# Thinking in School and Society

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# Thinking In School and Society

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Recent decades have witnessed the decline of distinctively philosophical thinking about education. Practitioners and the public alike have increasingly turned rather to psychology, the social sciences and to technology in search of basic knowledge and direction. However, philosophical problems continue to surface at the center of educational concerns, confronting educators and citizens as well with inescapable questions of value, meaning, purpose, and justification.

PERL will publish works addressed to teachers, school administrators and researchers in every branch of education, as well as to philosophers and the reflective public. The series will illuminate the philosophical and historical bases of educational practice, and assess new educational trends as they emerge.

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My daughters, Naomi and Stephanie, supported me (psychologically, of course) and tried valiantly, though without success, to come up with a jazzier title. Stephanie went through the entire manuscript to check my references, for which I am grateful. Teri Frailey did a fine job typing up the Bibliography. I'm fortunate to be married to a talented editor, who not only suggested innumerable improvements along the way but was gracious enough to let me use the word processor even when she needed it for herself. And most important, she had confidence in my ability to write this book although my own doubts loomed large.

# Contents

# Introduction

"'Critical thinking' displaces rote and drill" according to a headline in a recent *Newsweek* (27 January 1986, p. 59). The story takes note of distressing evidence concerning the reasoning abilities of American students and documents the spread to twenty-seven states of "critical-thinking-programs" designed to remedy the alleged deficiency. The fact that such a feature appeared in a national news magazine suggests that the movement to teach thinking in schools has gathered considerable momentum. As with any educational reform movement, there are some who say that this is just what schools have *always* done, and others who say that it is *impossible*. Still others herald significant developments which they claim will make possible the heretofore impossible. The National Educational Association's monthly newspaper, in a recent lead article, alludes to "exciting breakthroughs in cognitive research" which are paving the way for new approaches to the teaching of thinking (November 1986, p. 4). At the same time, many would agree with Mortimer Adler, educational reformer and philosopher, who labels the entire movement an ill-conceived "voguish panacea" (1986, p. 2).

The concern with thinking is hardly a new one. The alleged demise of humdrum routines in school has been in progress for at least a century. Already in 1885, Herbert Spencer announced that the "once universal practice of learning by rote, is daily falling more into discredit" (p. 103). Even the anticipation of new approaches to teaching thinking based on the discoveries of psychologists is old hat. In 1967, a leader in the educational research community made a strikingly similar announcement:

> Recently studies of thinking have been undertaken which promise to revolutionize the concept of thinking as well as the way of teaching thinking (Taba, 1967, p. 27).

We would be mistaken in supposing that the hope of altering classroom practices to emphasize the development of the ability to think effectively was limited to school reformers of the progressive or pragmatist persuasion. Consider, for example, the following

statement by W.T. Harris, generally regarded as an educational conservative by historians of education:

> It is believed that the arrested development of the higher mental and moral faculties is caused in many cases by the school. The habit of teaching with too much thoroughness and too-long continued drill, the semi-mechanical branches of study, such as arithmetic, spelling, ... and even the distinctions of formal grammar, often leaves the pupil fixed in lower stages of growth and unable to exercise the higher functions of thought (1898, p. 7; cited in Mann, 1979, p. 349).

Once we realize that this particular criticism of schooling is at least a century old, the fact that we are presently no better at responding to it than we were, suggests that the issue is perhaps more complex than most educational researchers or practitioners have been ready to believe.

The more seriously I considered the problem of teaching thinking, the more it began to seem that the perspectives of the principal participants in the discussion were severely limited by the narrow perspectives of their academic disciplines. I was upset by the tendency of philosophers and psychologists to travel on paths which scarcely ever intersected. Reading the reports of educational psychologists, I was especially troubled by the absence of an awareness of the social realities of classrooms—to say nothing of the wider social context beyond the classroom. Even otherwise exemplary books like David Perkins's *Knowledge as Design* (1986) virtually ignore the social context within which learning takes place.

What I have tried to do here is to write a book which integrates the perspectives of a number of disciplines, each of which, I believe, has something to contribute to a better understanding of the extent to which the schools might help the next generation of adults become better thinkers. Let me sketch out the argument: if we are to discuss the teaching of thinking, we must have a clearer understanding of what thinking is. This is my task in the first chapter. The conception I develop is one specifically tailored to the needs of educators although it is at variance with the way in which most of those involved in the "critical thinking movement" talk about it. I argue, in fact, that the dominant way of referring to thinking as a set of skills is not only not apt but potentially pernicious. The second chapter focusses on experimental investigations of thinking with a view to understanding what research in cognitive psychology over the last decade has to tell us about the nature of thinking and its relationship to learning. The significant educational implications of that research are then carefully examined. In chapter 3, I focus on

the school, more specifically on the conventional classroom as a context for thinking. The limitations of that context are identified and accounted for, and suggestions for creating "thoughtful" contexts are adumbrated. Chapter 4 goes beyond the school to discuss the extent to which three contexts elicit and reward thinking: the economy, the polity, and television. I also discuss the relationship of these contexts to the school. Finally, in my conclusion, I propose some changes both in the educational sphere and in the broader society which have the potential to improve the quality of thinking in future generations.

Before beginning, I need to say something about the nature of the inquiry, especially for those who might be expecting a more conventional philosophical treatment. I do not deny that philosophical works of a more usual kind are necessary and important. Yet I share some of the misgivings about the conventional approaches which Foster McMurray (1981) has articulated. Even the best writers in philosophy of education rarely have anything novel or compelling to say about the practical task of education, and although they are well informed in contemporary philosophy, they tend to appropriate rather than to develop the ground covered by their colleagues in philosophy departments.

Many disciplines attempt to illuminate educational situations, but rarely is there an effort to see an issue steadily and see it whole, to borrow a phrase from Matthew Arnold. This is an important job, and one which philosophers (though not only philosophers) are equipped to perform. Philosophers of education do have two handicaps to overcome here. One is the dogma I "grew up" with that philosophers deal with conceptual matters rather than matters of fact, which are best left to "empirical" researchers. But many among the best academic philosophers have come to see this neat dichotomy as more of a limitation than an opportunity. In education, at any rate, I believe it is silly to suppose that any worthwhile directions can be charted if one has not ascertained relevant facts about schools, human learning and social requirements. Of course, the selecting of facts as relevant is connected to notions of educational and social purpose that are at root philosophical. I see no vicious circularity here.

A second handicap *I* needed to overcome was the belief that the philosopher's role is to analyze, not to propose. But if a sound analysis leads naturally to the formulation of certain proposals, is there good reason to stop short of making them? Is not our traditional reticence here one reason why those who are trying to decide what to *do* have stopped reading us? I am not suggesting, I should make it clear, that philosophers ought to stop the other things they are doing. There are many styles of philosophizing in education, and

most are fruitful when done well. I only say that here is an equally worthy enterprise.

A word about my own philosophical debt. Many of the ideas found here have already been presented by John Dewey, but this is not necessarily because I first read Dewey and then formulated my own position. Often, having developed my own point of view, I later found that Dewey had beaten me to it. Seeing that Dewey had already said some of the things I wished to say dulled my sense of originality but it did not discourage me for there is ample reason to be suspicious of "new" or "radical" ideas in education. In human affairs and especially in education, new or radical ideas are almost always either restatements of worthwhile ideas advanced by earlier thinkers or they are plain silly. Each generation responds to another idiom than did its predecessor, so that a convincing restatement is hardly superfluous

Finally, just a word to prospective readers. This is not an easy book to read but it is not addressed only to professors, certainly not just to professors of philosophy of education. I hope that any serious student of education, regardless of political or disciplinary allegiance, will be able to read it and come away with something worthwhile. For those whose frame of reality is the world of actual classrooms, I'd suggest starting with chapter 3 and then working either forward or backward.

CHAPTER 1

# What is thinking?

What I wish to say about education for thinking presupposes a particular view of the nature of thinking. Accordingly, my principal task in this initial chapter is to formulate and defend that view. The chapter is organized as follows: section 1 offers a guiding metaphor which informs the entire volume. In the second section I delineate the distinction between virtues and skills before going on in section 3 to discuss whether thinking is a skill. In section 4 I ask whether thinking comprises operations that are domain specific or that generalize across domains. Section 5 examines attempts to identify different modes of thinking. A brief discussion of the value of thinking concludes the chapter.

## 1 Thinking as exploration

I begin with the formulations of three eminent students of thinking, John Dewey, Frederic Bartlett, and Gilbert Ryle. I cite them in the order in which they were written.

> (a) reflective thinking, in distinction from other operations to which we apply the name of thought, involves (1) a state of doubt, hesitation, perplexity, mental difficulty, in which thinking originates, and (2) an act of searching, hunting, inquiring to find material that will resolve the doubt, settle and dispose of the perplexity (Dewey, 1933, p. 12).
>
> (b) The broad objectives of thinking remain very nearly the same, in whatever field the thinker operates, and with whatever kind of evidence he is concerned. Always he must try to use the information that is available to him so as to reach a terminus, based upon that information, but not identical with it, and he must so set out, or be prepared to try to set out, the stages through which he passes, that he can reasonably hope that where, for the time being, he comes to rest, everybody else who is not mentally defective or mentally ill, or abnormally prejudiced, must come to rest also. In some instances ... the thinker's hope is that others will approve of, rather than be compelled to reach, the

result which he eventually attains, and at which he stops (Bartlett, 1958, p. 97).

(c) Thinking is trying to better one's instructions; it is trying out promising tracks which will exist, if they ever do exist, only after one has stumbled exploringly over ground where they are not (Ryle, 1979, p. 78).

There are differences in the formulations, but I wish to call attention to two common threads, one of content and one of form. Each quote contains the notion of thinking as necessitated by an insufficiency of information;[1] certainty renders thinking superfluous. Each author makes either explicit or implicit use of the metaphor of physical search and exploration.

I propose that we liken thinking to an activity which is the cognitive equivalent of territorial exploration. I mention here a few of the ideas whose analogues will be developed below. Successful explorers do not begin an expedition without extensive preparation and planning. They know their tools. They find out as much about the terrain beforehand as they can, and if possible, practice on similar terrain. Yet no matter how rigorous their preparation, they are bound to meet the unexpected, to be tested by challenges they could not precisely anticipate. Character, as well as natural endowment account for their success. There are skills involved in rock-climbing or white-water canoeing but no skills of exploration *per se*. Later travellers, benefiting from better equipment and well-marked trails, may pass with ease over what was once inaccessible to all but the strongest and most intrepid.

The kind of exploration I am describing seems to be purposeful, deliberate. Cannot thinking be random and capricious? Isn't daydreaming also thinking? This raises a problem: Is my conception of thinking normative or descriptive? Suppose a student confronts the following problem for homework: $\frac{1}{2}+\frac{1}{3}$. The student writes down $\frac{2}{5}$. Was the student's thinking defective or non-existent? How can we tell? We ask the student: why did you put down $\frac{2}{5}$, and he says, "$\frac{1}{2}$ of $\frac{2}{3}$ is $\frac{1}{3}$, so if I add $\frac{1}{2}$ to $\frac{1}{3}$, that would be two thirds." The student was certainly thinking even though he came up with the wrong answer. Now suppose he says, "I wanted to have something down so the teacher would know I did my homework. But I was in a hurry, so I figured since I don't really remember how to do it, I'd better put something down, and $\frac{2}{5}$ seemed like it might be about right." That may be reprehensible thinking but it is thinking about the problem. Now how about this: "I was thinking about the punchball game yesterday and I just wrote down the first fraction that came into my head." Here we have thinking but not about the arithmetic problem

at all. Finally, "I just wrote down any numbers that came into my head." We could say that this reveals the absence of any thinking, yet why put a number down at all? Doesn't that indicate some kind of mental processing? The answer to my question about what to count as thinking appears somewhat arbitrary but not inconsequential. If we define thinking by way of a certain normative model, say Dewey's (1933) complete act of thought, then our conception seems one-sided, since thinking we might label intuitive would fail to be included. On the other hand, if we label as thinking just any mental process, such as daydreaming, how can we focus on the kind of mental activity schools ought to foster?

Could neuroscience eventually determine whether the student was thinking? Suppose we had electrodes attached to the brain of our student as he did his homework and let's suppose that we have some theory which says that a certain pattern of recorded waves indicates information processing in the brain. Let's hypothesize that some pattern present in the first three was absent in the last case. Would that be decisive? Wouldn't we need to know what the thinking was about before we could say whether we'd want to count it as relevant to the task at hand? Maybe there is a "number" center in the brain but how do we know the numbers refer to the addition problem rather than the number of runs in the punchball game. I don't think that advances in neuroscience will solve our problem.

Let me *stipulate*, therefore, that we call mental activity *purposeful* thinking, only if it is experienced as *directed* to a problem or task one has set oneself. By this stipulation, the third and fourth answers of the student reflect no purposeful thinking about arithmetic. This, admittedly normative, conception is meant to include cases in which we may suddenly see a solution without any awareness of "wrestling" with a problem. But notice that even in such cases, an idea does not appear as a *solution* unless it is experienced in relation to some difficulty one has been worrying about.

Am I equating thinking with problem solving? Is all thinking directed to the solution of problems? Not much hinges on this so far as I can see. "Problem" is not a concept with clearly defined boundaries. Visual artists as well as scientists are often comfortable describing their activity as problem solving. As our quotes suggest, thinking is evoked in situations where one is not quite sure how to go on. I am calling such situations problems.

Some readers are likely to be dissatisfied for two reasons: the boundaries of my conception are very vague. And I have tried to say what thinking is like but not what it *is*. The two concerns are related. If we knew exactly what thinking was, perhaps the boundaries would be clearer. What is the dissatisfied reader seeking? The neuroscientific identification of thinking with some particular brain processes? No

such identification has been made? It may be that there is no single process or set of processes which corresponds to our notion of problem solving just as there may be no single process which corresponds to our ordinary notion of learning. But should we not have some rigorous definition of thinking, expounding the necessary and sufficient conditions for application of the term? It is not at all clear that such a formulation would advance our inquiry. On the contrary, it would merely focus attention on the adequacy of the definition. We can say many true and important things about exploration without a precise formulation. One of them is that it is difficult to identify a rigid boundary where familiar terrain ends and exploration begins. I take this to be one respect in which the metaphor is apt.

## 2 Skills and virtues

In saying of someone that he or she is a good thinker we may mean one of two things: that the person is *intelligent* or that the person is *thoughtful*. A person may be clever without being thoughtful and vice-versa. In the first sense, we commend something skill-like. In the second we commend something more like a virtue or trait of character. *The educator's focus, I shall argue in this book, ought to be on the development of the virtue or character trait of thoughtfulness.*

Before going further, a few words about the notions of skill and virtue may prove helpful. One way of thinking about this is to distinguish three kinds of impediments to effective action. When a person (or animal) lacks a fundamental *capacity* for some task, we imply that training will not remedy the deficit; it is built into the organism, so to speak. (Of course some capacities can be trained, but these must rest on fundamental capacities which cannot be.) Both skills and virtues, on the other hand are acquired, though they depend, of course, on innate capacities. But lack of *skill* and lack of *virtue* may be distinguished because the impediments they overcome are different. A person may be unable to perform some activity because of a lack of skill. J. Wallace considers such an inability to be due to "technical" difficulty:

> the difficulty is inherent in the doing of the action itself. In some cases, the technical difficulty is due to the complexity of the action itself, as in cooking or theorizing. There is much one must know in order to do these things. In other cases, however, such as hitting a baseball or performing eye surgery, the action is hard because of the co-ordination required. Still other actions are hard because their performance requires a complex set of reflexes, as in riding a bicycle or typing rapidly and accurately (1974, p. 187).

Virtues are needed because of a different kind of impediment:[2]

> Virtues, however, are not masteries of techniques; technique has very little to do with being brave, generous, or honest, nor do these necessarily involve being proficient at anything. Some virtues involve being able to do difficult things, but the difficulties involved are due to contrary inclinations, not to technical difficulties in the actions themselves (ibid., p. 187).

Consider a related point: skills and virtues have different scopes. A skilled person is skilled at performing some rather well-defined activity be it playing the piano, driving a car, climbing rocks, or diagnosing mental illness (Von Wright, 1963, p. 33). How are we to individuate skills? Is shifting gears a different skill from driving an automobile or is it part of that skill? Is playing piano with the right hand a different skill from playing with the left? "Skill" is not a technical term; there are no precise criteria for demarcating different skills. As our interest is in the acquisition of skill, it makes sense to take transferability as a way of demarcating skills. *Let us say that if a skill learned in setting A is not transferable to setting B, then B requires a different skill. If mastery of skill A is necessary but not sufficient for skill B, then we will say that it is a sub-skill of B.*

Virtues, since they are antidotes to contrary *inclinations* are not tied to well-defined activities at all. A person can show courage in each of the following activities, e.g. a pianist filling in for a famous artist at short notice, a psychiatrist interviewing a psychopath, but in each case he will be doing very different things which "need not have any 'outward' feature in common" (Von Wright, p. 141). It's true, though, that were he to give in to his fear he might be disposed to similar actions such as running away in each case. The main point is that virtues are traits of character which may be exhibited in many different ways in different contexts.

There is, finally, one more distinguishing feature of a virtue as a trait of character which needs to be introduced. In distinguishing virtue from habit or temperament, I borrow from L. Hunt (1978). Hunt notes that a character trait involves a *judgment* of what is important or worthwhile in a way that habit or temperament do not. Neither the thoughtful person nor the phlegmatic person normally rushes into action. How can we distinguish them? The difference resides in the thoughtful person's understanding and appreciation of the need to think things over before acting. He or she does not respond blindly or mechanically. The difference between the thoughtful and the lethargic person may manifest itself in behavior from time to time, for the thoughtful person can and does rush into action when time is of the essence whereas the phlegmatic person does not.

The thoughful person's character is animated by an awareness that thinking is worthwhile. Although Hunt doesn't mention this, the thoughtful person's appreciation of the value of thinking has an emotional component as well. The thoughtful person not only believes that thinking is worthwhile but he has a modicum of confidence in his ability to "figure things out" for him or herself.

The distinctions between skills and virtues which I have drawn are not beyond challenge (see Roberts, 1984). I do not think we need to confront all the subtleties. My reason for drawing the distinction is the bearing it has on the way the *pedagogical* task is conceived. How are skills acquired?

> What is learned ... is a technique, and instruction in a technique may take the form of verbal instructions, demonstrations, diagrams, and leading the trainee through the action (Wallace, 1974, p. 187).

These means are not excluded from the inculcation of virtue but they are not sufficient. Character traits are not formed simply by acquiring some know-how. Technique can be acquired almost anywhere and from almost anyone who has himself a mastery of the technique. *Once the educational focus is on the development of a character trait though, concern necessarily extends to the environment in which it develops.* Our fundamental attitudes and dispositions are influenced by all those with whom we come in contact, whether directly or vicariously through various media. We learn to value what they value and to steer clear of what they shun. An educator whose prime interest lies in the development of character needs to be sensitive to the total physical and, more importantly, the social environment in which any specific training takes place. (Of course a skill teacher cannot overlook the environment entirely, for a technique cannot be developed effectively in conditions very different from those in which it will be exercised.) I don't think any of the philosophers who have discussed the contrast between skills and virtues would deny the point that where virtues and dispositions are concerned, the educational influence resides in the total *milieu* in which the student finds him or herself. Every wise educator since Plato has agreed on this. Here is Dewey's recognition of it:

> The development within the young of the attitudes and dispositions necessary to the continuous and progressive life of a society cannot take place by direct conveyance of belief, emotions, and knowledge. It takes place through the intermediary of the environment. The environment consists of the sum total of

conditions which are concerned in the execution of the activity characteristic of a living being (Dewey, 1916, p. 26).

## 3 Is thinking a skill?

Thinking is an activity. I have already intimated though that it cannot be reduced to skill, but why not? The study from which Bartlett's quotation is taken is indeed based on the notion that it is useful to study thinking by conceiving of it as analogous to a bodily skill. Bartlett does not go so far as to claim that thinking is a skill, but that claim is explicitly made by P. N. Johnson-Laird (1983), an eminent contemporary investigator, and is implicit in R. Sternberg's influential "componential" theory of intelligence (Sternberg, 1980; 1983; 1985).

Clearly, thinking has some of the characteristics of skills like woodworking, driving, typing, playing tennis etc. (People improve as they practice, they often benefit from tutelage, their performance is subject to breakdown under conditions of stress, some are naturally more adept than others, and so on.) Isn't conceiving of thinking as skill useful, *especially* for educators? I think not; let us see why. One of the hallmarks of a skill, such as driving, is that it can be analyzed into a number of sub-skills which are both sequentially and hierarchically organized (Elliott and Connolly, 1974). The skilled differ from the unskilled in their ability to integrate a number of sub-routines into a smooth, efficient flow. As the novice driver gains experience, for example, she begins to coordinate the movement of the clutch, accelerator and gearshift lever in such a way that shifting from first to second becomes a single operation rather than a series of separate maneuvers. And her shifting becomes increasingly responsive to appropriate signals from the environment which includes her own vehicle. Bartlett saw directionality, sequencing and timing as central to both thinking and bodily skills.

One reason the skill model of thinking is so attractive to the educational community is that our considerable effectiveness in imparting skills is based, at least in part, on our ability to "break them down" into sub-routines which may be demonstrated, practiced, and corrected independently. If we could identify the separate components of thinking, then learning to think could be made much more efficient. Thinking could be gradually "built up" out of components, missing or weak components could be identified, practiced in isolation, and so on (see e.g. Beyer, 1985 a,b; Pellegrino, 1985). What might the sub-skills of thinking be?

Dewey identified five phases or stages in what he called a complete act of thought (Dewey, 1933, chap. 7). More recently, Bransford and