ANALYZING THE CURRICULUM

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an inordinate amount of space to content, then you might infer that the planners regarded covering content to be the teacher's major responsibility. Or, if the curriculum documents seem preoccupied with the philosophy supporting the curriculum, then you might infer that little consensus exists in the field and that developing a rationale to justify a set of activities was the primary concern.

Occasionally, some limited aspect of curriculum, such as sequencing principles, has preoccupied developers., particularly in highly structured subject matters such as mathematics.[4] Some developers have even focused almost exclusively on non-curriculum elements that, however great their influence on the curriculum, are not, strictly sneaking,, elements of the curriculum: for example, teacher training;[5] school facilities, e.g. a computer lab; or administrative structures, e.g., team teaching.

You might be able to infer the primary planning foci by searching through the curriculum documents for evidence that the planners were preoccupied with one or more of the twelve questions listed in Table 2.1 - By noting which of the planning foci received the greatest and least attention, you might also be able to predict potential problems arising from neglected planning elements—i.e., neglected questions.

CURRICULUM ANALYSIS QUESTIONS FOR CHAPTER TWO

1. Who made up the cast of characters for the development of the curriculum? What were their names, with what institution were they affiliated, and what were their respective roles in the project? Within the project team, who represented the learners, the teachers, the subject matter, and the milieu? Was there an obvious blind spot on the team?
2. To what social, economic, political, or educational problem was the curriculum attempting to respond?
3. What planning elements dominated the curriculum development process?

NOTES

1. See especially Chapter Nine.
2. For some notable exceptions, refer to Walker (1971) and Grobman (1970).
3. Smith and Sendelbach (1982, p. 101) use the term "frame" instead of my term "focus." They define "frame" as a "functional unit" of the planner's knowledge, "which had certain 'slots' for information to be filled during the planning process."
4. See Chapter Seven.
5. See Chapter Nine.

Chapter Three

Theoretical Perspectives on Curriculum

What have been the most significant perspectives on curriculum development in the United States?
What would proponents of each perspective propose for the reform of today's curriculum?

Every curriculum represents a choice as to how to approach the education of students. As we discussed in Chapter Two, the particular approach chosen by the developers of a curriculum stems in part from how they formulate the problem to which they are responding. For example, if the problem were formulated as "cultural illiteracy," then the curriculum would likely emphasize those aspects, of our culture about which people are presumed to be ignorant.[1] If the problem were formulated as thespoofs lack of relevance to children's lives, then the curriculum would likely emphasize activities or content that students can relate to everyday living. If the problem were formulated as a lack of educational equality for students of different backgrounds and capabilities, then the curriculum would likely emphasize ways to remediate or compensate for perceived disadvantages.

The problem formulation influences but does not determine the curriculum. Cultural illiteracy can be solved by having students read the "Great Books," learn the basic concepts of each discipline of knowledge, or develop a critical awareness of the contradictions of daily life in Western culture. Education for relevance might mean learning marketable skills, studying pop culture, or becoming social activists. Educational equality might be achieved by establishing a "core curriculum" for all students but providing special classes that allow for differences in pace, e.g., accelerated and basic

classes; native language, e.g., bilingual education; and handicapping conditions, i.e., self-contained classes. Or it might be achieved by requiring all students not only to study the same core program, but to do so in heterogeneous and mainstreamed classes. Educational problems can be responded to with various curricula. The approach chosen depends on the beliefs and assumptions (often termed "philosophies" or "perspectives") of the people that develop the curriculum.

In this chapter we introduce five different, coherent, but not mutually exclusive perspectives on curriculum. I call them "perspectives" because I want to think about the view of education each of them permits, what features of the educational landscape each allows us to see, and what each obscures from our view. Each perspective represents a particular, coherent set of assumptions about education. These assumptions can be considered distinctive answers to questions like the following:

How does learning occur, and how is it facilitated?

What objectives are worthwhile, and how should they be expressed?

What kinds of content are most important, and how should the content be organized for instruction?

How should educational progress be evaluated?

What is and should be the relationship between schools and the society at large?

Each perspective chooses which of these questions it will address. Some perspectives are more comprehensive than others and thus address a broader set of questions.

The five perspectives are named as follows: *traditional, experiential, structure of the disciplines* (or *disciplines,* for short), *behavioral,* and *cognitive.* In subsequent chapters we select from these five perspectives ones representing conflicting views about particular curriculum components. By contrasting divergent perspectives, we will be able to bring the assumptions associated with each component into sharper relief.

Although this chapter is primarily intended as an introduction to the five theoretical perspectives, it does lead to curriculum analysis questions in its own right. Some curricula have been strongly influenced by one or more theoretical perspectives. M:ACOS, for example, was dominated by both the strucrure-of-the-disciplines and cognitive perspectives. As you begin your curriculum analysis, you should ask yourself whether your curriculum was strongly influenced by, and thus reflects, a particular theoretical perspective—and if so, which one. For now you can only form hypotheses. The perspectives are described in this chapter in only introductory fashion, emphasizing their historical and intellectual roots. Subsequent chapters will provide more detail about each perspective and will help you identify specific ways in which these perspectives influenced various components of your curriculum, even though the curriculum as a whole may not reflect a pure case.

Table 3.1 THE FIVE PERSPECTIVES: CENTRAL QUESTIONS

1 • *Traditional:* What are the most important aspects of our *cultural heritage* that should be preserved?
2. Experienf/a/.'What *experiences* will lead to the healthy growth of the individual?
3. *Structure of the disciplines:* What is the *structure of the disciplines* of knowledge?
4. *Behavioral* ':Atthe completion of the curriculum, what should the learners *[,e able to do?*
5. *Cognitive:* How can people learn to *make sense* of the world and to *think* more productively and creatively?

At the end of the book's final chapter you will ask yourself whether your curriculum, as a consequence of a particular theoretical perspective, evidences any significant blind spots. In that chapter we consider the limitations of theoretical perspectives and the ways in which an eclectic approach addresses these limitations.

Before presenting the five theoretical perspectives, a few caveats are necessary.

1. These perspectives summarize many, but certainly not all, approaches that curricula take. That is, they are representative, but not exhaustive. They are not the only perspectives possible, but they are important ones. However, it is entirely possible that you may find a curriculum that has no elements of any of these five perspectives, but instead represents an entirely different one.
2. Each perspective may be regarded as a "family" of approaches to curriculum. Although there may be disputes within families, i.e., family squabbles, each family represents a coherent set of assumptions underlying a curriculum's emphasis.
3. Many actual curricula cannot be neatly categorized as belonging to only one of these perspectives. The five families represent analytic and pedagogical tools rather than actual curricula. You will need to use them in subsequent chapters to help you analyze your curriculum.
4. Presentation of the perspectives here is somewhat oversimplified in order to avoid technical jargon.

With these caveats in mind, we will now examine the five theoretical perspectives. Note that each perspective can be summarized by an overarching question directing our attention to its central focus, as depicted in Table 3.1.

TRADITIONAL

What is now called "traditional" education by many writers was, at an earlier period in history, actually a response to a contemporary problem. The problem in the United States during the late nineteenth century was "the seemingly intractable problem of universal schooling in an increasingly urban society" (Cremin, 1975, p. 20). William Torrey Harris, then superintendent of the St. Louis school system and a learned philosopher in his own right, believed that education needed to focus on transmitting the cultural heritage of Western civilization. (See Figure 3.1.) For Harris, education was the process "by which the individual is elevated into the species" (Harris, 1897, p. 813). Therefore, the curriculum, according to Harris, should make the accumulated wisdom of "the race" available to all children. The textbook would make a common body of facts equally accessible to the children, thereby serving as an antidote for the opinion-dominated newspapers of the day. The teacher, using the lecture-recitation method, would be the driving force in the process and would be responsible for getting students to think about what they read. Examinations would monitor and classify the students as they progressed through a graded educational system. As Cremin points out, "all the pieces were present for the game of curriculum making that would be played over the next half-century; only the particular combinations and the players would change" (Cremin, 1975, p. 22). I might add that the game remains the same to this day.

One of its leading critics, John Dewey, describes traditional education as follows: "The subject matter of education consists of bodies of information and skills that have been worked out in the past; therefore the chief business of the school is to transmit them to the new generation . . ." (Dewey, 1938, pp. 17-18). One of the leading contemporary *proponents* of the traditional perspective, humanities professor E. D. Hirsch, Jr. (see Figure 3.2), says essentially the same thing in somewhat different terms: ". . . the basic goal of education in a human community is acculturation, the transmission to children of the specific information shared by the adults of the group or polls" (Hirsch, 1987, p. xvi).

Perhaps because they dominated educational practice, traditional educators after Harris did not need to make their underlying assumptions explicit. That is, until recently they did not have to explicate their theories of learning, of motivation, of knowledge, or of school and society.

Today, the traditional perspective is promoted by writers such as political scientist Allan Bloom (1987); historian Diane Ravitch (1985); Hirsch (1987); and former Secretary of Education and chairman of the National Endowment for the Humanities William Bennett, most recently head of President George Bush's antidrug campaign (1984, 1988). Hirsch and Bennett, because they have deliberately and eloquently expressed this perspective and wish to apply it to the curriculum of both elementary and secondary public education, will serve as our modern-day traditionalists in this book.

FIGURE 3.1 William Torrey Harris.

In his widely read 1983 article "Cultural Literacy," and his 1987 book of the same title, Hirsch argues that "to be culturally literate is to possess the basic information needed to thrive in the modern world" (1987, p. xiii). That basic information is composed of the facts that "literate" Americans possess not what they should but what they do in fact possess. Literacy requires more than learning skills; it requires "the early and continued transmission of specific information" (p. xvii). Without this information, people are unable to communicate with one another: "Only by piling up specific, communally shared information can children learn to participate in complex cooperative activities with other members of their community" (p.xv).

Although Bennett appears to agree with Hirsch's emphasis on specific information, he represents the more generally accepted traditional view, which includes not only "worthwhile knowledge" but also "important

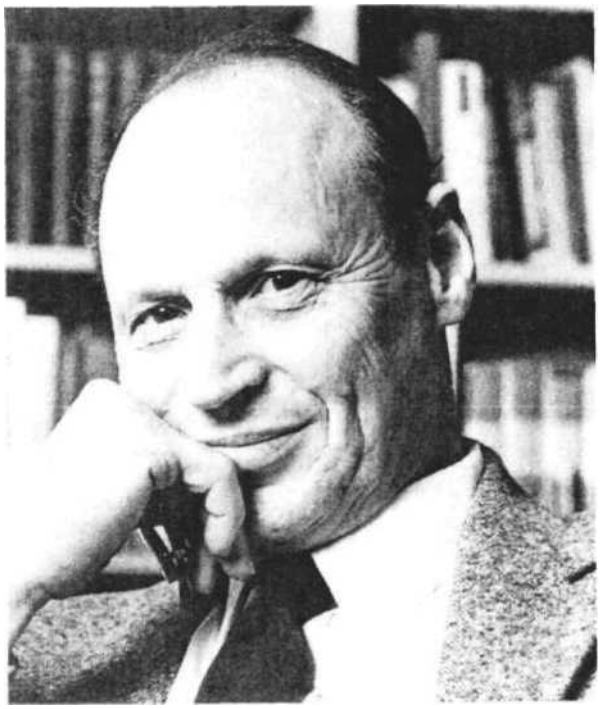

FIGURE 3.2 E. D. Hirsch, Jr.

skills and sound ideals" as educational goals (Bennett, 1988, p. 6). Like Hirsch and other traditionalists, Bennett believes that there should exist a core curriculum, a curriculum with an "irreducible essence . . . of common substance" (p. 6).

Although the traditionalists lost ground to progressive educators during the first half of this century, the current wave of popularity of traditional views demonstrates the resilience of this perspective. We will see that most other curriculum perspectives can be understood, in part, as responses to traditional education. Because these other emphases represent insurgent points of view, they have been much more deliberate in explicating their underlying theories.

EXPERIENTIAL[1]

Beginning toward the end of the nineteenth century, the traditional perspective exemplified by the views of Harris came under attack. Its critics

claimed that its authoritarian posture was in conflict with the nature of a democracy, that its view of children as passive recipients of information was inconsistent with the growing body of psychological knowledge, and that its approach to school knowledge as compartmentalized, isolated from everyday living, static, and absolute made schools increasingly irrelevant to life in a rapidly changing and complex world. A new perspective was emerging that placed at its focal point the experience of the child.

The view that curriculum can be considered in terms of the experiences of students is essentially a twentieth-century development. Simply stated, an experiential view is based on the assumption that everything that happens to students influences their lives, and that, therefore, the curriculum must be considered extremely broadly, not only in terms of what can be planned for students in schools and even outside them, but also in terms of all the unanticipated consequences of each new situation that individuals encounter. The consequences of any situation include not only what is learned in a formal sense, but also all the thoughts, feelings, and tendencies to action that the situation engenders in those individuals experiencing it. But since each individual differs in at least some small ways from all others, no two individuals can experience the same situation in precisely the same way. Thus the experiential view of education makes enormous demands on anyone who attempts to make practical curriculum decisions, for it assumes that the curriculum is more or less the same as the very process of living and that no two individuals can or should live precisely the same lives. The twentieth-century development of experiential education centers around efforts, first, to understand how curriculum can be considered in this broadest possible way, and second, to develop clear and workable principles to guide practical decisions about such curricula.

The historical roots of experiential education can be traced to the Enlightenment in Europe during the seventeenth and eighteenth centuries. During that time, philosophers such as Hobbes (1962) and Descartes (1931) emphasized the importance of both mind and sense impressions, thus laying a basis for the development of modern psychology and an emphasis in modern education on both reasoning and empiricism. Locke (1913) argued that learning arises directly from experience, from how sense impressions of the external world "write" on the mind, which he likened to a *tabula rasa*, or blank slate. Rousseau (1955) added to such ideas his notions about the primacy of the individual, arguing that by nature individuals are pure until corrupted by the influence of society, and advocating a pedagogy that protected the experiences and spontaneous development of children. During the nineteenth century, other child-centered pedagogies that were advanced by such European educational pioneers as Pestolozzi and Froebel, and that further emphasized the needs, interests, and experiences of developing children, gained increasing prominence in Europe and gradually began to come to the attention of American educators.

The results of these new influences were soon to be felt. In the United States at the beginning of the nineteenth century almost all formal education was based on the training of the mind. Formal education was limited to a small proportion of the population, however, and training in the practical skills needed by the masses to get along in American society went on primarily through apprenticeships and the activities of daily living. During the nineteenth century, major sociological changes in the United States gradually caused the curriculum of many schools to become increasingly oriented toward practical subjects and social utility. This change occurred as the nation became increasingly urbanized and industrialized, and as compulsory school attendance laws were passed. Given these internal changes and the emergence of child-centered pedagogy in Europe, the United States at the end of the nineteenth century was poised on the brink of an immense educational revolution.

The catalyst for this revolution was the development around the turn of the century of pragmatic philosophy and the progressive educational movement. John Dewey's ideas were the principal basis for both. Dewey (see Figure 3.3) believed that traditional philosophies were inadequate largely because they viewed reality as external to the individual. Such philosophies emphasized either thinking or sensing as the best way of knowing reality, but not both. Education based on traditional philosophies therefore emphasized as the best criterion of curriculum choice either training of the mind (reasoning) or training of the senses (empiricism). Dewey contended that under the former criterion curricula became unduly academic and intellectual, while under the latter they became unduly vocational and social. Neither criterion alone could emphasize properly balanced individual development. In contrast, Dewey believed that reality is not external to the individual; it is found within the experience of the individual, the composite of both the individual's internal reactions, such as thoughts and feelings, and external reactions, such as actions, to the influences of the external world. Reality itself is in constant flux as both individuals and their world constantly change. For Dewey, therefore, the only way of knowing if a belief is true is to weigh the consequences of testing it in action. True beliefs are those that have good consequences for the further development of the experience of the individual. These and similar ideas advanced by other American philosophers coalesced into pragmatic philosophy, the basis for experiential education, in which the curriculum is based on the needs and interests of students and is subject to constant change and reorganization in order to foster the best possible consequences for the further development of each student's experiences.

Any form of experiential education that is consistent with Dewey's ideas therefore rejects neither reasoning nor empiricism as a criterion of curriculum choice, but it does combine them in a way that at the beginning of the twentieth century was new. To the two older criteria for curriculum choice in American schools, the development of reasoning, then associated with

FIGURE 3.3 John Dewey.

academic subjects believed useful in the training of mind, and the development of empiricism, then associated with practical subjects believed to lead to socially useful skills, Dewey added a new criterion: the development or healthy growth of individual experience. The addition of this third criterion brought the first two into balance. In order to lead to healthy growth, no longer could a curriculum be justified as solely academic and intellectual or as solely vocational and social. Any subject or activity chosen for or recommended to individual students should contribute to both their intellectual and social development, and to their personal development as well. Dewey believed that, as individuals thus developed in healthy ways, so, too, would American society develop and progressively change in healthy ways.

The immediate challenge for the newly formed progressive education movement was, of course, to develop principles and forms of education that would be based on personal experience and promote the development in the individual of both intelligence and socially useful skills; however, in the early decades of the century progressive education was part of the wider progressive social reform movement. It was part of a response to a whole host of ills brought on by major changes in national life. Educators

and the public alike increasingly believed that American schools should contribute directly to the solution of the nation's most intractable problems. When in 1918 the National Education Association (NBA) issued the famous *Cardinal Principles of Secondary Education,* which exemplified the national mood, the organization was suggesting that curricula be nearly as broad as life itself in order to deal with seven aims: health, command of fundamental processes, worthy home membership, vocational preparation, citizenship, worthy use of leisure time, and development of ethical character (NEA, 1918).

The magnitude of these demands on the progressive educational movement brought both the opportunity on a broad scale to reconstruct the curricula of American schools and disagreement about how curricula should be organized. Despite Dewey's explanations, many progressives did not keep the three basic criteria of curriculum choice in reasonable balance. Some emphasized what they considered a scientific study of individuals and society in order to create curricula that would efficiently fit individuals into prevailing social structures. Others emphasized curricula that would protect the free and spontaneous development of children. Still others emphasized curricula intended directly to reconstruct society itself, though during the 1920s and 1930s the traditional academic curriculum that American schools had inherited as a legacy of the nineteenth century gradually incorporated different progressive emphases, there were few real experiments in genuinely experiential education, and most of these were of small scale and short duration.

The major exception was the Eight-Year Study, possibly the most important and most successful experiment ever undertaken in American schools. It compared nearly 1,500 students who attended 30 progressive, experimental secondary schools with an equal number of students from traditional schools, following all students through their eight high school and college years, mostly during the middle and late 1930s. No two experimental schools were alike. Each freely developed its own curriculum; however, almost all these curricula were developed directly and cooperatively by the students and teachers of the schools in accordance with their own perceived needs and interests. Furthermore, comparisons between experimental and traditional students were made in terms of the development of individual experience, including academic, vocational, social, and personal considerations. Thus the study was clearly an experiment designed to measure the success of curricula developed in general accordance with Dewey's basic principles. Comparisons seemed to indicate that students from the experimental schools, which emphasized experiential education, did slightly better academically in college than did students from the traditional schools, but were decidedly better off in terms of their overall development in a whole host of things such as thinking, taking initiative for their own lives, and social adjustment.

Even while the Eight-Year Study was still in progress, Dewey had issued a warning and a clarification in *Experience and Education* (1938) to those progressive educators who were still confused about experiential education and how to properly balance the three basic criteria of curriculum choice: that is, how to promote the development of intelligence, the development of socially useful skills, and the healthy growth of individual experience. Dewey pointed out that all education, like all living, is a process of experiencing, but not all experiences are equally or genuinely educative. Experience must be judged by its quality. High-quality, or educative, experiences are those that contribute to the healthy growth of further experience; low-quality, or "miseducative," experiences are those that distort or arrest the healthy growth of experience. The problem for the educator is to make suggestions to individual students about subject matter, materials, and activities that will contribute to educative experiences. In general, the highest-quality experiences are those that help individuals become increasingly autonomous and intelligent in guiding their own future educative experiences. The quality of the personal experiences that the curriculum contributes to is more important than how it is organized or whether it is primarily academic, vocational, or social.

Unfortunately, both the example of the Eight-Year Study and the significance of Dewey's message were obscured by World War II, and after the war ended, the national mood turned increasingly conservative. Progressive education was increasingly viewed by the general public as something whose time had come and gone, even as something that was now largely responsible for the same ills in American schools that the progressives themselves had identified and denounced earlier in the century. The general public, of course, made no distinctions between forms of progressive education that were consistent with Dewey's views of experience and forms that were inconsistent. As we shall shortly see, the national debate about education in the late 1940s and the 1950s—very much like the national debate of the 1980s—became a call for more emphasis on traditional forms of academic education, and by the time that call was answered by the nationally sponsored, academically oriented curricula, the Progressive Educational Association itself had quietly faded out of existence. Except for a brief period during the late 1960s and early 1970s of national attention to free schools and open classrooms, some of which were genuinely devoted to experiential education and some of which were merely reactions to the academic emphases of the time, the national mood has remained unreceptive to progressive education, the fundamental experiment in modern education begun at the start of the century.

So that part of the experiment devoted to experiential education remains incomplete. Experiential education has been talked about a great deal, it has been tried out on a small scale, a few of its tenets have even seeped into typical American classrooms, but the challenge remains largely the same at

the end of this century as it did at the beginning: to understand how curriculum can be considered in the broadest possible way, as whatever experience fosters the healthy growth of further experience, and to develop clear and workable principles to guide practical decisions about such curricula. Good experiential education is consistent with Dewey's views about fostering the intelligent autonomy of individual students.

Although Dewey's views were criticized during the 1950s, they were rediscovered by reformers in the late 1960s, forming the basis for the "alternative schools" movement. More recently, Eliot Wigginton (1985), through his widely publicized Foxfire program, has given Deweyan ideas a rebirth in a modern form. We will examine this modern expression of a Deweyan experiential perspective in more detail in Chapter Seven.

STRUCTURE OF THE DISCIPLINES

Abuses and distortions of Deweyan ideas provided educational critics of the 1950s, like Arthur Bestor and Admiral Hyman Rickover, a scapegoat for America's inability to gain a decisive competitive edge over the Russians in the Cold War that followed World War II. Books such as *Educational Wastelands* (Bestor, 1953), accusing American education of being intellectually "flabby," turned the questions of what schools should teach and who should decide this matter into issues of national concern. These critics laid the groundwork for a perspective that returned the focus of the curriculum to subject matter, and in particular to the disciplines of knowledge and the way scholars in those disciplines understand their structure. But as Atkin and House point out, there were significant political and educational antecedents to these issues:

> Before the mid-1950s . . . there was a lively education debate, and it was a curriculum debate. It centered on the decades-old battle between professors in liberal arts colleges and professors in schools of education. This heated internecine conflict over who trains teachers and what they should learn had been in progress at least since the late 1800s. (Atkin & House, 1981, p. 6)

The liberal arts professors representing the specific subject matters of the school curriculum regarded the education professors, particularly the progressive educators with an experiential perspective, as too general and fuzzy-headed. The education professors accused the subject-matter professors of being too narrow (Foshay, 1970). Atkin and House contend that World War II had a profound influence on this debate.

> . . . World War II and, particularly, the development of the atom bomb, greatly strengthened both the self-confidence of university-based academic scholars and their political power. The development of the practical application of atomic energy was seen as a triumph of theoretical, intellectual effort. Furthermore it was considered university-based and an achievement of professors. The fruits of research were seen by the American people, as never before, as having an impact on daily life. The United States had been increasingly enamored of technology during the preceding decades, but the developments were seen as a result of inventiveness and industry, rather than of science and theoretical inquiry. Edison and Ford had been the popular embodiments of American progress in the decades before World War II.
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> With the Allied victory over Germany and Japan, Einstein became a cultural hero. This quintessential professor—pipe-smoking, unkempt, apparently unworldly—had developed as an act of mind the basis for defeating the Axis power. People like him had worked intensely during the war to translate theory to an awesome weapon that had saved the world from enslavement. Professors captured the respect of the American public, and academic life was seen, for the first time perhaps, as crucial to our national survival. . . . There was a boost to professors and importance of a university education which had never been seen before and, many people think, is unlikely to be seen again. (Atkin & House, 1981, p. 6)

Because of these events and because of the international political climate of the time, education at all levels was regarded as crucial to the achievement of national goals. The most direct beneficiary of these developments was the university professor. Probably for the first time, university-based scholars in mathematics and science were seen as having a legitimate influence on elementary and secondary curriculum.

> University professors had long been lamenting the quality of precollege education in the battles over teacher education policy. They had been saying for 50 years that students were arriving at the university without necessary preparation. The information high school graduates possessed was insufficient, inaccurate or unimportant—sometimes all three. What the education system needed was more involvement by university professors in the creation of curriculum for the schools; more involvement, that is, by professors in the academic disciplines that constituted the high school curriculum. (Atkin & House, 1981, pp. 6-7)

It was in this climate that Max Beberman at the University of Illinois formed a group of mathematicians and engineers at his university for the purpose of improving the high school mathematics curriculum. The group, formed in 1951 and called the University of Illinois Committee on School Mathematics (UICSM), "analyzed secondary-school mathematics courses and concluded that they seldom included concepts developed after the year 1700, and almost never focused on the mathematical ideas professors considered important" (Atkin & House, 1981, p. 7). Beberman himself demonstrated at the University High School that he could successfully teach secondary school students topics like set theory. In 1952, UICSM developed instructional materials for use by other teachers under a grant from the Carnegie Corporation. This grant allowed UICSM to expand, involving

FIGURE 3.4 Jerrold Zacharias.

more mathematicians and more schools in which it could try out the experimental materials. The "new math" was born (Atkin & House, 1981).

By the mid-1950s, these developments were paralleled by developments in physics, this time spearheaded by a group of professors at MIT and Harvard under the leadership of Jerrold Zacharias (see Figure 3.4) (Zacharias & White, 1964). These scientists, after analyzing the secondary school physics curriculum, reached the same conclusions that Beberman and his colleagues had reached earlier. The physics curriculum did not include the topics that these physicists regarded as the most important. Instead, high school physics textbooks emphasized technology, in particular the physical principles underlying the operation of everyday devices like refrigerators and automobile engines.

> In the Cambridge setting, Zacharias, himself involved in defense work during World War II and emboldened by successes to be achieved by well-mobilized minds, attracted a group of outstanding physicists to work on high school curriculum. Several of these physicists also had been involved in weapons development just a few years earlier.
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> By 1956, the 6-year-old National Science Foundation, which in its charter had been given responsibility for improving the state of American science education as well as science, began to fund Zacharias' Physical Science Study Committee (PSSC). The verve, motivation, optimism, and esprit of PSSC seemed to many observers to be reminiscent of the organization that developed the atom bomb, and by this time Americans were convinced that great minds and plenty of money could do almost anything, even change the secondary school curriculum.
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> It probably is no coincidence that these early nationally oriented attempts to change the curriculum were in the fields of mathematics and science. It was these subjects that were associated with success in the war effort. It was these fields that represented increasingly for the American people an unqualified good. UICSM and PSSC received considerable publicity in the nation's education press, and there were feature stories in magazines such as *Time*. The tenor of the publicity, as might be imagined, was that the outstanding scholars associated with these new projects were in the process of remedying extraordinary deficiencies in the existing education system. Indeed, they were about to "reform" the curriculum. The clear inference for the public was that schools had been mismanaged, the curriculum was antiquated, and all this was, in an almost criminal fashion, depriving youngsters and society of a rightful education. The education "establishment" was seen increasingly by the public as it had been seen for decades by academics, as self-serving, unresponsive, and probably a bit dull-witted. (Atkin & House, 1981, pp. 7-8)

On October 4, 1957, these developments took on a sudden urgency with the dramatic launching of Sputnik I by the Soviet Union:

> The defense of the United States suddenly was seen as threatened. A sense of crisis permeated the nation. Professors testified in the Congress, and their testimony was believed. They said that our national well-being depended, in part, on high-quality precollege science education, (p. 8)

It was in this context that scientists like Zacharias had been attempting to update the physics curriculum. They quickly realized that the "knowledge explosion" had created too much subject matter to allow them simply to add modern physics to the existing curriculum. They found that they needed to establish priorities. Zacharias's solution was twofold: (1) teach only the most fundamental concepts in physics; (2) teach students how to derive the rest of physics knowledge from those concepts. In a sense, children could learn a lot "while keeping very little in mind" (Brunei, 1971, p. 20). Although this notion began with physics, it quickly spread to other sciences.

These efforts provided the basis for a conference in 1959 at Woods Hole, Massachusetts, sponsored by the National Science Foundation and other foundations. Jerome Brunei's (1960) report on that conference, entitled *The*

Process of Education, proposed a theoretically reasonable solution to the ongoing debate between the subject-matter specialists and education generalists based on the work of Zacharias, Beberman, and others attending the conference. This report provided the principles upon which a structure-of-the-disciplines perspective was based. First, Bruner proposed that subject matter is dynamic, something evolving, instead of a given. Second, he proposed that each discipline has its own way of conducting inquiry. There is not one scientific method, but many. Third, he proposed that the purpose of education should be to develop in children's minds several different "modes of inquiry." These proposals struck a compromise between the education professors and those in the academic disciplines. After all, they were, and always had been, both interested in fostering understanding (Foshay, 1970). Bruner's proposal was a reasonable resolution of the dilemma and spread rapidly. In the words of Bruner (1971, pp. 19-22):

> Let me reconstruct the period in which *The Process of Education* came into heing. The year 1959 was a time of great concern over the intellectual aimlessness of our schools. Great strides had heen made in many fields of knowledge, and these advances were not being reflected in what was taught in our schools. A huge gap had grown between what might be called the head and the tail of the academic procession. There was great fear, particularly that we were not producing enough scientists and engineers.
>
> It was the period, you will recall, shortly after Sputnik. The great problem faced by some of my colleagues in Cambridge, Massachusetts, at the time was that modern physics and mathematics were not represented in the curriculum, yet many of the decisions that society had to make were premised on being able to understand modern science. Something had to be done to assure that the ordinary decision makerwithin the society would have a sound basis for decision. The task was to get started on the teaching of science and, later, other subjects. . . .
>
> The prevailing notion was that if you understood the structure of knowledge, that understanding would then permit you to go ahead on your own; you did not need to encounter everything in nature in order to know nature, but by understanding some deep principles, you could extrapolate to the particulars as needed. Knowing was a canny strategy whereby you could know a great deal about a lot of things while keeping very little in mind.
>
> This view essentially opened the possibility that those who understood a field well—the practitioners of the field—could work with teachers to produce new curricula. For the first time in the modern age, the acme of scholarship, even in our great research institutes and universities, was to convert knowledge into pedagogy, to turn it back to aid the learning of the young. It was a brave idea and a noble one, for all its pitfalls. . . .
>
> The rational structuralism of Woods Hole had its internal counterpoise in intuitionism—the espousal of good guessing, of courage to make leaps, to go a long way on a little. It was mind at its best, being active, extrapolative, innovative, going from something firmly held to areas which were not so firmly known in order to have a basis for test. . . .
>
> During the early sixties, in various projects, it was discovered again and again how difficult it was to get to the limit of children's competence when the teaching was good. It was Socrates and the slave boy constantly being replayed. No wonder than that we concluded that any subject could be taught in some honest form to any child at any stage in his development. This did not necessarily mean that it could be taught in its final form, but it did mean that basically there was a courteous translation that could reduce ideas to a form that young students could grasp. *Not* to provide such translation was discourteous to them. The pursuit of this ideal was probably the most important outcome of the great period of curriculum building in the sixties.
>
> With all of this there went a spirit and attitude toward students. The learner was not one kind of person, the scientist or historian another kind. The schoolboy learning physics did so as a physicist rather than as a consumer of some facts wrapped in what came to be called at Woods Hole a "middle language." A middle language talks *about* the subject rather than talking the subject. . . .

The metaphor of the student as neophyte scientist nicely captures the essence of this perspective. Once we understand that this metaphor provided the foundation for the perspective, the emphasis on students' active participation in scientific inquiry, the dominant role of university scientists, and the importance of providing students with the fundamental concepts of the disciplines all make perfect sense.

BEHAVIORAL

The dominance of scientists and mathematicians in curriculum development during the 1950s and early 1960s did not go unnoticed by behavioral psychologists. They were concerned that all the knowledge they had gained during the previous fifty years about how children learn was being ignored. Furthermore, with all the federal dollars being committed to curriculum development since Sputnik, they wanted a piece of the action. They argued that the strictly disciplines-based curricula were failing to teach science and mathematics effectively, that there was much more to curriculum development than providing materials that reflected the structure of the disciplines. According to these psychologists, curriculum development needed to focus not on content, but on what students should be able to do—i.e., the behaviors they learn—as a consequence of instruction. Further, educators need to take into account how students acquire these behaviors—i-e., the conditions of learning—as they plan instruction. In order to understand these criticisms and proposals, we must first consider the development of these views.

The roots of behavioral views, like most other views, can be traced back to Greek philosophers, particularly Aristotle. In an important work on memory and recollection, Aristotle argued that imagery is the basis for memory, that the associations a person makes between images are the basis for recollection, and that the principles of comparison, contrast, and contiguity are the basis for all associations. That is, the differences and similari-

ties between images, as well as when they occur, account for the ways in which we relate our images, and those relationships in turn determine what we remember at any given time. Many of Aristotle's ideas found expression in the classical empiricism of John Locke (1913) in the seventeenth and David Hume (1957, 1967) in the eighteenth century. This view of knowledge was based on the assumption that all knowledge is rooted in sense impressions, i.e., the effects that seeing, hearing, touching, tasting, and smelling things in the world have on our minds. These sense impressions form the building blocks of experience, much as atoms form the building blocks of the physical world—as Sir Isaac Newton proposed at about this same time. These "atoms" of experience are then connected by associations into complex ideas. However, as Hume (1957) so succinctly put it, no matter how complex the ideas, "there is nothing in the mind which was not first in the senses."

The founder of behavioral psychology is often considered to be Edward Thorndike (see Figure 3.5). His highly influential work near the beginning of the twentieth century in the areas of mental measurement, the laws of learning, the psychology of arithmetic, and transfer of training also established him as the founder of educational psychology. In addition, his exhaustive works on behavioral objectives in arithmetic contributed to his influence on the curriculum field during its formative years in the beginning of the twentieth century. It was Thorndike's preeminence and his promise of a behaviorally based science of education that led to the parallel emergence and common behavioral roots of educational psychology and curriculum as fields of professional study.

While Thorndike provided the necessary scientific basis, Franklin Bobbitt provided the necessary technology for a behaviorally based theory of curriculum. His two major works, *The Curriculum* (1918) and *How to Make a Curriculum* (1924), established behavioral analysis, termed "life-activity analysis," and specific objectives derived from the analysis as the principal methods of curriculum development. As long as one could assume that preparation for current life activities also prepares people to live in tomorrow's world, Bobbin's methods seemed reasonable. Furthermore, basing curriculum on actual life activities, rather than on traditional subject matter, seemed to be consistent with the progressive movement sweeping the nation at the time. However, once educators realized that they were living in a rapidly changing world, and that life-activity analysis could lead educators to develop curricula that reinforced the existing social structure and were doomed to technological obsolescence, they began to regard Bobbitt's methods as too conservative. But Bobbitt's technology for developing curricula based on activity analysis left a legacy. After Bobbitt many educators believed that curriculum development is a process best left to experts, i.e., those with specialized knowledge. This belief transformed the field to one based on a technical production framework (see Chapter One).

Ralph Tyler continued the technical production and objectives orientation of curriculum into the 1930s, 1940s, and 1950s. In his seminal book, *Basic Principles of Curriculum and Instruction* (1949), he presented a method for analyzing each curriculum objective into its substantive, i.e., content, dimension and its behavioral dimension.[5] Tyler's notion of the behavioral aspect of an objective served as the basis for Benjamin Bloom's (1956) highly influential work on a taxonomy (a classification) of objectives. Bloom's taxonomy (See Chapter Four) systematized the behavioral dimension and, in doing so, reinforced the belief that objectives are fundamentally expressions of the behaviors that educators want learned—as opposed to the content teachers want to teach or the experiences educators want students to have.

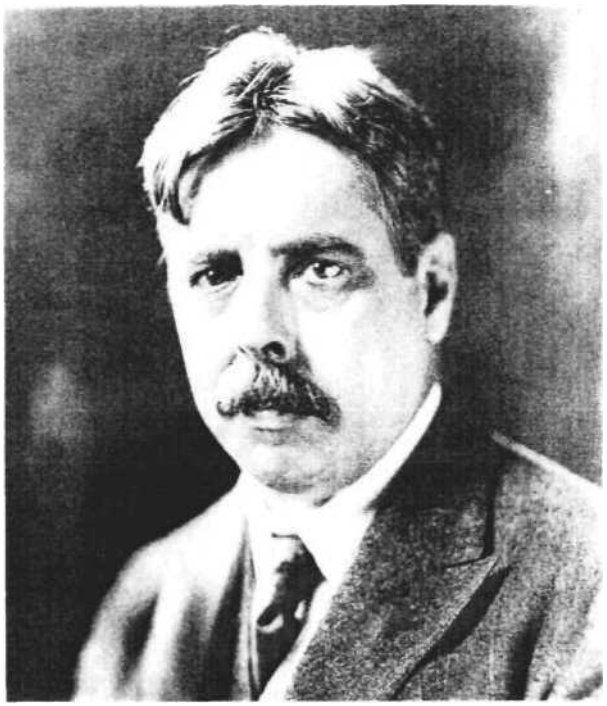

FIGURE 3.5 Edward Thorndike.

While Bobbitt provided educators with the technology to identify important objectives, Robert Mager and Fred Keller provided the technologies necessary for expressing those objectives in clear, unambiguous terms; their work gave teachers a blueprint they could use to redesign their courses according to behavioristic principles. Mager's little book *Preparing Instructional Objectives* (1962) has done more to influence educator's beliefs about objectives—and in particular, their proper form—than any other

work. Likewise, Keller's (1968) approach to teaching, termed Personalized System of Instruction (PSD, has arguably done more to change college instruction than any other single innovation. In this approach, a course is broken down into a step-by-step series of behaviors, each of which must be "mastered" before the student is allowed to move on. By uncritically transferring their extensive experience in industrial training to public education, Mager and Keller were able to stipulate the requirements for well-formed objectives and for effective course organization, respectively. The major requirement for Magerian objectives is a verb that expresses observable behaviors. As we shall explore in greater depth in Chapter Five, Mager's insistence on observable behaviors and his stipulation of a simple procedure for writing this type of objective, and Keller's requirements for content sequence and for student progress through that sequence, have provided educators with straightforward, if not reductionistic, technologies for implementing B. F. Skinner's (1968) behavioristic psychology of learning.

COGNITIVE

In primary and secondary education, as in the universities, a challenge to the behavioral orientation that dominated psychology came from cognitive psychologists. Ironically, the foundations of modern cognitive views can also be traced to Greek philosophy, but in this case to Plato. Although some of Plato's theory now seems strange, his views had a strong influence on antecedents of contemporary cognitive psychology. Plato believed that a person's knowledge and ideas are innate, or inborn; all that a teacher needs to do is help the person recall them. Therefore, according to Plato learning is recollection, and recollection is the search for and discovery of innate ideas followed by the construction of new concepts from those ideas. Plato's rendition of Socratic dialogues has remained, for many educators, the prototype of great teaching. Socrates seemed capable of teaching complex, abstract ideas without appearing to tell his students anything. As implausible as Plato's view of innate ideas might seem to us now, it has been very influential and formed the basis for many modern ideas of learning as discovery.

In spite of Plato's influence, the predominant views about learning and knowledge through the nineteenth century were empiricist ones, according to which all knowledge derives from sensations and the associations made between them. Modern cognitive views, though rooted in Platonic idealism formulated more than 2,000 years earlier, may, therefore, be understood as a response to nineteenth-century empiricism. By arguing that the empiricist account of knowledge is fundamentally flawed, Immanuel Kant in the nineteenth century established the foundation for the cognitive perspective. Sensations and associations, he argued, are insufficient as an account of knowledge. Kant then asked the fundamental cognitive question: "What

FIGURE 3.6 Jean Piaget.

goes on in the mind that allows us to form knowledge?" His answer was that empiricists failed to take into account the structure of the mind. The mind, he said, has categories that structure perceptions. Experience does not consist of raw sensations, but of sensations structured by the mind.

In part because some of the methods used by some cognitive psychologists to study the mind proved to be unreliable (particularly the method known as introspection), the work of most cognitive psychologists was discredited and ignored for almost a century.

For example, the work of the Swiss psychologist Jean Piaget went largely unnoticed for thirty years until the 1950s. Piaget (see Figure 3.6), as he sought to understand the development of intelligence, was particularly interested in children's beliefs about space, e.g., volume; time; natural phenomena, e.g., the sun; and moral questions (Piaget, 1929). By providing detailed accounts of how these beliefs develop and how young children's thinking differs from that of adults, Piaget provided educators with an in-depth understanding of children's minds and convinced many educators that they must wait until the child is cognitively ready," before teaching abstract concepts. Furthermore, his notion that the mind both "assimilates"

new ideas into an existing structure and also "accommodates" new ideas by reorganizing this structure, has formed the basis for modern conceptual change theory, to be discussed later in this book.

While Piaget was showing educators the cognitive limitations on abstract thinking in young children, Noam Chomsky (1968) was portraying the incredible accomplishment that young children manage to complete within two to three years, namely, language acquisition. He developed a mode of analyzing the structure of language, showing that language is far more complex than previously believed, and that behaviorist accounts of language development are incapable of explaining these complexities. He argued that innate structures (a "language acquisition device") are necessary for explaining how someone learns such a complex language in so short a period of time. In his argument he made an important and highly influential distinction between competence (which he defined as the existence of mental structures, such as understanding of grammatical rules—and performance) in other words, observable behaviors, such as utterances. The study of the relationship between knowledge and performance continues to be of fundamental concern to cognitive psychologists studying such topics as problem solving, language, decision making, and even teaching.

Although the work of Piaget, Chomsky, and many others have provided the basis for modern cognitive views of education, little direct attention had been given to problems of learning per se until David Ausubel's (1978) work on "meaningful learning." Although Ausubel approached the problem from a different perspective, he joined the behavioral psychologists in criticizing the proponents of the disciplines-based curricula, particularly for their use of "discovery learning" and for their failure to distinguish between the "logical structure" of the disciplines and the "psychological structure" of the learner (Ausubel, 1964). His work and that of "schema" theorists like Richard Anderson (1977) after him established the view that "the single most important determinant of learning is what the learner already knows; ascertain that and teach him accordingly" (Ausubel, 1968).

Much of the recent work in this field has been aimed at discovering what it is that learners already know, i.e., their existing concepts and beliefs; how that knowledge affects their performance on school-related tasks such as comprehension and problem solving; and how to teach learners to perform difficult tasks and to understand abstract ideas. As you will learn in Chapter Five, this range of concerns has produced a variety of approaches to curriculum, all of which can be considered cognitively oriented thinking those based on child development., concept, learning, and the thinking process. Most recently, the notion of the thinking curriculum attempts to resolve conflicts among these different views by

> offering a perspective on learning that is thinking- and meaning-centered, yet insists on a central place for knowledge and instruction. Cognitive scientists today share with Piagetians a constructivist view of learning, asserting that people are not recorders of information (as in the traditional perspective) but builders of knowledge structures. To know something is not just to have received information but also to have interpreted it and related it to other knowledge. To be skilled is not just to know how to perform some action (as in the behavioral perspective) but also to know when to perform it and to adapt the performance tq varied circumstances. . . . Thinking and learning merge in today's cognitive perspective, so that cognitive and instructional theory (and we might add, curriculum theory) is, at its heart, concerned with the Thinking Curriculum. (Resnick & Klopfer, 1989, pp. 3-4)[9]

SUMMARY

To summarize the five perspectives, we can imagine asking the proponents of each one how they would advocate reforming schooling in general and curriculum in particular. Their responses might be as follows:

1. *Traditional:* Schools need to return to the basics, that is, to a mastery of basic literacy and computational skills, to a knowledge of basic facts and terminology that all educated people should know, and to a set of common values that constitute good citizenship.
2. *Experiential:* Schooling is too detached from the interests and problems of the students, that is, from their ordinary life experience. Make schooling more functionally related to the students' experience, that is, less contrived and artificial, and students will grow more and become better citizens.
3. *Structure of the disciplines:* There is too large a gap between school subject matter and the scholarly disciplines from which they derive. Reduce that gap by engaging students of all ages in genuine inquiry using the few truly fundamental ideas of the disciplines, and students will develop both confidence in their intellectual capabilities and understanding of a wide range of phenomena.
4. *Behavioral:* There is too much vague talk about objectives, and there are too many unsystematic approaches to the development of curricula. Just decide what the successful graduates should be able to do in very specific measurable terms, analyze those behaviors to identify their prerequisite skills, provide opportunities for students to practice each skill with feedback to the point of mastery, and then evaluate the students' performance. We have the technology to ensure that all students master what they need to know. We need only the determination to implement our knowledge.
5. *Cognitive:* Schools emphasize rote learning too much and do not put enough emphasis on real understanding and thinking. Curricula need to allow students to construct their own knowledge based on what they already know and to use that knowledge in purposeful activities requiring decision making, problem solving, and judgments.

Perspectives not only provide vantage points that increase our educational vision but also may influence and be influenced by our views of reality. An understanding of this point is essential before you attempt to use the perspectives for curriculum analysis.

A theoretical perspective functions as a metaphor for thinking and talking about the mind, teaching, and curriculum. Traditional curricula conjure up the metaphor of the mind as a storehouse, while cognitive curricula appear to view the mind as a garden. Behavioral curricula conceive of teaching as shaping behavior, structure-of-the-disciplines curricula view teaching as the induction of novices into a community of scholars, and experiential curricula consider teaching to be working behind the scenes to facilitate and guide student-directed projects. Behavioral perspectives conceive of curricula as the specific destinations or targets toward which education is aimed, whereas traditional perspectives imagine curricula as encyclopedic repositories of ideas, skills, people's names, events, books, and values that all students should master.

Metaphors such as these are powerful. They affect the language we use to discuss education, and they make certain proposals reasonable and others unreasonable. They even help determine what we consider to be common sense. For example, the claim by behaviorists that you cannot determine your itinerary and mode of travel until you decide specifically where you want to go is used as an appeal for highly specific educational objectives.

But we must always be cautious of metaphors. Although they help us understand the unfamiliar in terms of the familiar, they also distort. The things or experiences that a metaphor equate are never really exactly the same. That is, all metaphors have inherent limitations. They can be taken too far. More important, unless we are aware of our use of metaphors and their limitations we can become captive to them and encapsulated by them (Zais, 1976). The experienced curriculum analyst is continually monitoring the use of metaphors in educational discourse, particularly in curriculum proposals.

In Chapter Twelve, we will examine in more detail the limitations of the theoretical perspectives introduced here. An understanding both of the perspectives and of their limitations will provide the basis for the reflective eclecticism discussed in Chapter One.

CURRICULUM ANALYSIS QUESTION FOR CHAPTER THREE

1. What perspective, if any, does the curriculum represent?

As you answer the question, remember that at this point you can only hypothesize about the curriculum's perspective. Don't be afraid to go out on a limb here. Subsequent chapters will enable you to test your hypothesis. If you can see no perspectives, don't hesitate to say so.

NOTES

1. See, for example, writers like E. D. Hirsch, Jr. (1987), William Bennett (1988), and Allan Bloom (1987).
2. I wish to thank George Willis for his contribution to this section of the book.
3. *See Cremin (1961).*
4. See Aikin (1942).
5. See Bloom, Hastings, and Madaus (1971) for an elaboration of this two-dimensional analysis of objective.
6. Typically based on the work of Piaget (1929) or Kohlberg (1971).
7. Typically based on the work of Ausubel (1968) or Bruner, Goodnow, and Austin (1956).
8. For example, those derived from the work of Taba (1967) on inductive thinking, Sternberg (1985) on critical thinking, and deBono (1970) and Torrance (1965) on creative, or "lateral," thinking.
9. Interestingly, although the cognitive and the behavioral psychologists may bitterly debate the way people learn, both psychologies represent technical production perspectives on curriculum. Both consider learning to be the purpose of education, although they may come to blows about what it means to learn something and how best to facilitate the process. Furthermore, both perspectives consider curriculum development to be a technical process requiring the expertise of psychologists, although they obviously each consider their own brand of psychology to be the most useful.