bear thoughts. If you rigorously follow along Marilou’s reasoning, you do not have thoughts?
- Alexandre: Yes, I have thoughts.
- Facilitator: Well, then, how do they come, your thoughts?
- Alexandre: Thoughts are brain. What I think is that the heart, when beating, makes vibrations in your brain and that is how it can function.
- Facilitator: Now, we will give George, Dominic, Nadia and Jim a chance to speak because they have not spoken yet.
- George: (Noise and coughing cover his voice.)
- Nadia: (Noise and coughing cover her voice—impossible to transcribe).
- Dominic: I do not agree with Alexandre, because God exists: we would not be born if God were not existing. And also there are Adam and Eve . . .
- Paule: I don’t agree with Samuel, because (. . .) And I do not agree with Alexandre: Jesus exists because otherwise we could not celebrate Christmas.
- Facilitator: Paule, do you think that God exists because we celebrate Christmas or that we celebrate Christmas because we believe God exists?
- Paule: We celebrate Christmas because God exists: If God had not come, no one would have ever thought of celebrating Christmas!
- Marilou: I agree with Paule, but she forgot something because when God is present . . . heu . . . I want to ask Alexandre something: “Who would have created the first creature?” I am not sure that it would be the water or the sun or whatever, right? (Group laughter) It is God, because God exists!
- Alexandre: It is nature! . . . Nature had been formed by the films of air and air existed before the Big Bang.
- Marilou: Alexandre, I would not think that it was Mother Nature who produced human beings. Maybe animals, but not human beings. I do not think so: it is God who produces them.
- Facilitator: Is there a difference between animals and human beings? Yes, Jim?
- Jim: I do not agree with Samuel who says that when you are dead, the mind goes away. Why must the mind go away when you die?
- Facilitator: Samuel, why did you assert that? Why must the mind go away when you die?
- Paule: It is I who said that “the mind goes away when you die.” If you have a mind, you are not dead, (but when you die) the mind must go in another body so that someone else may live in his own way.
- Facilitator: Do you understand Jim? (Nod) Do you agree with that?
- Jim: Yes.
- Facilitator: Alexandre?
- Alexandre: I do not agree with Marilou that God created the animals and the human beings, because the animal, the monkey, made the cave men: it was transformed into cave men; after, these turned into men of Cro-Magnon and after, into human beings.
- Marilou: But the monkeys, who created them?
- Alexandre: Well, nature!
- Facilitator: Everybody close his/her eyes for two minutes. We imagine we are on earth before everybody, before all the animals—there is nothing on earth, absolutely nothing. So, logically, what must first appear on earth?  
[And the discussion continued on that new topic to the end of the period, implying, this time, other members of the community of inquiry.]

I find it fascinating to see these six- and seven-year-old children discuss so reflectively and so easily (with very little philosophical help from the facilitator) such abstract subjects (mind, thinking, the existence of God, etc.)

I also find fascinating their level of discussion: beside using the complex products of the mind (systems, transformations, implications), we can note an ability to synthesize their knowledge and an aptitude to communicate in a logical and coherent fashion.

In fact, the young child is, by nature, creative and logical. A little philosophical help from the facilitator is sufficient for such a child to exploit the uppermost of his/her potentialities.

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Salem, Oregon.

# Doing Philosophy With Children

Terry L. Allen

They (the miners) were not companions to give the best of help toward progress, and as Curdie grew—he grew at this time faster in body than in mind—with the usual consequence, that he was getting rather stupid—one of the chief signs of which was that he believed less and less in things he had never seen . . . he was becoming more and more a miner, and less and less a man of the upper world where the wind blew . . . He was gradually changing into a commonplace man.

There is this difference between the growth of some human beings and that of others: in the one case it is a continuous dying, in the other a continuous resurrection. One of the latter sort comes at length to know at once whether a thing is true the moment it comes before him; one of the former class grows more and more afraid of being taken in, so afraid of it that he takes himself in altogether, and comes at length to believe in nothing but his dinner: to be sure of a thing with him is to have it between his teeth.

—from George MacDonald, *The Princess and Curdie* (first published in book form, 1882; pp. 17-18.)

The “experiment” described in this is actually an attempt at curriculum implementation and then a check to see if it had an effect when compared to a similar group of children not receiving the “treatment.” The curriculum from *Philosophy for Children* was used. My ultimate approach and goal was to encourage children to become not merely “commonplace” in the sense of minding the earth, but more of the “upper world” contemplating and wondering about the meaning of things.

## Problem Statement

Will an implementation of the program *Philosophy for Children*, specifically using the text, *Harry Stottlemeier's Discovery* (Lipman, 1982), significantly effect the reasoning ability of sixth-grade children?

## Hypothesis

As measured by the New Jersey Test of Reasoning Skills, the reasoning of sixth-grade children taught using a program format from *Philosophy for Children*, will increase significantly more than that of similar children not taught using this program.

## Null Hypothesis

Given a two-month trial, no significant difference will be found in the growth of reasoning skills when comparing two groups of sixth-graders, one having been taught using a format from *Philosophy for Children*, the other not.

$H_0: X_e(\text{post-pre}) = X_c(\text{post-pre})$   
 $H_a: X_e(\text{post-pre}) > X_c(\text{post-pre}), p < .05$

## Description of Project

The explanation, prediction and subsequent control of behavior are major goals of psychology and education. Often, the process of experimentation is used to discover or verify a relationship between events or variables so that a given course of action may be justified in light of objectives implicit in the helping professions. Thus, by *control*, we want our goal to be one that helps others *gain control* of their thinking and behavior so that life becomes more meaningful and satisfying for the individual, his society, and those he loves.

Teachers in a “free society,” in which the ideals of mutual respect within an informed and reasonable community

of choosers are upheld, seek control in order to free. Could the constraints of a curriculum, designed to elicit philosophical thinking with a format encouraging an open, "Socratic-style" dialogue-method, be used with children to stimulate the freedom of a more reasonable, accurate approach to thinking and relationship? Could such an approach also stimulate a sense of wonder about life and an appreciation for its complexities that might preclude attitudes of intolerance, indifference, and insensitivity to others?

Sound a little idealistic? The writers of the program *Philosophy for Children* emphasize that this is a long-term process, but that beginning with children will assure a greater likelihood of its occurring at all. Also, as children begin to understand the basis of beliefs held to explain their own and others' feeling about life and motives for behavior, they will be helped to avoid problems arising from their own delusions or the vested intentions of others. Young people as well as adults need to know what and why they believe and the basis for the reasonableness of both. This seems to best be accomplished in an atmosphere of dialogue, mutual respect of persons, and an encouragement to openly share, question, and examine ideas and thoughts.

In an attempt to encourage children in this way, and having been encouraged and stimulated to "thinking about thinking" by a course taught by Dr. Dale Cannon on *Teaching Philosophy to Children* (WOSC, Phil433G, Winter, 1987), we set about to implement a portion of the program as part of the regular teaching day with a class of sixth-graders. In mid-March (1987) the New Jersey Test of Reasoning Skills (Form B, c1983, revised 1985) was administered separately to two sixth-grade classes. This became the pretest, and approximately 3 weeks later one class (the experimental group) began study in formal and informal reasoning skills using the text, *Harry Stottlemeier's Discovery*, as a base. Study continued eight weeks, two to three times per week, and included about twenty-four 30 to 45 minute sessions.

Most of the "philosophy classes" began with a reading (aloud) from

*Harry*, usually one chapter. Following the reading, ideas of interest from the text were elicited from students and recorded on the board. The class then expanded on one or more ideas; or, using ideas and worksheets from the manual, varying aspects of formal logic were presented and discussed. Often, a chapter was read on one day, and the next day's lesson was used to fully extend the formal/informal logic implications from that previous reading. The concept of dialogue as two-way communication was emphasized, and the class worked hard (with encouragement) to make comments relevant and avoid group chatter. A group recorder and summarizer (one student) was randomly selected during most of the lessons; this student was to prepare a summarizing statement(s) at the close of each lesson, and they also kept track of total "blurts-outs" or "break-downs" in the dialogue. These latter were simply tallied, not personalized, and the awareness that we were "keeping track" seemed to help settle the group occasionally, while not stifling dialogue. Students were often encouraged to turn and speak directly to their classmates in an attempt to get them listening to each other and not only the teacher. The summarizer turned in a paper with the written summary following each lesson.

Examples of topics that were explored by the use of informal logic were: What is testing? Why do people tease? What is the difference between discovery and invention? What is personal identity? Is it OK to cry? When?

Formal logic-discussions centered on ideas surrounding four forms of standardized sentences, simple "membership" diagrams, and sentences which show relationships of contradiction, symmetry ("turn around") and transitivity ("carry over").

Getting children to move from "All" to "Some" can be a major step in overcoming certain prejudices or an overreliance on generalizations and stereotypes. "Everyone's doing it," becomes "Some are . . . and Some are not . . ." "All scientists believe \_\_\_\_\_" becomes "Some are those who believe \_\_\_\_\_, and some are those who do not believe \_\_\_\_\_."

Children were able to handle the ex-

amples of turn around and carry over relationships that are in the novel and they were able to make up their own. This way of thinking about language and thinking made them more aware of their own spoken sentences. They were also able to understand that a carry-over relationship might be *valid* in terms of following from the premises, but *not necessarily true*, depending on the truth of the premises. This is an important step in evaluating belief and understanding the basis upon which they and others might build "world view" type statements.

### Description of Setting

All students tested were in the sixth grade at Salem Academy, a private non-denominational Christian school, located in West Salem. Most students are from middle/upper middle class families and have homes generally supportive of education and interested in the activities and development of their children.

The 48 children enrolled in the sixth grade are in two separate self-contained classrooms. Each room had 24 students, with 15 boys and 9 girls in each. The rooms were separate from each other during the school day, except for daily recesses, lunch, and a PE class held three times per week. Many of the children within and between classes are good friends, play together on athletic teams, and invite one another over for parties and other special times. Most have attended the school for more than a year. Other than being in two separate classrooms with different teachers, these children seem very similar as groups. During the implementation period, one group (E) was introduced to *Philosophy for Children* through *Harry Stottlemeier's Discovery* (Lipman, 1982). The manual, *Philosophical Inquiry: An Instruction Manual to Accompany Harry Stottlemeier's Discovery*, (Lipman, Sharp & Oscanyan, 1979, 1984) provided a guide with alternative worksheets for formal/informal logic discussions. Some comparisons between the E and C group are below:

E

(N) 24 (15 boys, 9 girls)

Age: (mean) 12 years, ½ month

March/1987 SAT scores. (Class mean)

(percentile/stanine)

Total reading: 96/9

Reading Comp: 94/8

C

(N) 24 (15 boys, 9 girls)

Age: (mean) 12 years 3 months

March/1987 SAT scores. (Class mean)  
(percentile/stanine)

Total reading: 98/9

Reading Comp: 99/9

The program, *Philosophy for Children*, approaches philosophy with the idea that it (philosophy) is inseparable from moral/ethical considerations. The program assumes responsibility, accountability and opportunity for schools (teachers) to help children grow in their *capacity* for thought and their ability to *find meaning* in life and education. The program also espouses the worth of individuals—every individual's worth and contribution to a "community of inquiry" and to the process of being drawn out and revealed and developed as a person.

The program is not just a way of "getting at" reasoning skills. "Reasoning" *per se* can be useful in the sense of helping to solve problems or complete projects that range from building something, to maintaining or fixing it, or working out difficulties between people. But some deeper "problems" come out of our need as persons to find meaning in life. Logic must be coupled with meaning to give heart to education, and this begins in many homes prior to the start of formal education and should be nurtured from the beginning of the latter. Searching for meaning is part of what it is to be a person, at 4 or 5, or 50 . . .! And faulty thinking, the holding of stereotype and prejudice, the frustration of meaninglessness and boredom are likewise found all along the chronological spectrum of life. So *Philosophy for Children* seeks, not only to encourage and stimulate normative reasoning and critical thinking skills, but also to facilitate the search for personal understanding and insight that is part of the bigger picture of life.

So, teaching children to "think well and to think for themselves" (Sharp, 1984, p. 3) is a major objective of philosophy for children.

Another important aim of "doing philosophy with children at the elemen-



tary school level is to turn classrooms into communities of inquiry" (Sharp, 1987, p. 37). Shared experiences of reading the text and dialogue (Sharp, 1986, 1987) lead to "inner dialectical and dialogical discourse" which is a "necessary condition for the having of ideas" (Sharp, 1986, p. 192). Such a process requires persistence.

However, some students and theorists of human development have suggested that the sequences of cognitive growth in children preclude the possibility of true logical, reasoned and principled thought and behavior in children. For example, it is theorized (Piaget in Shaffer, 1985, pp. 355-356) that, beginning at about age eleven, a process of "formal operations" reasoning begins to take place. This process is a gradual one, taking several years, and eventuates in the ability to "think more rationally and systematically about abstract concepts and hypothetical events" (Shaffer, 1985, p. 355). It is likewise suggested (*ibid.*, p. 356) that "adolescents are much slower to acquire formal operations than Piaget had thought, and that a

review of the literature suggests that a sizeable percentage of American adults do not reason at the formal level and that there are some societies where no one solves Piaget's formal-operational problems.

Thus, why teach *philosophy* (which often deals with the abstract and hypothetical) to *children*? Perhaps the above-mentioned theory puts an inordinate emphasis on a view of cognition that involves the solving of puzzles, analytical "scientific" reasoning that relies on a large amount of sequenced content, or considerations of global issues, which again rely on specific content and/or experience that necessitates an accumulation over years of development and a certain background of education. In fact, perhaps such a theory of development is a function of one's literacy, schooling, and enculturation interpreted in such a way as "to sustain prior theoretical commitments" (Gellatly, 1987, p. 46). Furthermore, many *mental acts* or predispositions to certain ways of thinking are not so closely hitched to or dependent on such a view of cognitive development. Wondering, sensitivity to

the feelings of others, creative thought, and intuition are examples of thinking that may be highly individualistic and not related to chronological age, *per se*. More important, a deterministic point of view that does not recognize the possibility or significance of moral reasoning, beginning at a surprisingly early age is not compatible with much of our experience with children that reveals their disposition to thinking and feeling in ways indicative of a person behind the thought, a person preparing to be an adult.

. . . he (Piaget) did not often consider the context of observed moral judgments in terms of the relationships and social situations involved . . . .

Comparison of the children's reasoning about matters of justice with their reasoning when it is based on painful moral experience of relationships suggests that Piaget may have underestimated the conventional, socially structured nature of cooperation and reciprocity . . . They (children) are open to and tolerant of moral complexity and ambiguity, and are able to deal cognitively in certain contexts with direct personal moral experience. . . (Skrimshire, 1987, pp. 99, 103).

The idea that young children are not truly capable of such reasoning is also inherent in Kohlberg's (1981, 1984) theory of ethical stages, which supposes that one would not find behavior based on true, universal principles, prior to the onset of adolescence and Piaget's stages of "formal operations reasoning." But, as everyday experience and experience with children doing *Philosophy for Children* shows, this does not seem to be the case, especially when considering the informal, interpersonal, philosophical, and moral reasoning so much a part of these experiences. Children have profound insights to share.

Implicit in concepts such as "*every child in the classroom should make a difference*," (Lipman, Sharp & Oscanyan, 1980, p. 155), free will, and moral choice is an idea that each individual owns a certain accountability based on the liberty to select self-chosen (rather than other-imposed) beliefs and behaviors. This is, of course, a philosophical position in itself, but one that certainly most individuals would desire for themselves. But words such as account-

ability and freedom presuppose degrees or limits, beyond which belief or behavior could cease to be constructive and begins a destructive cycle in individuals and society. So how does one encourage liberty (or even "autonomy") without an appeal to moral relativism and limits without the use of indoctrination? Through reflection, respect, and an appeal to reasonableness in all of its facets, *Philosophy for Children* encourages that balance, although it is difficult to achieve. Children are encouraged to see how their beliefs and actions fit into the whole picture of life, much as a musical performer must *voluntarily* limit his/her behaviors in such a way as to allow the whole piece to make sense and to be an adventure in which many others are permitted to play their part.

Such reasoning can help children visualize the consequences of their actions and may motivate a change in belief or behavior. And there is validity to the idea that in the *process* or *method* of moral inquiry, children gain confidence to think and search for reasonable answers. By allowing and encouraging such thinking, simple indoctrination, with the possibility of weakened or unreasoned commitment, may be averted, and a self-chosen commitment to moral decision and interest enhanced. The emphasis is not, however, on *self-chosen* without regard to the *content* or *substance* of choice; rather, it is on a self-chosen commitment to content and action that nurtures and protects the life of each person and the group in an ultimate sense.

It can be seen that, because philosophy presupposes a commitment to open inquiry, and a certain aversion to indoctrination, it may create concerns in those who feel a definite commitment to a particular body of knowledge and truth, or to a set of behaviors and manner of life. This concern may be well founded for in the writings of those generally supportive of open inquiry and mutual respect one finds references to ideas build on presuppositions and commitment to a particular world view. For example, Sharp (1987, p. 39) suggests that "human beings have evolved conceptions of cognitive virtues that have been of help in creating civilizations out of barbarous conditions." This

is spoken as if it were a matter of uncontested fact, perhaps precluding the possibility of another origin of "cognitive virtues," or interpretation of history. Thus, the role of the teacher becomes very important. Trust within the classroom comes not only from the opportunity for each person to share (in the dialogue) their own ideas, but also in the commitment to a respect for reasonable, sensible thinking that can be examined and weighed by all those present, in an atmosphere of noncondemnation. Thus, indoctrination is neither allowed to squelch an honest search for truth nor to exalt prematurely or incorrectly a disrespectful or unreasonable way of thinking. Experience would tell us that commitments are deeper and more lasting when we not only know *what* we think is best to believe or do, *but also why* it is credible to us and upon what foundation or presuppositions it rests.

Almost all convictions, beliefs and justifications for behaviors can be traced to basic assumptions, and through philosophical discussion, children and adults have the opportunity to examine the credibility of their own (belief and action) as well as to learn how to respond in love and respectfulness to those who may differ. Also, *many* ideas are not the kind of considerations that have easy closure (*e.g.*, What is teasing? and Is teasing *ever* O.K.?) Through open discussion each person is able to think about, clarify and amend his own views as he verbalizes and then listens carefully to others' responses to his own thoughts *and* to their verbalization of theirs. It would seem that *all* world views ultimately rest on a faith of sorts and that (for now) many common human experiences are unable to be completely understood, boxed and finalized. Therefore, philosophical discussion, when properly organized and guided can be a tremendous source of community, self-understanding, and acceptance in a classroom or family setting. And, as the results of this study indicate, such discussion is helpful in increasing the thinking/reasoning skills of children, upon which these and other achievements rest.

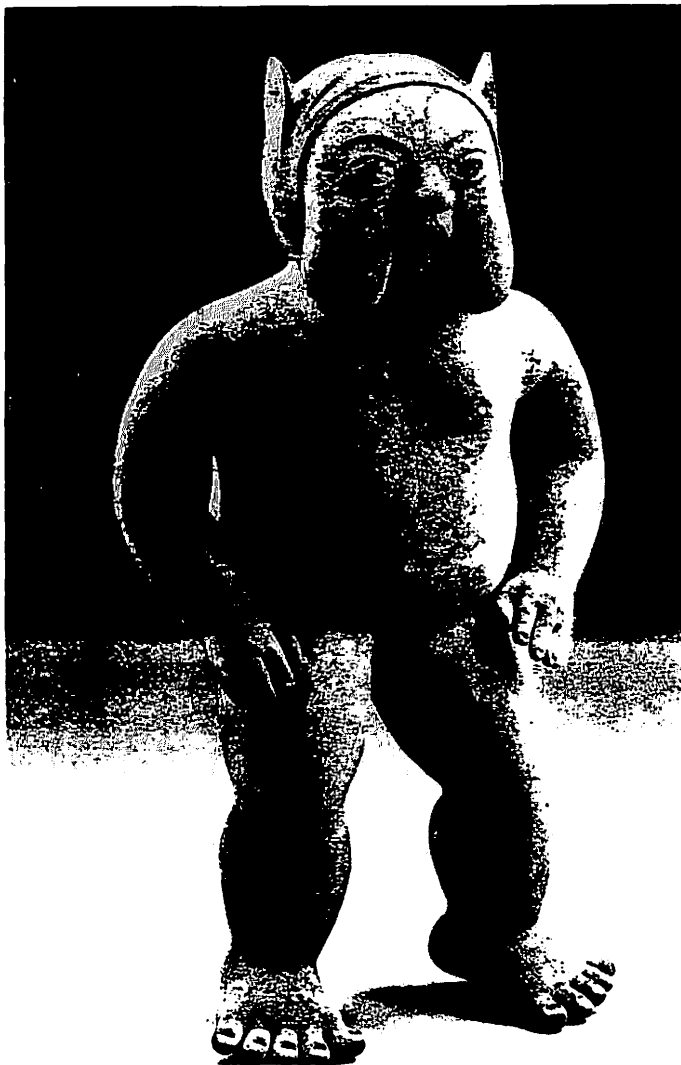
Before and during the implementation of this program I emphasized the following points about thinking and

philosophy in general.

1. Thoughts can be taken captive, and take captive.
2. Thoughts have transforming power, and ideas have consequences.
3. We can choose the thoughts upon which we will reflect; we can choose to think about good and healthy things.
4. Some thoughts are foolish. We do not have to follow every thought or act upon every thought (see #1).

8. There is a philosophy which depends on human, worldly tradition but which is empty and hollow and deceptive, in the sense that it dogmatically denies hope.
9. Some ideas are falsely called "science" and "knowledge."
10. Consider possibilities and attempt to distinguish them from reality when possible.

Jesus said, "Do not judge according to appearance, but judge with righteous



5. We should be willing to examine ourselves, including our thoughts.
6. It is our goal to not be immature in our thinking, but rather to develop maturity of thought.
7. Be open to renewal—allow a "flexible" renewal of thought that breaks the rigid mold or convention of the world—both the secular "world" and the religious "world"—when there is compelling evidence to question the "convention."

judgment." A follower of His wrote, "What is seen was not made out of things which are visible." Philosophical inquiry and a dialogue based on mutual respect can assist children in learning to make judgments and to see the non-obvious, that which is often overlooked. Both statements are a call to reflective thinking and imply man's capacity for insight and responsible judgment. It is a joy to challenge children to an examination of thought on reasonable terms.

### Project Design and Findings

Lipman & Gazzard (1986) cite the results of sixteen different studies involved in using the curriculum from *Philosophy for Children*. In each case the experimental groups gained significantly in performance on reasoning skills tests. These studies were conducted between 1970 and 1985; the length of each study varied from 9 weeks to 2 years. Likewise, Strohecker (1986) reported gains in creative thinking as a result of using this curriculum.

The measurable object of this project was to improve the reasoning skills of sixth-grade students. A further objective was to involve them in a "community of inquiry" wherein they could discover (1) what and why they believe certain things, and (2) that they are capable of reasonable thinking.

The New Jersey Test of Reasoning Skills (Form B, c 1983, revised 1985)

was used as a pre-test with both experimental and control groups, and then, as a post-test. This was a quasi-experiment, because intact groups were used. The pre-, post-test design allowed the calculation of *gain* for each student and mean gain for each class. The mean score for pre-test and post-test were also used. T-tests and one-, two-way analysis of variance (ANOVA) were used to assess the statistical significance of the variability in the two groups as a presumed result of the curriculum implementation. The Stanford Achievement Test was administered schoolwide between the pre-test and full intervention began, so an attempt was made to correlate reading comprehension stanine scores with pre-test success. Scores of all tests were randomly assigned. Table I shows the experimental findings of this project.

**TABLE I: PROJECT FINDINGS**

Experimental Group	Control Group
N (23)	N (22)
X pretest 35.8	X pretest 38.3
X post-test 40.4	post-test 40.3
X gain (post-pre) 4.65	X gain (post-pre) 1.95
T-test for variance on difference in gain, items 1-25 (first half of test)	
t = 2.26	
p < .025	
T-test for variance on difference in gain, items 1-50 (whole test)	
t = 2.29	
p < .025	

ANOVA	Source	df	SS	MS	F
(one-way)	Between groups	1	81.83	81.83	
	Within groups	43	676.17	15.72	5.21*
					*p < .05

ANOVA	Source	df	SS	MS	F
(two-way)	Between groups	8	319.74	106.58	
	Factor 1 (treatment)	1	32.4	32.4	1.37
	Factor 2 (testing)	1	245.25	245.25	10.30*
	Interaction (1 X 2)	1	42.09	42.09	1.77
	Within groups	86		23.8	
					*p < .01

Results of these statistical measures indicate that the null hypothesis, that there would be no difference in the mean gain between classes, can be rejected. That is to say, the results of this experiment tend strongly to confirm the hypothesis that sixth-grade children taught Philosophy for Children increase

significantly their reasoning capacity compared with a similar group of children not receiving the program. Perhaps most remarkable of these results is that this beneficial impact of the program occurred in a 2-month period.

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*Prof. A. Gray ("AI") Thompson shuttles between Marquette University and Guatemala.*



*He loved Philosophy for Children class. He used to say, "That's going to take a little more thought, I think."*



*Beautiful and smart—no, beautifully smart. In the best sense.*

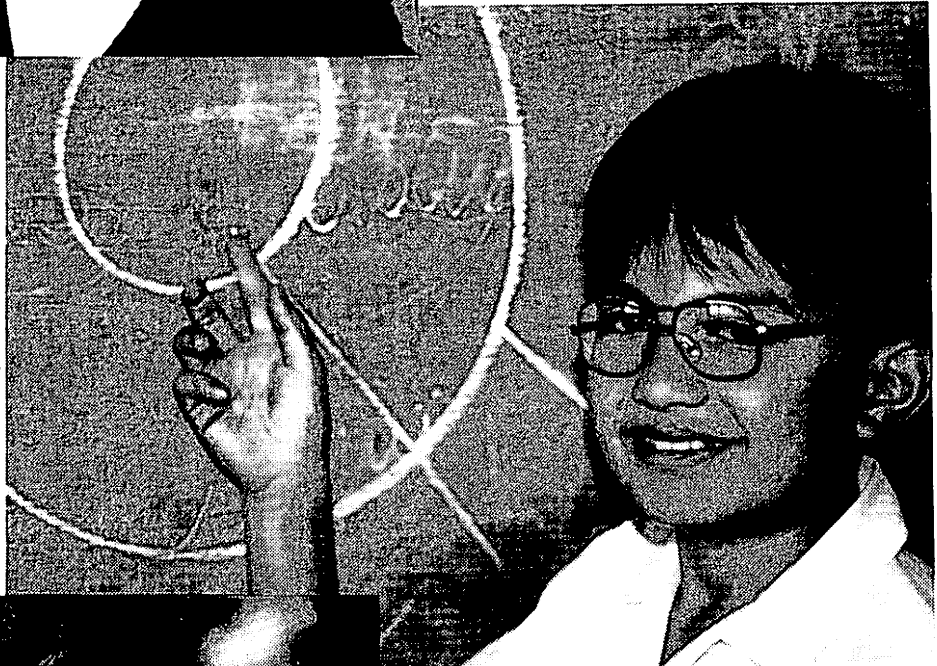
## *Philosophy Students in Guatemala*

**A. Gray Thompson**





Could "see" stuff most teachers haven't thought of. He talked about Mother Nature being the great inventor.



This young fellow was wonderful—he's working on wholepart—degreekind, etc.—explaining with good reasons, like a machine gun.



From Nicaragua. Smart. Talked like a machine gun. Ready for a good verbal fight. A pleasure.

# Reflections

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

## Can philosophical literature deal with individuals?

It is a lack of this respect for an imaginative attention to the individual that seems to me to be, throughout, the deepest failure of Scruton's book.

Does this imply that a good work of philosophy cannot be written on the subject of sexual experience? For philosophy has traditionally been committed to an "ascent" from the perception of particulars to the intellectual grasp of universals. It seems to me that good philosophy will always have a place in the investigation of any matter of deep human importance, because of its commitment to clarity, to carefully drawn distinctions, to calm arguments rather than to prejudice and dogmatic assertion. But if philosophy is to illuminate sexual experience (or, indeed, any deep and intimate aspect of people's lives) it must, I think, become more attentive to particular histories, more explicit about the personal and cultural origins of its own statements, more tentative and suggestive, more humble before the mystery and complexity of living, than Scruton's philosophy is, and than contemporary philosophy (in both the Anglo-American and the Continental traditions) has usually been. It must, as the best works of philosophy on this topic, Plato's *Symposium* and *Phaedrus*, have done, find a language that retains philosophy's commitment to clarity and to explanation, while also expressing a respect for particularity and complexity.

Philosophy must recognize as well that sometimes there can be more precision of the relevant kind in a complex novelistic description than in the abstract and simplified terms of theoretical discourse; more accuracy sometimes in indefiniteness (where reality is itself be-

wildering and unclear) than in a false decisiveness of statement. Describing the novelist's art, Henry James spoke in his preface to *The Golden Bowl* of an "immense array of terms, perceptual and expressional, that . . . simply looked over the heads of the standing terms—or perhaps rather, like alert winged creatures, perched on those diminished summits and aspired to a clearer air." If philosophy is to become sufficiently alert on Scruton's topic, it needs to borrow those wings — or rather to discover them, as Plato's *Phaedrus* recommends, within its own soul.

—Martha Nussbaum, in a review of Roger Scruton's *Sexual Desire*, *New York Review of Books*, December 18, 1986.

## On the relationship of the schools to the universities

Good elementary schools promote the flourishing of gymnasia and prepare able students and teachers in always sufficient numbers. The gymnasia themselves serve the universities and from the latter the Academy acquires men with talent and basic knowledge. Thus, the lower schools are the primary seedbeds of enlightenment, and it is essential that they be protected from falling apart . . . Without good schools for commoners, we shall never have good universities or academies. If a half century before the foundation of academies and universities, we had established modest, humble schools for the training of elementary school teachers, our academies would not now be in ruins and our elementary schools only on paper.

—Count Sergei Uvarov, Supt. of Schools, St. Petersburg, Russia, 1817.



A Few Comparisons . . .

### Heraclitus:

Whatever we see when awake is death; when asleep, dreams.

### French child, age 7:

When we are dead, we dream that we are dead.

\* \* \*

### Zeno:

Even the swiftest runner will never overtake the slowest, because the pursuer must first reach the point from which the pursued has set out, so that the slower runner will always be some distance ahead.

### Chicago child, age 4:

"Shouldn't you shut the water off now, dear?"

"No, it's all right. You see, the distance between the water and the edge of the tub just keeps getting less and less, so the water's not going to overflow."

\* \* \*

### Pythagoreans (according to Aristotle):

The soul hovers in the air "like the motes in a sunbeam."

### American boy, age 11:

"How is the body related to the mind? It's like the grapefruit to the taste of the grapefruit."

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# *Thinking Skills in Science and Philosophy for Children*

**Ann Gazzard**

The contents of this paper stem first from the belief that philosophy is an integral part of every discipline and therefore should similarly be an integral part of its instruction; and second from the belief that science more than any other discipline needs the complement of philosophy in its instruction, for it is scientific knowledge more than most that is accepted by the general population as being true.

In what follows both the nature of scientific knowledge and the way in which it is produced has been examined to determine the methods most befitting its instruction and the skills most required of its students. The Appendix is somewhat of an outline of the ideas presented here.

## **The Nature of Scientific Knowledge**

There are two features of scientific



knowledge that have important implications for the way in which science should be taught. The first concerns the generation and production of scientific knowledge, and the second concerns the epistemic status of that knowledge once it is produced.

Scientific knowledge is *generative*. That is to say, it is constructed. It is information, created and for the most part, accepted by the professional scientific community. Moreover, what other individuals know of science is further construed from this accepted material into a body of understanding that makes sense in terms of what they already know. At all levels then, professional, semi-professional and lay, knowledge of reality through science is created. It is a product of the knowledge that the individuals already have and the thinking in which they engage when assimilating the new information with their former beliefs. In other words, scientific understanding is concerned with the reliable construction of knowledge by connecting claims with each other on the one hand, and the assimilation of the new information with the old on the other. If the goal of science, then, is to help persons better understand their world, to help them understand science more comprehensively, and accordingly, to help them function well as professional scientists, then science education needs to attend to practices that stimulate and improve these very processes.

Let us look more closely therefore, at what the construction and assimilation of scientific knowledge involve. If knowledge is to be reliably constructed, then an individual's beliefs, claims, assertions, etc., have to be connected logically. That is to say, the newly-acquired knowledge has to be coherent and consistent within itself as well as coherent and consistent with what is already known. At the same time, however, the ability to construct scientific knowledge in keeping with its generative epistemology requires that it be done with the awareness that any knowledge claims that are produced are, in the long run, *interpretations* of events rather than necessarily being on-to-one correspondences with the events themselves. In other words, students need also to be able to recognize that the knowledge

presented to them is someone else's interpretation of a particular idea or phenomenon, and moreover, that the form in which they finally understand and accept it is their own interpretation and one that is always at least a second-generation interpretation of the original idea. For example, the full meaning of 'All metals expand when heated,' can only be appreciated if, when it is learned, it is also understood that, however reliable the claim is, it is only the result of the scientific community's observa-

ing the similarities and differences in the relationships within each of the two things. Accordingly, it is the cornerstone for understanding new information and the skill upon which assimilation rests. It enables students to translate any information into their own language, that is, into terms that they already understand and it enables them further to move from one discipline to another, understanding each in their own language and each in terms of one of the other disciplines if need be.

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*“ . . . if the nature of science is to be successfully understood, then students need to be trained (1) in the importance of logical coherence and consistency, (2) in making interpretations that are meaningful and reliable, (3) in analogical reasoning, and (4) in the search for good reasons. ”*

---

tion and consequent interpretation of what appears to happen when various metals are heated.

While the processes of constructing knowledge and assimilating new knowledge feed each other, they are somewhat distinct in their operation. Assimilation is one of the ways in which this new incoming information is made meaningful, and, for the most part, it functions in one of three ways. Either the new information is related to the former-held beliefs by making the necessary adjustments in the former-held beliefs or it is connected by making the necessary adjustments to the new information, or it is accepted by making no adjustments at all and assimilating the new information meaningfully as it stands. Irrespective of which of these processes is involved, however, it is clear that the process of assimilation involves relating two sets of information, the new and the old, to each other, and then determining what changes are needed in either set such that the new can be accommodated by the old. The skill primarily responsible for being able to relate two sets of information to each other is analogical reasoning. Analogical reasoning rests upon finding similarities and differences in any two things, and more complex forms of it rest upon find-

Irrespective of whether the old information is adjusted to the new or the new to the old, the search for good reasons is a skill, like analogical reasoning, at the center of the process. In other words, no matter whether the changes that need to be made concern the old information or the new, good reasons are needed to make them. Good reasons are generally needed to alter one's former-held beliefs, and the way in which science is presented, that is—as a very reliable body of information—also suggests that very good reasons are needed to alter any part of it. Learning what constitutes a good reason and knowing how to apply it is as much a part of assimilating new information as it is a part of justifying the beliefs that one already has.

Thus far, the generative nature of scientific knowledge, has revealed that if the nature of science is to be successfully understood, then students need to be trained (1) in the importance of logical coherence and consistency, (2) in making interpretations that are meaningful and reliable, (3) in analogical reasoning, and (4) in the search for good reasons. Let us turn now to the second important feature of scientific knowledge, namely, its *fallibilism* and see what other types of thinking its successful implementation might also entail.

Scientific knowledge is fallibilistic. That is to say, the knowledge that science generates is not absolute in the 'truths' it reveals. Rather, the information that the practice of science generates is considered to be the best possible understanding for the moment of the phenomena in question. Given the limits of the scientific methodology, the limits of the previous knowledge upon which any present knowledge rests, the limits of man's understanding, and given the possibility that the future may reveal information which necessitates reformulations of current knowledge, science continues to present as a product of these restrictions the most accurate account of events possible at any given time.

This aspect of scientific knowledge makes certain of its own demands upon what the practices of a responsible science should be. First, the concepts, laws, theories and methodology of science need to be presented when they are taught that way, as only tentatively the best descriptions and explanations of the phenomenon and only tentatively, the best method for understanding them. It is important for students to realize that the explanation or description that is given by science is not the only one possible. It is important that they realize that science is just one of the many possible metaphysical frameworks that could be brought to bear in understanding this or that particular phenomenon, and it is important that they realize that, given science has been selected as the method of inquiry, the explanation at hand may, in the long run, not be the best possible explanation that there is. As important as it is to present the contents of science in this way, it is equally important to provide students with the opportunity to explore its contents in ways that guarantee their being held tentatively. Students of science need to know how to work with knowledge and at the same time be aware of its limits. This process of flexible thinking, of not holding ideas rigidly, needs continual practice and it can start to be developed in the early years of school. All concepts, for example, have fuzzy edges, even the concepts of science that are wont to be treated as being definitive. The outer edges of most con-

cepts have areas of overlap with other concepts and there are areas where there is debate as to whether a particular *x*, for example, is an instance of the concept at all. Science education in the early years, then, can start with conceptual exploration—with exploring concepts to appreciate their problems and limits. It is only by experiencing the limits and problems of concepts that children can be expected to appreciate the importance of using them with an open-mind, and with a certain amount of reservation.

By way of illustrating the detrimental effects to further knowledge acquisition of holding concepts rigidly, let us consider a concept from zoology and a boy called Johnnie. Johnnie learns from the dictionary that a raccoon is 'a black-masked, pointed-face mammal with a black-ringed bush tail that is found in North and South America.' Johnnie's concept of 'raccoon' comes to include animals that look like this and that are in North and South America. After a trip to England where he sees an animal that looks exactly like a raccoon, he reasons in the following way:

"When I was in England, I saw a raccoon, but I must have been wrong, it must have been some other animal with which I'm not familiar. Raccoons don't live in England."

Johnnie's reasoning here is poor. The concept 'raccoon' is being held rigidly and it is preventing him from broadening his knowledge in the face of new evidence that might allow it. A less fixed use of the concept and one that might generate its ultimate revision, however, would enable Johnnie to reason something like this:

"When I was in England, I saw a raccoon, or could I have made a mistake? Could it have been some other animal that I don't know about yet? Or might it really have been a raccoon? Could it be a raccoon even though it was in England? How could that be? Under what circumstances could a raccoon be in England? Is the time I saw it like that? Everything else about it was like a raccoon. Could an animal still be a raccoon even if one little thing about it was not like a raccoon? . . . How else could I find out whether or not it was, or possibly could have been a raccoon? . . . etc."

Similarly, it is important that students of science learn to think openly about the

methodology they are using. The fixed use of any method, that is closure to its further revision, necessarily curtails the knowledge that can be derived from any phenomenon in the same way that the fixed use of a concept does.

The view that the 'truths' of science are provisional has a second important implication for the teaching of science, namely, that epistemology be taught *in* science from the time it is first introduced into the curriculum. Epistemology is generally thought to be a subject suitable only for college level students. However, epistemological inquiry, that is the *doing* of epistemology, is something that even very young children do. Questions like, "How do you know that?" "Is that *really* true?" and "Why should I believe you?" are questions that young children are wont to ask. Such questions reveal that children are perplexed by epistemological matters and that they have already begun epistemological inquiry. Given that children have this interest and ability, it is not unreasonable to suggest that the planned intervention of epistemological inquiry in the elementary curriculum might foreclose the necessity of its remedial intervention in later years. The need to correct students' understandings and expectations of scientific knowledge might be forestalled if students learned at a young age to appreciate the problematic nature of knowledge and truth. Irrespective of the potentially beneficial consequences of including epistemology in the education of the young, its inclusion in elementary education is required if science is to be taught with due respect to its fallibility. To exclude inquiry into the meaning of what one knows when one claims to know something is science, is to misrepresent not only the value of the scientific enterprise but also its very nature.

The provisional character of scientific truths then, implies the need for epistemology in science education, and moreover, it indicates at least four things that epistemology *in* science education should do. First, it should reveal the ways in which statements assume different sets of truth values and allow different claims to truth depending upon the epistemological qualifiers that proceed them. For example, qualifiers

such as "It is claimed that . . .," "It is believed that . . .," "It is known that . . .," "It is observed that . . .," and "It is predicted . . .," each indicate different reasons for calling a statement true, or for calling a fact a fact.

formulations have the greatest claims to truth. Skills such as these help students to be able to evaluate scientific information critically. They become able to assess the factual potential of any statement and they become alert to the in-

truth. Students of science need to appreciate that the meaning of a statement cannot be fully understood unless the conditions that guarantee its truth and falsity are also understood. For example, the meaning of the statement "Water freezes at 32 °F" cannot be fully understood if it is not also understood that there are conditions under which the statement is not true, for instance, the case of sea water, or boiling water in a freezing cold room. All phenomena occur in contexts, and statements are connected to the phenomena they describe by these contexts. Accordingly, statements derive their meaning by understanding the conditions in which the phenomena they describe occur. Thus, it would be of little value to a meaningful education if science were taught out of the contexts that validate it. Moreover, part of those very contexts include exploration into the conditions that verify each of its more specific claims. Consequently, students, if they are ultimately to understand any information, must learn to inquire into the range of possible conditions that both verify and falsify it.

The third thing that epistemological inquiry in science should do is expose students to the problematic nature of truth. Students need to realize why the existence of absolute truth is controversial, and why, even if it does exist, science could not lay claim to disclosing it. It is only in this way that students can appreciate scientific knowledge in its best perspective, that is, as temporary truths on the path to ever-growing knowledge. Of course, philosophy of science specifically treats these issues, inasmuch as it is concerned to portray as distinctly as possible the relationships between knowledge, science and truth. But the understanding of science that these approaches offer need not be reserved for college-level populations. For while philosophy of science courses help older students appreciate the importance of science as continual inquiry, elementary school children can also be afforded this understanding, not by learning theories *about* truth but rather by inquiring first-hand into the issue as it occurs to them in their school lessons and in their everyday lives. Children readily engage in inquiry about



Epistemological inquiry should help students explore these reasons, the differences in meaning they generate and the difference in the reliability of the knowledge they qualify. For example, students need to be able to determine whether a statement like, "All metals expand when heated," means "It is believed that 'All . . .'" or "It has been observed that . . ." or "It is claimed that 'All metals expand when heated'" and they need to know which

adequacy of claims that are not epistemologically qualified and to the inadequacy of knowledge sources that lack such qualifications. These skills may not in themselves be enough to evaluate scientific claims thoroughly, but without them students cannot be held responsible for merely coming to accept all that science tells them.

Second, epistemological inquiry in science should also be concerned with the relationship between contexts and

truth—beginning with questions like, “How do you know that’s the truth?” “Is that the whole truth?” and “What’s the truth?” What’s more, they are open to having their inquiry directed into areas where they find for themselves the importance of the circumstances to truth, the possible importance of truth, the interaction between truth and mind, and the various meanings that truth itself can have. The more children are exposed to these problematic aspects of truth and the more they are encouraged to inquire continually into the truth of whatever it is they are confronting, then the more they are engaging in the very process of science itself.

Finally, epistemological inquiry should engage students continually in an appraisal of the reasons they have for calling something true. Students need to be aware that there are many possible reasons for calling something true, and that the best reasons are not always the same in different situations. For example, Johnnie might have as a reason for calling something true that his brother told him it was so. But obviously, there are circumstances under which this would not count as a good reason and others under which it would. If his brother had said, for example, that “Fiats are good cars,” then this would more likely count as a good reason for believing it to be true if his brother were an authority on cars than if he knew very little about them. In other words, children need exposure to the variety of reasons one might have for calling something true and they need practice in identifying and applying the best type of reason in any given situation. They need to know, for example, the differences between calling something true by definition, true by evidence, true by authority, and true by belief, and they need to know under what circumstances any one of these is a reliable predictor of truth.

This leads us to a final point that needs to be made about teaching science if its fallibilism is to be adequately represented. Through practice with its method, students need to realize *for themselves* that science does not provide answers in the sense of closure. Rather, it is important for them to come to terms with the view that its answers are more

like the starting points for further questioning and investigation, and that science itself is perhaps best conceived of as perpetual inquiry. Problem-finding and question-asking, then, are as important to science as the more recognized skill of problem-solving. Continual inquiry requires finding the problems in the temporary answers that it provides as well as in the methods used to create them, and problem-finding presupposes the ability to ask questions. Of course, problems can be identified intuitively, but in most cases, more than this is required. Knowing how to ask those questions that could unveil hidden difficulties is as much a part of problem-finding as knowing how to ask the questions that might further clarify the problem at hand. This is not to say that all problems uncovered will be relevant to further *scientific* inquiry. All problems do, however, deserve further inquiry of some sort, and it is the business of science, as it is of any other discipline, to acknowledge all problems as they arise, sort out the ones relevant to the inquiry in the discipline at hand, and suggest ways of dealing with the rest.

Let me quickly restate then the skills that would be needed to engage in a science education that would be true to the nature of the knowledge it sought to teach. On the one hand, there are, because of the generative epistemology of science, the skills in service of logic, interpretation, analogical reasoning, and the search for good reasons. On the other, there are, because of its fallibilism, the processes engaged by holding knowledge loosely, understanding the differences between claims, belief and observations, understanding the connection between the truth of an event and the conditions that allow it, understanding the problematic nature of truth, and understanding the open-ended nature of scientific answers. Important to each of these is the ability to ask questions and find problems, and more specifically to the issue of truth and circumstances, the ability to draw distinctions and make connections. For example, one cannot hold concepts tentatively if one cannot find problems in them; one cannot see the importance of distinguishing observations and beliefs if one cannot see the problem with calling a belief an observa-

tion; and one will not appreciate the necessarily open-ended nature of scientific answers if one cannot find the problems in those answers and indeed within the concept of truth itself. Similarly, one cannot evaluate the meaning of a claim if one cannot make the connections that relate it to the conditions that permit its truth. I will return to these skills later, but for now, let us turn from the nature of scientific knowledge to the process of science itself, to see what skills it entails.

### The Scientific Process

The process of science is inquiry. One aspect of its inquiry it shares with all other disciplines, while another aspect of it is peculiar to the discipline of science itself. Let us consider each of these in turn.

Common to all disciplines is the search to understand the information that is elicited. While every discipline might have its own particular way of ascertaining knowledge, the process of understanding that knowledge, of evaluating it and of discovering ways to improve upon it are processes that span all disciplines equally. It is, as it were, a mode of inquiry common to all disciplines and applicable to all types of information. There are certain things, however, that this type of inquiry *must* do if the discipline in question and the knowledge it produces are to be well understood.

First, the terms in which the knowledge of the discipline are spelled out must be clarified. This requires of students that they be able to say what the terms mean in their own language as well as being able to determine if there are differences in their use of them compared with the way others use them.

Second, students need to engage in conceptual exploration. In order for knowledge to be understood, that is, the concepts that comprise it need to be explored for their limits and for their overlap with other concepts. Students cannot work successfully with a concept if they do not appreciate the range of its possible meaning, nor can they draw the necessary connections and distinctions between this and other concepts, thereby making the overall tone of their knowledge more integrated and mean-

ingful, if they do not know the full extent of the meaning it can assume.

Thirdly, it is important for inquiry in all disciplines, and most particularly in science, that there be a continual reappraisal of its methods and content. Students must be open to and capable of revising both in the light of new alternatives that are created.

Fourthly, regular inquiry is needed into the ethical, metaphysical and logical consequences of the discipline and its practices. For example, a complete understanding of science is not forthcoming if the benefits to mankind of, say, research based on animal studies and genetic manipulation are not weighed with the ethical consequences of those very practices. And similarly, approaches to health care are necessarily myopic if they fail to consider treatments presupposing metaphysical systems different from that upon which orthodox medical treatment is based.

Perhaps the most important feature of all this inquiry into meaning and understanding is that it take place with others, that is, among persons who are, together, engaged by the same issues, and who, as a group, are committed to the practice of inquiry itself. It is not that an individual is necessarily incapable of understanding a discipline in the same way that a group working together might, but that most persons, from an early age on, do benefit from the ideas and points of view of other people. The full meaning of any term, for example, is not likely to be realized in the absence of group inquiry. Students need to share their understanding of terms with each other so that their most impartial meaning can emerge, and so that each of the students, as well as the group as a whole, can revise their own conceptions of terms in light of others that are more reasonable, more appealing, or simply more sensible. Similarly, the critical appraisal of any discipline benefits more from communal inquiry than it does from any one individual's. Thinking and talking with others provides the context that allows for the discovery of new ways of saying, making and doing things. New alternatives are advanced; alternatives, moreover, that are more likely to be well understood because they have come from one's

peers, and more likely to be vigorously defended and indicted for that very same reason.

Let us look more closely now at those methods of inquiry that the community of professional scientists have agreed upon to use. This second major aspect of scientific inquiry is that aspect of the process which, unlike the above, is specific to the discipline itself. The type of inquiry in which science engages is concerned with bringing meaning to experience by finding the order and regularities that there are in it. To do this, it searches for the similarities and differences among events, extracting those regularities that it finds or perceives there. In its attempt to formulate laws about such findings, and theories that might account for them, it also (whether suitably or not) constructs ways of testing the 'truth' of what it claims to have discovered. Whether or not the way in which the laws and theories are tested, that is, by the rejection or confirmation of predictions and whether or not predictions themselves are things that science ought to be concerned with, are questions at the center of what science is about. It is not my intention here to explore these problematic issues; rather, I am concerned to explicate the skills that scientific inquiry demands of its students. Yet, I do want to stress the injustice that is done to all students of science in courses that present it as having one possible goal, namely, prediction and control, as opposed to courses that present its alternative goals as well, namely, description and explanation. A course in science that was true to its integrity and fair to its students, therefore, would be one in which students were actively engaged in exploring these issues as well as in experiencing both these forms of scientific practice. Let us return, then, to the skills that the scientific method of inquiry requires of its participants.

I will delineate the skills in what follows: however, I will spend little time discussing them since they should be most familiar to educators as they are the skills generally regarded as the skills of science.

First, there are the skills associated with finding order, pattern and regularity in phenomena; processes each of

which depend upon the ability to perceive similarities and differences among those very phenomena. That is to say, one cannot find patterns in events or regularities between them if one cannot identify the ways in which they are the same and the ways in which they are different. What's more, one cannot articulate what these patterns are if one cannot reason analogically and indicate the ways in which the things are alike. Thus, the ability to draw distinctions, make connections and reason analogically are all skills essential to the first step of scientific inquiry.

The second cluster of skills are those in service of hypothesis formation and testing. Students need to be able to extract from a range of more specific contexts the regularities and patterns that they see there. In other words, they need to be able to separate foreground from background material, and hold either one constant for the sake of perceiving the other one more clearly. Giving students practice in working with part-whole relationships is perhaps the best way to accomplish this.

Once certain patterns and regularities have been identified, hypotheses as to the laws that govern them are then formed and tested. Perhaps the single most important skill for understanding what any hypothesis is doing and for understanding the results of its test, is the ability to think syllogistically. The underlying structure of any hypothesis is 'if x, then y'. Consequently, one has little chance of understanding the results of an experiment in terms of the hypothesis the experiment was designed to test, if one can't extrapolate the x's and y's that make the proposal valid. It was long thought that this so-called hypothetical thinking was the prerogative of the later years of childhood. However, there is now a considerable amount of research evidence to contest this claim.<sup>1</sup> Indeed, one need only to look at what children understand in the context of their daily lives to see that, at a young age, they already think that way. For example, the teacher of a first-grade class might say, "I don't see any hands up." The implication that the children understand is "Nobody knows the answer." In other words, they have been able to work from the claim that "If you know





the answer, then you'll have your hand up," to one of its valid conclusions, namely, "If there are no hands up, then no one knows the answer."

Understanding the meaning of an hypothesis, however, is only one aspect of the skills needed to construct and test it. There are also skills needed to carry out each of these processes. These are the

skills that serve observation, measurement, estimation, and other types of quantification, and they tend for the most part to be well covered in science programs. Unfortunately, however, they are, in most cases, the only skills of science that are disclosed. Many of the other skills discussed here, particularly those in service of meaning, are exclud-

ed either because they are considered unnecessary or because they are not even thought to be relevant.

Finally, scientific inquiry often requires being able to work with scientific equipment. Students need to be able to use a whole panoply of gadgets in their investigations. They need those skills required by caring for their instruments as

well as the know-how that goes with operating them. Perhaps the best way to develop these skills is through practice. Students need to be exposed to the equipment, shown what it means to care for it, and given the opportunity to explore the range of its possible use in experimental contexts that are meaningful.

It would be encouraging if the entire set of skills discussed in this paper were made available to children in their elementary education and beyond. However, this would still not be enough to teach science adequately for what would be the value of having those skills if they were not used. Students with a bag full of skills are not going to perform well in science or function well later on as professional scientists if they are not motivated or inspired to inquire in the first place. Science education then, needs also to stimulate inquiry. It needs to present material that is at least potentially stimulating and it needs to sensitize its students to the problematic and hence, the *need* for inquiry by showing them just how pervasive that need is in their school work and their everyday lives.

At this point I should like to consider Philosophy for Children and by way of closing, make a few remarks about its contribution to science education.

One of the main contributions it can make is by modeling the ways in which children can be made more aware of the problematic. It accomplishes this in a number of ways. First, the children's curriculum materials expose them to the problematic aspects of many words and ideas, and issues of life. For example, a third-grader raises her mother's eyelid and says, "Mommy, are you in there?" and a second-grader wonders whether or not giving pets names protects them from being killed. Second, the teachers' material shows teachers how to explore these issues even further with the students. Teachers are shown how to inquire into the things that are obviously problematic as well as how to uncover the problematic in issues less controversial. For example, there are guidelines for exploring renowned problematic issues like truth, space and time, but there are also many designed to elicit the contestable within the commonly accepted unproblematic. For example, the concept of "wetness" is introduced in

the elementary curriculum and it is explored by considering examples of things that are wet and not wet. The problematic is introduced when children are asked to decide whether things like moist, foggy, misty, damp, and humid are things that are wet, not wet, neither or both. And similarly, whether it is raining or not might, at first, seem unproblematic. But in this curriculum children are directed to the problematic with questions like, "What if there are just one or two drops, is it raining?" Third, Philosophy for Children shows educators how to sensitize children to the problematic by offering an alternative pedagogy that does just that. The community of inquiry exposes its participants to different ways of thinking and different points of view urging them to realize that what might for them seem unproblematic can be rendered complex by community involvement. Students are forced to realize that any one idea can have a number of meanings and that any one problem can be approached in numerous ways. In other words, students come to understand that while problems and ideas might for them admit of a simple solution or have a straightforward meaning, their communal resolution and understanding might not.

Finally, Philosophy for Children generates student respect for the problematic by having them practice logic. It thus provides them with a tool for identifying counterinstances and conditions that falsify or, at least, provide problems for claims. There are numerous other ways in which Philosophy for Children models instruction suitable for improved science teaching. By way of the community of inquiry, it demonstrates pedagogy capable of integrating and incorporating ethical, epistemological and metaphysical inquiry into children's discussions in ways that are meaningful *to the children*, and it immerses them unremittingly in the process of inquiry itself. The children are taught to listen to others, respect the procedures of discussion, reflect upon what they are doing and stay alert to the possible problematic in all they say and hear. What's more, the strategy of using children's ideas as the agenda for discussion is in keeping with many of the more recent recommendations for science

teaching. Children's conceptions of scientific phenomena have been shown generally to differ from the accepted scientific viewpoints.<sup>2</sup> The recommendation is to direct children's inquiry from where they are, systematically and gradually, to where the scientists are. It is in this respect also that Philosophy for Children provides a lead. In the discussions it fosters, it is always concerned to "start where the kids are." That is, children are encouraged always to express and clarify their ideas first before their elaboration and revision sets in. If educators want particular views understood by their students, they themselves must also be prepared to hear what their students have to say. They need to listen so that they will gain that same respect from their pupils and they need to listen in order to identify those ideas that might furnish the necessary steps in bridging their understanding.

Finally, a few words of caution. Philosophy for Children, even in its more specific scientific components like *Kio and Gus*, is designed to complement science instruction. It is not, that is, intended to supplant it.<sup>3</sup> To do this would require more focus than it has upon the skills peculiar to science like measurement and working with instruments, more attention than it now gives to scientific phenomena, and a less rigid presentation of the scientific concepts that it now has, when it does present them. But I am willing to submit that if only its approach to knowledge through inquiry were transferred to science, then a great service would be done to the latter.

#### Footnotes

1. See Carey's work, in particular "Are Children Fundamentally Different Kinds of Thinkers and Learners Than Adults?" Also Donaldson's work *Children's Minds* argues in this direction.
2. In particular, see Minstrell and Smith, "Alternative Conceptions and a Strategy for Change"; and Osborne, "Science Education: Where Do We Start?"
3. *Kio and Gus* is one of the elementary school programs in Philosophy for Children. It is targeted for the second grade with an emphasis upon botany and zoology.

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**APPENDIX**

**THINKING SKILLS IN SCIENCE EDUCATION**

	<b>Processes of Thinking</b>	<b>Dominant Thinking Skills</b>
<b>The Nature of Scientific Knowledge</b>	<ul style="list-style-type: none"> <li>—reasoning with logical coherence &amp; consistency</li> <li>—making interpretations</li> <li>—analogical reasoning</li> <li>—understanding good reasons</li> </ul>	
<b>Fallibilistic</b>	<ul style="list-style-type: none"> <li>—holding concepts &amp; methodology open-mindedly</li> <li>—understanding differences between claims, beliefs, etc.</li> <li>—understanding problematic nature of truth</li> <li>—understanding the connections between truth &amp; circumstances</li> <li>—understanding open-ended nature of scientific answers</li> </ul>	<ul style="list-style-type: none"> <li>—asking questions</li> <li>—finding problems</li> </ul>
<b>Inquiry into Meaning</b>	<ul style="list-style-type: none"> <li>—clarification of terms</li> <li>—conceptual inquiry</li> <li>—continual reappraisal of methods &amp; content</li> <li>—ongoing inquiry into ethical, logical and metaphysical consequences of methods and content</li> </ul>	<ul style="list-style-type: none"> <li>—communal thinking &amp; inquiry</li> </ul>
<b>The Process of Science Inquiry</b>		
<b>Scientific Methodology</b>	<ul style="list-style-type: none"> <li>—finding order &amp; regularity</li> <li>—hypothesis formation &amp; testing</li> <li>—working with equipment</li> </ul>	<ul style="list-style-type: none"> <li>—making connections &amp; distinctions</li> <li>—analogical reasoning</li> <li>—part/whole reasoning</li> <li>—syllogistic reasoning</li> <li>—observation, measurement, estimation, quantification</li> <li>—how to care for instruments</li> <li>—how to operate equipment</li> </ul>

From A. Calandra, "The Barometer Story," in  
*Current Science Teacher*, Jan 6, 1964.  
(Published by Xerox Education Publications.)

## Seeking Out Alternatives

# RIDICULOUS SUOLUCIDIR SUOLUCIDIR

### A. Calandra

Some time ago, I received a call from a colleague who asked if I would be the referee on the grading of an examination question.

It seemed that he was about to give a student a zero for his answer to a physics question, while the student claimed he should receive a perfect score and would do so if the system were not set up against the student. The instructor and the student agreed to submit this to an impartial arbiter, and I was selected.

I went to my colleague's office and read the examination question which was, "Show how it is possible to determine the height of a tall building with the aid of a barometer."

The student's answer was, "Take the barometer to the top of the building, attach a long rope to it, lower the barometer to the street, and then bring it up, measuring the length of the rope. The length of the rope is the height of the building."

Now, this is a very interesting answer, but should the student get credit for it?

I pointed out that the student really had a strong case for full credit, since he'd answered the question completely and correctly.

On the other hand, if full credit were given, it could well contribute to a high grade for the student in his physics course. A high grade is supposed to certify that the student knows some physics, but the answer to the question did not confirm this.

With this in mind, I suggested that the student have another try at answering the question . . .

Acting in terms of the agreement, I gave the student six minutes to answer the question, with the warning that the answer should show some knowledge of physics. At the end of five minutes, he had not written anything.

I asked if he wished to give up, since I had another class to take care of, but he said no, he was not giving up. He had many answers to this problem; he was just thinking of the best one. I excused myself for interrupting him, and asked him to please go on.

In the next minute, he dashed off his answer which was:

"Take the barometer to the top of the building and lean over the edge of the roof. Drop the barometer, timing its fall with a stopwatch. Then, using the formula,  $S = \frac{1}{2}AT$  squared, calculate the height of the building."

At this point, I asked my colleague if he would give up. He conceded.

In leaving my colleague's office, I recalled that the student had said he had other answers to the problem, so I asked him what they were.

"Oh, yes," said the student. "There are many ways of getting the height of a tall building with the aid of a barometer. For example, you could take the barometer out on a sunny day and measure the height of the barometer, the length of its shadow, and the length of the shadow of the building, and by the use of simple proportion, determine the height of the building."

"Fine," I said, "And the others?"

"Yes," said the student. "There is a very basic measurement method that you will like. In this method, you take the barometer and begin to walk up the stairs. As you climb the stairs, you mark off the length of the barometer along the wall. You then count the number of marks, and this will give you the height of the building in barometer units. A very direct method.

"Of course, if you want a more sophisticated method, you can tie the barometer to the end of a string, swing it as a pendulum, and determine the value of  $g$  at the street level and at the top of the building.

"From the difference between the two values of  $g$ , the height of the building can, in principle, be calculated."

Finally, he concluded, "If you don't limit me to physics solutions to this problem, there are many other answers, such as taking the barometer to the basement and knocking on the superintendent's door. When the superintendent answers, you speak to him as follows: 'Dear Mr. Superintendent, here I have a very fine barometer. If you will tell me the height of this building, I will give you this barometer.'"

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# *Critical Thinking and Moral Education*

## **Mark Weinstein**

The recent interest in critical thinking as the basis for educational reform has a deep philosophical and pedagogical affinity to the long-standing educational concern with the moral development of school children. Critical thinking and moral education both extend instruction beyond standard school subjects and require mastery at higher cognitive levels. The child is seen as a person in the deepest sense, rather than in terms of more instrumental notions of competence. Education, from these perspectives is frequently distinguished from schooling, and has as its aim the development of the highest and most characteristically human attributes: rationality and the moral sense (Seigel, 1988). The affinity of critical thinking and moral education is apparent, as well, in the pedagogical strategies most frequently recommended. Critical thinking, like moral education, deals with complex, multi-dimensional issues, and requires open-ended explorations and divergent thinking (Paul, 1982). Characteristically, lesson procedures and outcomes cluster around the upper end of the standard taxonomy of educa-

tional objectives (Bloom, *et al*, 1956). Critical thinking and moral education require the analysis of issues, the synthesis of differing perspectives and bodies of information, and the evaluation of outcomes. But no matter how deep the continuities, the recent advocacy of critical thinking as an educational ideal raises sharp contrasts in theory and in substance to much of what has become standard in the understanding of moral education in the schools. It is the task of this paper to call attention to some of the most crucial differences.

Moral education has a variety of concerns and reflects various psychological, philosophical and pedagogical models. The most common, by far, is the view that sees moral education as part of the mechanism for transmitting culturally approved norms to children. Frequently based on overt instruction in moral principles and reasoning through standard subjects like literature and social studies, values transmission is also embedded in the total process of schooling. The institution is seen to play a major role in socializing children in ways consistent with desirable social values (Carr and

Wellenberg, 1966). This view, dubbed "the bag of virtues" by Kohlberg (Kohlberg, 1981, p. 9), has as its objective that children should have dispositions of character and personality, expressed in traits that are deemed socially desirable. Such traits characteristically reflect shared values deemed central to well-functioning individuals and conducive to the common good. Such an approach to moral education, frequently conservative in moral content, is often manifested in moral exhortation, in curricula that include exemplars of appropriate moral practice and, most tellingly, in the so-called "hidden curriculum" (Jackson, 1968). The hidden curriculum is constituted by the norms and standards that are implicit in the schools institutional practices, especially those practices that, through reward and punishment, reflect on the child's behavior. Such implicit reinforcement is often thought to be the most causally effective mood of values transmission, speaking to the deeper affective and motivational structures that are theorized as underlying the construction of the individual's psyche. In this way, values like respect for authority, diligence and honesty are, as it is said, "caught, not taught."

Overt instruction in moral values, in such a model, aids in the transmission of cultural approved values by identifying the implicit structures underlying institutional practice. Children are helped to rationalize operating norms by seeing them reflected in traditionally valued individuals and events. In addition, overt moral instruction extends values transmission to domains not readily reinforced through institutional procedures. Values like sexual chastity that have no analogue in school activities can in this way be identified and reinforced.

The cultural transmission model of moral instruction is frequently thought of as a corrective for less acceptable overt and covert moral messages that the child receives from mass media or from peers. Such messages, frequently hedonistic in tone, are countered with a perspective informed by notions of duty and forbearance. In addition to the inculcation of practical norms required for social stability and the protection of the child from moral evil, moral education points the

child upward. The transmission of the higher moral culture becomes part of the general task of weaning the child from superficially attractive but demeaning aspects of the social milieu. Moral education, like acquaintance with art and literature, serves to point the child to the realm of the "life worth living."

Another of the most common approaches to moral education is that of the developmentalists. In this naturalistic perspective, the child is thought of pre-moral and in crucial ways, pre-social (Kegan, 1982). Moral education, even in the absence of countervailing social forces, is deemed necessary to help the child develop from socially and psychologically inadequate egocentrism, to a set of perspectives characteristic of mature and morally well-functioning adult members of society. Such a naturalism sees the essentially egocentric child initially responsive only to the most elemental moral persuasion, reward and punishment. Further, the child is seen to be incapable of seeing moral reasons in other than such rudimentary terms. Starting with morality as based on authoritative norms, the child moves overtime through stages of moral reasoning characterized by affiliation with significant others, identification with groups holding shared norms and ultimately to a sense of the larger cultural and ethical sphere (Kohlberg, 1982, chapter 2).

The child's moral development progresses through levels of increasingly other-regarding awareness until the highest moral consciousness, the perspective of equal justice is achieved (Kohlberg, 1981, chapters 4 and 5). This progression through stages reflects underlying natural processes of assimilation and accommodation, common to both cognitive and moral development. Although internal, the process reflects the active child's attempts to deal with the conflicts inherent in moral understanding. Each stage achieves a higher level of equilibrium, a more potent set of concepts and mental structures as measured by their ability to reconcile the tensions of the lower stage (Kohlberg, 1981, chapter 4). Moral education, on this view, becomes the active abetting of this process of increasing equilibration. This is characteristically

accomplished through the presentation and discussion of moral dilemmas that strain the adequacy of present understanding while exposing the child to concept sets that offer the possibility of more adequate moral resolutions (*ibid.*) Central to this conception is the claim that the stages of moral maturation are naturalistically generated. They are not merely more sophisticated social norms or cultural constructs, rather they reflect the essential structure of moral reasoning, a structure that is deemed common to all humans and implicit in all social constructions of morality. Requiring no more than the availability of social complexity sufficient to engender moral dilemmas, the moral stages are inherently realized in moral reasoning. They constitute, therefore, an objective cognitive substrate that enables a hierarchy of moral principles to be objectively defined.

As is apparent from what we have said both the cultural transmission and moral development perspectives are anti-relativist, presenting preferred modes of moral perception and behavior. In contrast to such views are the romantic and relativistic positions, popular in recent decades. Such approaches see the child as a spontaneously developing locus of moral perspectives, as a holder of values, coequal with others (Neill, 1960). For such views, education in general, and moral education in particular, requires that the child be given freedom to explore values through choices made. Formal moral education enables the child to identify, articulate and clarify the value stance peculiar to himself (Raths, Harmin and Simon, 1966). The child is exposed to the values of others, but this is to facilitate a broadening of the range of choices available. The awareness of alternative cultural and social perspectives is deemed a positive good, reinforcing a sense of the variety of moral options already chosen. The only value required is the socially-enabling value of tolerance and respect for others, although in the most radical of such views, even this must be personally chosen. (Neill, *op. cit.*)

## II

Like moral educators, critical thinking advocates reflect a spectrum of value postures. Among the earliest arguments

in support of the movement were reflections on the American democratic tradition. It has been long realized that political democracy requires critical intelligence (Glazer, 1985). Education in pursuit of the development of a competent citizenry could thus see critical thinking as part of the necessary socialization of the young. More important, many of the postures associated with critical thinking, thoughtful tolerance, intellectual openness and honesty, and a commitment to rational persuasion are central to the American value stance (Paul, 1984). The requirement that informed citizens be able to evaluate com-

peting claims in light of available evidence and arguments put forward, directly links critical thinking to a central goal of American education (Paul, 1985a). Thus, critical thinking characterized by, for example, Ennis as "reasonable, reflective thinking that is focused on what to believe or do," (Ennis, 1985, p. 54), is easily viewed as a mainstream activity, consistent with even the most conservative stance in values education.

Even as moderate a position as Ennis' raises problems for the implementation of critical thinking in the schools. For "reasonable, reflective thinking" re-

quires abstract standards for evaluation and an awareness of the processes and methods that support the appropriate application of standards to cases. Such an approach requires that school curricula include higher order cognitive skills and reflect such skills in educational objectives of sophistication and complexity. In the terms of Bloom's taxonomy (Bloom, *et. al.*, 1956), what is required is the ability to analyze arguments offered, synthesize information in support of views maintained and finally to evaluate claims and make decisions that reflect prior rational analysis. Not only, as is well known, are such educational goals mostly honored in the breach, but conservative calls for basic skills education and values by authority, run counter to the thrust of such programs. This is especially problematic for critical thinking in moral contexts, for even if wrapped in the flag of citizenship education, the curricular and pedagogical underpinnings of critical thinking point to value orientations that contradict much of the substance of the transmission of traditional values as seen by conservative educators. As we shall see, problems may even extend to the transmission of values associated with liberalism.

Traditional American values do not exhaust the value basis for critical thinking. Critical thinking theorists appeal to the notion of "rational passions" that constitute the dispositions of personality appropriate to critical thinkers (Peters, 1981). Such rational passions reflect a deep value commitment to truth and to inquiry. But truth and inquiry are not easily achieved when the focus is on issues of moral concern. Moral issues are multi-categorical, transcending any easy analysis from within a particular academic or scientific discipline. To address such issues, inquiry must be multi-logical and dialogical. Multi-logical issues require reinterpretation from many perspectives, using diverse sets of concepts and logical strategies (Paul, 1982). By their very nature they require that conflicting and even incommensurable frameworks be provisionally adopted and sympathetically explored. Prior commitments are then reevaluated through these contrasting points of view. Dialogics, the systematic and open en-



counter of alternative and competing points of view, becomes the method through which these issues are to be joined. This procedure, in itself, precludes the simple presentation and inculcation of values as in the conservative models of cultural transmission. But such a critique extends to the straightforward transmission of liberal values as well. Since all appropriately multi-categorical positions must be critiqued in light of alternatives, deep commitments to democracy and tolerances are exposed to their moral and political contraries. Such a principled commitment to the sympathetic presentations of, perhaps, repugnant alternatives is difficult to operationalize in the classroom, and difficult to justify within the real political contexts that education affords. Moreover, unless such a multi-logical examination is carefully performed and maturely understood, it can seem like thorough-going relativism, and as such, misleading as to its intent and pernicious in its effects. Thus the deep value structure underlying critical thinking exacerbates the difficulties inherent to moral discussion and creates problems of substance and form for the school practitioner. The commitment to rational moral evaluation through contrasting frameworks becomes liable to misunderstanding and subversion—the presentation of alternatives becoming no more than opinion-mongering.

The apparent need for cognitive sophistication and emotional maturity in the dialogical exploration of multi-logical issues raises a significant issue from the theoretic perspective of the developmentalists. Stage theories see individuals at differing levels of cognitive and moral competence. Some of these individuals are, in principle, at a less adequate level of moral and cognitive functioning. They do not merely have wrong beliefs, they are utilizing cognitive schemata, tools of conceptual organization, that are more primitive and less functional *viz a viz* the issues of concern. Such schemata do offer alternative perspectives, but such perspectives being developmentally prior are not rational competitors, rather they are naturalistically generated and are to be maturationally overcome. Further, it is maintained, people at early stages are



not amenable to instruction through schemes that are not contiguous to the stage they are functioning in. They cannot be instructed to use higher non-contiguous stages, nor can they fully comprehend arguments made through rational processes that reflect these stages. This raises obvious challenges for the critical thinking approach as viewed from the perspective of developmentally oriented moral education in the schools. If critical thinking requires the exploration of rationally defensible alternatives comprehensible to all of the discussants, critical exploration of moral issues may not be possible.

A possible solution to this dilemma is to limit moral discussion to alternatives couched within the dominant moral stage of the discussants or, at most, the next higher stage. Within such conceptual boundaries competing perspectives could be presented, adequately understood and evaluated.

Although such a solution might be seen as sufficient to satisfy the demands of critical thinking, it falls short of the ideal that requires that the teacher not be seen as privileged in respect of the point at issue (Weinstein, 1986). Lipman, for example, maintains that the teacher can not be seen, as a matter



of principle, justified in her beliefs (Lipman, *et. al.*, 1980, chapter 6 and see below). A critical thinking discussion on such a view requires that the teacher be open to challenge and responsive to the demand for justifying reasons. But insofar as the teacher's position reflects a more principled stage of moral development, her response to children's challenges is little more than a charade. The teacher may accept children's critique, and even respond with stage appropriate arguments, but the challenge is, in principle, irrelevant and the argument presented is inadequate as an expression of the teacher's real justifying grounds. Arguments constructed in defense of claims, modified in the name

of developmental considerations are instructional artifacts, mere expedients that falsify the teacher's position in the name of developmental appropriateness. Stage theorists see children as being developmentally immature and thus having natural cognitive and moral reasoning deficits as compared to their teachers and other adults. How open and critical discussion can be achieved among cognitive unequals is an open question that must be faced by advocates of critical thinking in the schools. Because of the complexity of moral issues and the entrenched developmentalist perspective through which moral reasoning is understood, the question becomes most urgent, a profound im-

pediment to the critical thinking approach to moral education.

A similar issue arises for cultural transmission models. Although in this view children are not in principle incapable of particular modes of moral reasoning, they have a functionally similar disadvantage. The cultural transmission model, like developmentalism, includes a prior agreement as to the relative adequacy of moral postures. Unlike moral developmentalism, the adequacy of a moral position reflects more than stages of moral reasoning. The cultural transmission model, characteristically, includes a commitment to particular substantive moral principles and frequently includes quite specific applica-





tions of these principles to concrete instances of significance to contemporary society. Moral education is required to reflect such value commitments and is evaluated on its ability to develop children's moral awareness and behavioral conformity with accepted norms. In addition, like developmentalism, transmission models generally adhere to a theory of the child that renders him an unfit critic of these prior judgments. Reflecting the wisdom of the culture, acceptable moral principles are not open to immature critique. The child does not have the option of either accepting or rejecting these values on rational grounds, since the child, because of lack of worldly wisdom, is deemed incapable of understanding the deep rationality of

the claims. As is the case with developmentally immature cognitive and moral process, the child's rational abilities are inadequate to the task of full comprehension. If moral education is to result in the acceptance of appropriate moral values and their internalization as motives for correct behavior, what is required for cultural transmission is authority, exhortation and ultimately, behavioral and social reinforcement. Such a course of moral training is frequently deemed a prerequisite for later understanding. Harkening back to Aristotle, the child must first learn to do and only then can be helped to understand.

One caveat must be included. It is not logically impossible that a cultural transmission model reflect a prior commit-

ment to critical inquiry and to the moral and cognitive adequacy of children. Such a position might even be attributed to educators with a commitment to critical thinking as the basis of moral education. From such a critical thinking perspective, moral education must include the practice of moral inquiry within a community engaged in the exploration of alternative moral perspectives. Such a community would be engaged in the transmission of the central values of critical thought. Such values, the rational passions, would include a commitment to the acceptance of any moral stance as a possible basis of inquiry, the use of principles of formal and informal logic as tools of criticism, and the acceptance of evaluative conclusions as tentative stopping places, reflecting inquiry so far, but open to challenge and reevaluation in the light of further argument. A model of this sort has been sketched by Lipman (Lipman, 1987). It is not yet clear to what extent such a recommendation for moral education will be deemed acceptable by contemporary educators. As things now stand, the available positions advocated by moral educators are restricted to the developmentalist, cultural transmission or romantic models discussed in earlier paragraphs.

Both the developmentalist and cultural transmission model, as standardly construed, are not acceptable given the theoretic demands for openness, tentativeness, and rational evaluation characteristic of critical thinking advocates. Lipman, by no means the most radical of the critical thinking theorists asserts, "There can be no legitimate philosophical discussion in which one party considers the other inferior, not as a matter of prejudice, but as a matter of principle." (Lipman, *et. al.*, 1980, p. 154). Since for Lipman moral education and critical thinking are essentially philosophical enterprises (*ibid.*, pp. 172ff.), theories that entail the principled exclusion of children from full participation in moral inquiry cannot be adequate to the task of meaningfully educating rational persons. Lipman once again, ". . . if children are deemed incapable of principled moral behavior, incapable of having reasons for what they do, incapable of rational dialogue about their

conduct, incapable of employing patterns of logical inference, they must be treated as no different from lower animals, or even as mere things.” (*ibid.*, p. 154). Although perhaps overstated, Lipman’s hyperbole reveals another of the deeply-held value postures of the critical thinking movement. As alluded to in the opening paragraph of the paper, critical thinking, like much of moral education, sees the function of education as the bringing forth of the rational capacities of the child. The most careful advocacy of this view is found in the work of Harvey Seigel (Seigel, 1988). He takes as an unargued assumption, the Kantian view that the fundamental right to personhood is a reflection of the universal rationality of human beings. Seigel maintains that to limit rational capacity is thus to strike at the very source of rights. To deny rationality is to deny personhood, and with such a denial to violate the individual’s rights at the most profound level and in the most all-encompassing fashion.

It is not clear that the demand for full rational participation in education is incompatible with the developmentalist claim that children are, in principle, incapable of the highest forms of reasoning, or a cultural transmission model that sees children as limited by virtue of lack of worldly wisdom. But how such a reconciliation is to be effected is none too clear. A plausible move is to see education, as Kohlberg does, as the vehicle through which full rational capacity is to be attained (Kohlberg, 1981, chapter 3). This attempt at reconciliation, however, does not address the problem of educational practice characterized by cognitive inequality. The demand that critical thinking discussions be equally open to all participants, and that alternative positions be seriously considered as *prima facie* equal in their critical role, make the process of developing rationality through critical inquiry paradoxical at best. If the teacher, as developmentally advanced or as superior in wisdom, has a position of privilege, then claims that reflect that privilege are not open to critical analysis by students. Thus, the teacher stands outside the critical inquiry as preformed by the students. The students’ explorations, on

such a view, seem at best preliminary excursions which, if appropriately informed, will result in the mature position already achieved by the teacher. Such a procedure seems closer to group indoctrination than to the open inquiry envisioned by critical thinking theorists. For, on such a reconciliative model, reactional criticism is a mere expedient for bringing students to the already-warranted positions of teachers. The central issue is whether priority is given to the rational process of inquiry or whether inquiry is a mere device for coming to correct understanding. This issue has particular salience in moral education where, unlike purely cognitive domains, inquiry has consequences that are deemed essential to morally correct human action. Can we tolerate, as many critical thinking theorists seem to maintain, inquiry that results in moral error? Is our commitment to the procedures that define rational thought stronger than our demand that children be taught what has been considered best as a guide for social and personal behavior? The interface of a critical thinking theory that answers, “Yes,” to both of these questions and developmentalist or commonsense claims about the limitedness of children’s competence remains one of the most singularly difficult and unexplored issues arising from the entrance of critical thinking theory into the arena of moral education.

Critical thinking approaches are also in apparent conflict with romantic and value clarification models of moral education. Personalist and relativistic, both of these approaches see the core of values as non-rationalizable and essentially an expression of emotion and will. The only role for rational process is in the clarification of inner tensions and in the overt prioritizing of inherently groundless choices. Although such views when baldly stated may seem extreme, they reflect an analysis of value that was accepted by many, (if not most) philosophers from the late nineteenth century until at least the 1950’s. Rooted in existentialism as well as logical positivism, values as reducible to emotion or will became cultural commonsense for many educated people. Conjoined with sociological and anthropological evidence of value diversity, such a non-rational view

of moral judgment was reflected in even the most sober educational theorists. As central an educator as Benjamin Bloom reflects the philosophical analysis of moral judgments common to his era by placing the entire hierarchy of moral issues outside of the cognitive realm. Values, seen as commitments and preferences are deemed as constituting educational objectives to be understood in the affective domain. The affective domain is seen as so disparate from the cognitive that its analysis is not to be included in the same volume, much less within an integrated theoretic perspective (Bloom, *et. al.*, 1956, 1956a.)

The construal of moral judgment as rational, common in philosophy since Hare and Rawls, is a radical revision of philosophic wisdom and a return to the Kantian and Utilitarian models. But such philosophical shifts are not immediately reflected in educational applications. And so the critical thinking movement, heir to the contemporary anti-emotivist and anti-voluntarist analysis of moral judgment, runs contrary to many of the “common sense” beliefs of educators, still under the influence of powerful and culturally embedded philosophical theories. But this is no abstract counterposing of philosophical points of view. Personalism and romanticism have a deep affinity with pluralism and the tradition of tolerance in American society, and offer a reconciliation of the perception of the child’s cognitive incompetence and our intuition that the child must be given human respect as a holder of values. Further, these views are reflected in curriculum practices that have had wide acceptance and that reflect the psychologizing of values construed as motivating desires.

The psychology of wants, needs and drives, constitutes common sense as much as do its philosophical counterparts. Such views offer the educator a handle on moral education that is easily understood and, as importantly, clearly connected with the role of moral education as determining behavior. Moral reason is linked to moral behavior only through arduous and inconclusive studies. Emotivist and volitional theories of moral choice, on the other hand, have a natural and internal rela-

tion to action. "You always do what you want," and "You have to use will power to overcome temptation," although ultimately vacuous have a deep and abiding force that makes their exposure a perennially arduous task for teachers of introductory philosophy. Theories that reify wants and volitions give the teacher a handle on moral education that is user-friendly: easy to understand and easy to apply. Critical thinking, by contrast, offers a most unwieldy and suspicious mechanism for moral advance, since the relation of the cognitive to the evaluative tends to be theoretical, opaque and pragmatically dubious.

### III.

My review of the tensions that underlie a critical thinking approach to moral education is intended as a corrective for a naive optimism. It is not at all likely that moral educators can welcome the perspective of critical thinking once its psychological and philosophical assumptions are made clear. But that may be all to the good. Moral education has developed in isolation from philosophy and has, most recently, been embedded in psychological theory whenever it has not been completely absorbed into polemical political and social disputes. The challenge from critical thinking should open this arena to critique at the deepest levels of theory and preconception. Critical thinking forces us to reconsider our conceptualization of the child and to precise the notion of reason that underlies our perception of children as pre-rational. On the other hand, critical thinking, typically developed for college-level instruction, may not be available to school children without a careful reappraisal of the particulars of its application in the schools. If children are as they are conceived to be by the mainstream of educational psychological theory, and by much of common sense, many of the ideals of critical thinking may not readily apply. Critical thinking theorists must address these conceptions, both by a careful critique of theories and cultural assumptions, and by the demonstration of successful programs in the schools. Much of the latter is being done, all too little of the former. Some programs of enormous apparent worth are now available to school child-



ren. Most of these beg the deep theoretical issues or side-step them through their appeal as programs that address pragmatic issues of school achievement. But the deep humanism and the commitment to inquiry that characterizes the very best of these can only be evaluated within the arena that strains these programs to the utmost. That arena, I maintain, is moral education. It is within moral education that the most essential worth of the critical thinking movement is to be tested.

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