DOCUMENT RESUME

ED 188 319 EA 012 770

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TITLE The Federal Role in Curriculum Development, 1950-80.
SPONS AGENCY National Inst. of Education (DHEW), Washington, D.C.
PUB DATE 80
CONTRACT NIE-P-79-0065
NOTE 87p.

EDRS PRICE MF01/PC04 Plus Postage.
DESCRIPTORS *Curriculum Development; Educational Change; Educational Demand; Educational History; *Educational Policy; Educational Supply; Elementary Secondary Education; Federal Programs; *Government Role

ABSTRACT

The federal government became involved in the development of public school curriculum in order to pursue broadly accepted national goals. During the first two decades of federal curriculum activity, however, the country became increasingly fragmented socially and politically, making the federal role more complex and controversial. Federal attempts at curriculum revision have affected materials and teaching activities, but have often ignored the wishes, habits, and needs of users. Still, an unprecedented degree of intrusiveness of federal regulation into the teaching process has become acceptable. Federal education policy tends to be a melange of the often conflicting policies of different special interest groups and governmental bureaus. In most cases these interests hope to develop curriculum changes at, diffuse them from, and evaluate them by a central agency--the federal government--without encouraging development of new policies in the field. Federal involvement in curriculum can be understood and interpreted from three analytical perspectives: the technological perspective was most important when there was a high consensus on national goals; the political and cultural perspectives have become important as the society has divided. Consideration suggests favoring strategies for change based on teacher initiatives and designed to meet varied, complex, and sometimes contradictory demands.
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THE FEDERAL ROLE IN CURRICULUM DEVELOPMENT, 1950-80

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Prepared pursuant to Contract No. NIE-P-79-0065

for

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ACKNOWLEDGEMENTS

During the early stages of preparing this monograph, the plan and major themes were discussed with Barry MacDonald and, separately, with Gary Sykes. We are grateful for their excellent suggestions during this critical, formative period. In the course of the project, interviews were conducted with Eleanor Farrar, Maurice Kogan, and Wade Robinson. Each one provided rich anecdotal detail that helped us relate our observations and recommendations to complex practices in the field of curriculum policy. Finally, Gene Glass and Gordon Hoke were generous enough to offer suggestions on the basis of the completed initial draft. We acknowledge with gratitude the assistance provided by these people, without attributing to any of them the particular viewpoints that are advanced.

In a document that spans as broad a topic as this one does, and over so long a period of time, there are intellectual debts of which we are only dimly aware that were developed during thousands of hours of reading and hundreds of hours of conversation. We apologize for omitting acknowledgment to many people who helped to enrich and clarify our thinking about the issues we have addressed.

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An Overview

The federal government became involved in curriculum development in the elementary and secondary schools to pursue certain national goals about which there was broad agreement. The first section of the monograph traces the history of that involvement and represents an attempt to put it in social and political perspective. During the course of the first two decades of federal curriculum activity, however, the country became increasingly fragmented socially and politically. A sense of national purpose began to fade, and special-interest groups increasingly determined policy. As a result, the federal role became more complex and controversial.

The second section of this monograph outlines some of the effects of the policies and programs developed during this period. The overall impact of federal efforts has been modest but measurable. Materials, and to a certain degree teaching activity, have been affected, but to a far lesser extent than many had hoped, expected, and promised. Much of the influence was exercised indirectly through publishers, testing agencies, and the mass media -- each of which exerts a stronger influence than curriculum development strategies would suggest.

The third section of the paper asks, What kinds of policies were formulated in this period? Generally, in accord with the ideal of nationally determined purpose, most policies have been of the "center-periphery" type, and they have not been particularly successful. As society has become increasingly fragmented and the ideal more illusory, the ascendency of special-interest groups served to highlight the

uncoordinated, sometimes chaotic, nature of federal activity. Unwarranted assumptions seem to have undergirded basic federal strategies.

How are these events understood and interpreted? Associated with an overview of change and innovation in the schools, we posit three analytic perspectives: the technological, political, and cultural. When the role of the federal government was to accomplish national concerns about which there was high consensus, the technological perspective seemed most relevent. However, as the society has appeared more divided, the political and cultural perspectives have become increasingly powerful. The perspectives are discussed in part four of the paper.

Finally, assuming that there will continue to be a strong federal presence in curriculum development (a certainty it seems to us), what should be the federal role? Should it act only in areas where there is broad agreement? Should it assume only a responsive posture towards policies initiated by special groups? Should it take a more active role and try to focus attention and achieve consensus and direction on various issues? These questions are explored in the final section of the monograph.

THE SOCIAL CONTEXT FOR FEDERAL CURRICULUM DEVELOPMENT ACTIVITY IN THE 1950s and 1960s

In analyzing the federal curriculum development efforts that began in the 1950s and continure through the 1970s as a guide for policy in the 1980s, the examination must rest in considerable measure on an understanding of the particular context in which the activities occurred. What motivated federal involvement? Who did the work? What were some salient characteristics of the education system at that time? To develop strategies for the 80s without asking how the 80s are different from the 50s would be as much an error in formulating education policy as it would be in technology policy, or defense policy, or health policy.

Before the mid 1950s, there was virtually no governmental effort at the national level designed to produce curriculum materials. There was, however, a lively education debate, and it was a curriculum debate. It was centered on the decades-old battle between professors in liberal arts colleges and professors in schools in education. This heated internecine conflict over who trains teachers and what they should learn had been in progress at least since the late 1800s, but while it was a commanding issue at most universities, the ramifications in the nation's elementary and secondary schools were indirect and relatively subtle. One could argue that people of only modest ability were choosing teaching as a career or that professors of education were working in a poorly understood field of study, but it was difficult to relate these views and the campus battles to actual school practice -- in part, because few systematic studies were undertaken to determine, for example, exactly who chose teaching as a

profession, what it is they had learned, and who taught them.

However 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.

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 the academic life for the first time perhaps was seen as crucial to our national survival. This development was to be underscored by the policy decision that led to the GI Bill and hundreds of thousands of war veterans flocking to the universities. There was a boost to professors and the importance of a university education that had never been seen before and, many people think, is unlikely

to be seen again. Higher education was to expand enormously. Less directly, the focus on higher education emphasized the importance of education generally in achieving national aims, including elementary and secondary education.

One of the major results of these developments, for our purposes here, was the fact that the position of university-based scholars in influencing education policies was enhanced. University professors had long been lamenting the quality of pre-college education in the battles over teacher education policy. They had been saying for fifty 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.

In this climate, in 1951, a project was started at the University of Illinois that, while it did not have government financial support initially, was to embody virtually all the features to be found later in the most widely accepted and influential of the federal efforts in curriculum. Under the leadership of Max Beberman, a group was created at the University to influence the mathematics taught in high schools. It was called the University of Illinois Committee on School Mathematics, and it included professors from the Department of Mathematics and the College of Engineering, as well as Beberman himself. The only feature of the UICSM effort that was not to be duplicated widely as the federal government became involved in curriculum development activities was the

fact that Beberman himself was a mathematics teacher at the Campus' University High School and a professor of education.

UICSM professors 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. At University High School, Beberman, an extraordinary teacher, demonstrated that a topic such as set theory could be taught effectively to secondary school youngsters. Instructional materials for use by other teachers began to be developed, and at about this time, 1952, a grant was received by UICSM from the Carnegie Corporation which served to involve even more mathematicians and expand the number of schools in which the experimental books could be tried. The project also began to receive national attention, in part because of the publicity associated with receiving a foundation grant.

By the mid 1950s, a group of professors at MIT and Harvard under the leadership of Jerrold Zacharias was forming to examine the secondary school physics curriculum. Precisely the same criticism had been leveled here. The physics taught in high school did not reflect the topics considered of greatest importance by professors of physics. Rather, high school physics textbooks emphasized how physical principles operated in 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.

By 1956, the six-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. 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.

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. There were feature stories in magazines like 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 the 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. Of course, this perception did not go unnoticed by teachers, school administrators, or professors of education. One or two of these people even objected to the involvement by scientists, mathematicians and engineers in a field in which they had little or no preparation. But these mutterings received little

attention, and when they were noticed, they were viewed as further evidence of an unresponsive and self-interested cadre that should be ignored.

All the activity described to this point was fully in evidence and commanding considerable attention before Sputnik I was launched by the Soviet Union on 4 October 1957. That dramatic event profoundly affected the scale if not the character of federal effort in curriculum. 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 pre-college science education. Some of the most eloquent remarks were presented by Edward Teller in advocating a strong role for the government not only in science teaching at the university level but in elementary and secondary schools as well. There is, said he, not only the need for highly trained scientists and engineers, but also for a general population that understands what these specialists do. Scientific work would not progress adequately unless there was a supportive climate. He drew the analogy with sports in America. A relatively small number of people are involved in professional athletics. The enterprise thrives because there are hundreds of thousands of fans. The country needs science "fans". With such supporters, science and technology would thrive. The place to educate such people is in the common schools, and it is a national responsibility to do so.

This argument and others like it were persuasive. The Congress passed the National Defense Education Act of 1958 that called for increased emphasis on science, mathematics, and foreign language in the elementary and

secondary schools. Congress also increased the science education appropriations to the National Science Foundation to enable NSF to initiate efforts in chemistry, biology, mathematics, and earth sciences, as well as physics.

These federal programs to influence curriculum in the schools were launched with little understanding of how schools change, and, in fact, there was not even much discussion of the subject. From the tactics employed, however, clear picture emerges of some of the assumptions implicit in federal programs. First, it was believed that school administrators and teachers are infinitely pliable. Second, it was assumed that if a program considered sound were to be developed by authorities in science and mathematics, these programs would find their way into the schools. there was, in fact, basis for both beliefs. Curriculum developers at the time thought they saw teachers using whatever curriculum materials were provided by commercial publishers with little attempt either to create their own programs or modigy that which had been provided. Furthermore, secondary school teachers, particularly in science and mathmetatics (like everyone else), admired the achievement of scientists and mathematicians during the preceding fifteen years. Many of these teachers identified with the university-based scientists and basked in the reflected glory. After Sputnik, they too were viewed by the general public as key figures in improving the defense posture of the United States.

This was a heady time for science teachers. New programs were funded by the National Science Foundation that enabled high school teachers of

science and mathematics to attend summer classes at universities to learn about new courses and modern content. Stipends were provided by the government that even included allowances for dependents. Implicit in the curriculum development policy of the time was the belief that the new curriculum developers had goals that not only were identical to those of the general population but to the goals of high-school teachers and administrators as well. To the degree that such assumptions were well founded, and by and large they were, there was little questioning of the strategy chosen for curriculum change. The social climate favored changes of the type advocated by the scientists and mathematicians to such a degree that the topic of mechanism for educational change seldom arose.

In retrospect, as one views the historic exclusion of the federal government from policy of the public schools, particularly curriculum, it is startling that virtually no one raised objections at the time to the dramatic new role assumed by Washington. Quite the contrary, in fact. Such was the generally accepted view that national defense was clearly a national concern and the schools an instrument for achieving nationally defined purposes that the new initiatives met with little but enthusiasm from legislators, teachers, school administrators, and the public at large. There was virtually no talk about local autonomy or the fact that education is a field constitutionally reserved for state-level initiative.

The only significant objection to strong federal involvement in curriculum activities in the late 1950s, in fact, was voiced not on legal or historical grounds but on grounds of feasibility. These

reservations, voiced largely by one person though a powerful one, is one of the only signs that there was any serious consideration in the early stages of the curriculum development movement about how schools actually change. James Conant, by then a former Harvard President and a powerful figure in science policy, warned the National Science Foundation against moving into the elementary-school field. He felt that the elementary schools were too large and diffuse an enterprise for the federal government to have much impact on practice. He noted that there were few teachers in the elementary school who taught only science. The common pattern was for each teacher to take responsibility for all subjects. Though he recognized the importance of effective science teaching in the elementary school, he wondered how the government could reach one million elementary school teachers (in 1959). The scale was significantly different for secondary school teachers of science and mathematics, only about 30,000. Furthermore, secondary school teachers of science and mathematics represented a relatively permanent group. Elementary school teachers, largely female, constituted a rapidly shifting population. By some estimates at that time, there was a turnover of half of the group of elementary school teachers every three years. Conant argued that the effects on actual science teaching in the classroom of even a massive federal effort would be minimal. He was concerned also that a major program at the elementary school level would detract from efforts to improve high-school teaching.

The prevailing view on the National Science Board, the governing body of NSF, and in the scientific community was that science and

mathematics education should be improved with federal help beginning in the elementary school grades. To overcome the objections of Mr. Conant, NSF commissioned a study that was conducted by the American Association for the Advancement of Science of the feasibility of moving into elementary-school science. The AAss conducted several regional conferences to which outstanding scientists and many public-school administrators were invited. The result was a recommendation that NSF became involved in the improvement of elementary-school science and mathematics.

Conant's objections served to delay the entry of the National Science Foundation into the elementary school field by about one year. By the start of the 1960s, two federal agencies, the National Science Foundation and the Office of Education, were strongly committed to modifying school curriculum nationally, and there was no longer a dissenting voice. Teachers, particularly science and mathematics teachers, welcomed the new federal interest; national attention was drawn to their centrality in addressing a major problem, improving the country's space and defense posture. Teachers were paid during the summer to study the new methods at universities across the country. In many summers there were several hundred institutes from which science and mathematics teachers could choose.

National Science Foundation activities in curriculum development during the early years did not receive searching attention from political figures either. Rather, since the NSF enabling legislation stipulated that the Foundation had responsibilities for improving science education, primary initiative was allowed to remain almost exclusively

with the National Science Board, with only preemptory review by the Congress.

On the other hand, the passage of the National Defense Education Act of 1958 came only after thorough Congressional study. As indicated earlier, there were well-publicized congressional hearings that served as a platform for advocates of an enhanced governmental role in local education affairs. While the Act did not mandate directly a curriculum function for the federal government, its passage left no question that local education matters were of national concern. The name of the Act suggests clearly that the Congress saw a powerful relationship between a strong education system and an adequate national defense. The 1958 legislation was the strongest signal yet that there are occasions for Congressional attention to matters of elementary and secondary education.

The early and mid 1960s, the Kennedy and early Johnson years, reflected a high degree of consensus about national aims as well as a strong sense of optimism regarding the ability of government to modify social institutions. However, by this time national priorities had begun to shift. Relatively rapidly, Americans began turning their attention away from issues directly focused on the Cold War and toward pressing domestic problems. In particular, the country was becoming increasingly sensitive to problems associated with racial friction and poverty. The space race still commanded interest, but domestic issues now dominated the political scene. The civil rights movement won a number of important court victories in matters like segregation, educational access, and voting. The 1954 Brown decision had served as a special impetus to press for progress. Civil rights leaders gradually became more effective

with the electorate, too. Accomplishments seemed substantial, and dramatic progress toward equality appeared feasible. Americans were talking about The Great Society, a nation characterized by health and welfare programs that would mitigate substantially the debilitating effects of poverty as the country moved toward racial justice.

Lyndon Johnson relished the attention to domestic issues. His special interest was the schools, and he liked being called the "Education President". Consistent with his effort to emulate Franklin Roosevelt and improve the domestic lot of Americans, he devoted monumental personal effort to assure passage of the Elementary and Secondary Education Act of 1965. A major feature of this legislation, Title I, established a "compensatory education" program to improve schooling in debilitated urban areas. It was thought that the country's worst problems were in the cities because of the influx of poor blacks from the rural South. Curriculum development was part of this effort, and it was to affect virtually every metropolitan area in the country.

By the end of the Johnson presidency, then, there was major federal education effort directed toward two broad goals. One was designed to improve science and mathematics education with a view toward helping the nation meet its needs for highly skilled specialists. These programs were really a legacy of the Eisenhower years. The other was intended to raise educational achievement among groups whose life chances traditionally had not been promising. The nation seemed committed to progress in both quality and equality in education.

So strong was the optimism about the potential of schools in meeting national aims that some of America's largest corporations, sensing a huge market, began to move into the education field by acquiring textbook firms and education equipment companies. Raytheon, Xerox, General Electric, Westinghouse, and ~~Time~~/Life all saw potential profit in the education business and moved to position themselves to take full advantage. In short, there was little questioning of the nation's capability or unity. The mood was bullish. Progress seemed natural in education and in virtually all other spheres of social policy. The problems were severe but manageable. The country was strong and united.

But with President Richard Nixon's first term came an increasing inclination to examine the results of social policy initiatives that had been launched during the preceding decade. The economy was turning sour. The increasingly costly and unpopular Vietnam War had forced President Johnson not to run for a second term. There was a growing tendency to examine critically the effects of government policy in a variety of fields. Nixon came to office not only ideologically committed to a reduced role for government in alleviating social problems but also at a time when the national mood was turning toward self-criticism, tinged, in the case of Vietnam, with guilt.

One began to read about the enormous investments made in improving housing for the poor, but also about a resultant loss of a sense of community. Unemployment had been attacked directly by government, but it seemed the problem was still severe. Congress and the courts often took the lead in trying to ease race relations, but conflict between black and white seemed to most readers of the daily newspaper to be

undiminished. The poor were very much with us despite ambitious social welfare programs that had chaneled many millions of dollars toward alleviating problems of poverty. Suddenly, it seemed the buoyancy and optimism that characterized social policy formulation just a few years earlier had disappeared.

Much of the overt and most violent protest about the was was centered on campuses, and it was led not only by students but by some faculty. The fact that the university was a strong base of political unrest probably contributed to some loss of lustre associated with academic activity. Professors no longer seemed the dispassionate and objective source of intellectual energy they had appeared to be just a few years earlier. They were like the rest of us. They, too, had political interests. They, too, made mistakes.

As consensus diminished about broad national purposes, the United States moved gradually into a period in which special-interest groups became more prominent. Traditionally strong groups, like political parties, began to lose some of their power. During the 1970s unlike the 1960s, government came to reflect not a negotiated national consensus but rather the ascendancy of special groups. Of course interest-group politics had always been a feature of the American scene, but the effects of these groups ebbs and flows, depending upon the sense of national unity. The 1970s came to be a decade where each group -- and there now were many more than there had been heretofore -- advanced its own causes with little

regard for the general welfare. After a time, it was not necessary in advancing the political fortunes of a single group to claim that the general welfare was thereby advanced also. Special-interest groups for the handicapped, for women, for minority ethnic groups; for homosexuals, and for the aged were just a few of those that moved to new aggressive activity during this period. Organizations representing these interests were strengthened considerably by decisions of the courts that broadened the applicability of civil rights legislation and by legislatures that moved toward the same goal.

Teachers, too, began to act more as a special-interest group. They became unionized rapidly from 1965 to 1975. This militancy weakened the identification of teachers, especially at the high school level, with scholars in the various disciplines who were based at universities. It also strengthened the sense of independence that helped make teachers resistant to external initiatives from any quarter, including government. Science teachers, for example, tended less to see themselves as physicists or biologists and more as teachers with interests allied with those of other teachers. Their relationships with many external groups gradually became adversarial as they attempted to assert their own prerogatives as teachers, not only in advancing conditions of employment as unionized workers always had done, but in establishing professional independence with regard to issues like curriculum development and teaching methods.

Paradoxically, while governmental initiatives were falling under a cloud and people were resisting government programs because they felt such programs were ineffective or unnecessarily intrusive, the same people often were trying to use government to advance their own causes.

By the middle and late 1970s, extraordinary fragmentation of the American society seemed obvious to most observers. A major indicator in education was the establishment of new, often non-sectarian, privately supported schools. While many of these schools were created as a reaction to government directives that required busing of public-school children to achieve racial integration and were a reflection of racial prejudice, other schools were started by middle-class parents, black and white, who began to see the schools as progressively less attentive to the needs of their own children because, without new resources, schools were required to respond to the demands of special-interest groups. For example, the courts often sent delinquent children back to classrooms where they had been (and where they would continue to be) highly disruptive and commanded disapproportionate amounts of teacher time. Similarly, handicapped children were placed in regular classrooms without additional resources being provided for the teacher, thus forcing the teacher to redirect attention from "average" youngsters to a new group.

Federal curriculum development activities in the 1950s and 1960s seems to have cleared the path for a broad presence by the national government in education. In the early days of federal involvement, government action was seen as beneficial, or at least benign. Less so in the 1970s, but by this time few people were questioning the role of government in the schools. A particularly vociferous public outcry about federal activity in the curriculum field signaled the existence of serious problems in the mid 1970s. An NSF-supported curriculum project titled "Man-A Course of Study" (MACOS), with its anthropologically oriented descriptions of non-Western societies, seemed to some groups to challenge

traditionally accepted values of family unity and sexual behavior. NSF activity in curriculum was slowed down somewhat as a result of congressional objection. As the 1970s progressed, it was becoming clearer that federal involvement in curriculum development could be controversial; and the issues were complex -- though government was unlikely to get out of the classroom.

SOME EFFECTS OF FEDERAL EFFORTS

Curriculum development activities can be classified into three categories: generic development, curriculum policy-making, and site-specific development. The vast majority of federal efforts fall into the first two categories. (Walker, 1976). Generic development is characterized by the design and production of curriculum plans and materials that are viewed as broadly applicable in certain schools or grade levels. Such development includes creation and testing of pilot versions of a curriculum, as well as marketing it. The earliest curriculum efforts of the National Science Foundation, such as the Biological Science Curriculum Study materials, were of this type. Almost, most of the activities of the federally supported regional laboratories and research and development centers fell into this category, though the labs and centers have tried other approaches as well. Another example is the national Follow Through program which attempted to develop entire generic curricula for disadvantaged children in kindergarten through third grade.

The second type of activity, curriculum policy-making, consists of establishing ground rules, criteria, and limits with which particular programs must comply. State laws and court reulings are examples. The federal "categorical" programs -- efforts that earmark funds for certain carefully specified purposes -- are in this category. School districts receive federal funds if they conform to certain rules and regulations. Examples include compensatory education programs, Title III of the Elementary and Secondary Education Act, the Right-to-Read program, and most bilingual education programs.

The third approach is site-specific development which is directed toward modifying the curriculum of a particular school or school district. This approach includes identifying local needs or problems, adapting generic materials to local conditions or developing new materials. Site-specific development requires intricate knowledge of local conditions and is relatively rare among federal efforts. One example is the Experimental Schools Project in which a few districts were given funds to change their curricula as they saw fit.

Prior to federal involvement in curriculum development, generic materials were almost exclusively the responsibility of commercial publishers, and a few textbooks dominated the field in almost any subject area. A single textbook, for example, captured half the market in tenth-grade biology. Only publishers with large shares of the market earned sufficient revenue to undertake development, and these companies had little incentive to make changes. Teachers were highly dependent on these materials. In effect, a standardized national curriculum existed in most fields. The pattern was intensified by state-wide textbook adoption agencies. In the Southeast and in the State of California books were purchased for use throughout a state. Therefore publishers directed their activities toward winning sales from the large purchasers. In other parts of the country, where there was less state-level domination of the text-selection process, purchasers had little choice but to use the materials produced by the commercial publishers for the states where there was a single adoption.

Some investigators (Wirt and Quick) have concluded that the NSF-sponsored curriculum development activities altered this pattern of conformity, at least in science and mathematics education. The Biological Sciences Curriculum Study materials were markedly different in both content and

teaching method from existing textbooks. In a relatively short seven years after initiation of the project, the BSCS materials held 30% of the market. Of greater significance, perhaps, was the fact that the mainline published material in biology was altered significantly to include topics introduced by BSCS. On the other hand, there was a major emphasis during the curriculum reform movement on altering teaching styles. Youngsters were expected to engage in first-hand inquiry using approaches similar to those employed by scientists, as well as to learn about topics considered important. There is little evidence, however, that this feature of the curriculum development movement ever had much impact.

The Biological Sciences Curriculum Study is usually considered the most successful of the curriculum development projects in influencing practice. Attempts to partial out costs suggest that after five years of development, intensive efforts to "disseminate" the program, and major attention to teacher education, development costs were only about 50 cents per student affected. It must be noted, however, that the audience was small (fewer than 20,000 high school biology teachers), and it was a relatively stable group. The Physical Science Study Committee project captured a much smaller fraction of high school physics instruction, though there were (and are) many fewer physics teachers than biology teachers. A contributing factor in the differential rate of adoption may have been the fact that BSCS produced three different versions of a high school biology course, thus giving the interested teacher some choice.

In the late 1970s, the National Science Foundation commissioned three studies designed, in part, to ascertain the effects of their efforts in

curriculum development. It was found that the science textbook was still considered the key to information and the instrument of teaching and learning. (Stake and Easley, 1978). Classroom teaching styles in science classes (as contrasted with topics to be studied) were unaffected by federal curriculum efforts. The standard mode of teaching was to assign sections of the textbook, recite in class, test, and discuss. Not a single NSF-supported science or mathematics curriculum project advanced this instructional method; in fact, most of them were designed to counteract the recitation method by placing more responsibility for inquiry in the hands of the student. It was clear that the classroom teacher was a key determiner to teaching style. They were influenced by external factors only to the extent that it suited them to be so influenced and their circumstances allowed.

The NSF-supported curriculum developers advocated relatively informal teaching styles that would enable youngsters to identify key problems and undertake serious investigations. At the elementary school level, it was thought that there was considerable educational advantage in being opportunistic. Scientific events were to be studied as they captured the attention of the teacher and children. Such an approach to teaching requires considerable skill on the part of the teacher to avoid the appearance of chaos and lack of direction, but interest in such methods peaked sharply in the early 1970s as Americans began to hear about informal methods in Britain at the primary-school level that seemed to lead to worthwhile educational ends. Enamored of reports from England (usually by Americans), education journalists began to tell the public about joylessness in the classroom, about the fact that American teachers were entirely too formal.

However this development was quickly submerged by the overwhelming pressure to create a well-defined and tightly structured curriculum at the elementary-school level. Inasmuch as financial constraints were becoming an increasingly important factor in decisions about education policy as the country began to fall on hard times, the pressures for greater explicitness in the accomplishments of the schools became intense. Student achievement was declining as measured by test scores (though it was seldom noted that a higher percentage of the age cohort was taking the tests). The solution seemed to be to clarify the objectives of the school, develop tests to measure progress toward meeting the objectives, and standardize instructional procedures to enable teachers to achieve the goals efficiently.

The movement to emphasize the technological features of instruction drew sustenance, in part, from a national attraction to the virtues of business and industry. It is an article of faith in America that business procedures are a major contributing factor to American progress, and if only these procedures were used more broadly -- in the schools, for example -- progress would be faster. Teachers and school administrators did not seem to object strongly to the introduction of objectives-oriented instruction. While there was some apprehensiveness about these trends, many teachers appreciated the apparent order and assurance brought to the classroom. They may have appreciated even more the fact that they could speak with parents and others in the community with greater clarity and confidence.

In the 1960s, the attempt to improve education for the poor and otherwise disadvantaged did not seem to conflict with policies to improve education for the talented. But by the 1970s, the harmoniousness

of the goals was in doubt. Egalitarian pressures, reflected in part by the activities of special-interest groups and financial stringencies, seem to have blunted the major thrust of early, NSF-supported curriculum development activities in training a scientific elite plus supporting "fans". Back-to-basics and "minimum-competency" commanded attention. Laboratory work translated poorly into gains on test scores and tended to disappear. Reading came even more to dominante the elementary-school curriculum.

A somewhat altered view of federal curriculum development activity from that which prevailed in NSF projects was evidenced in the Follow Through project, the largest education experiment ever conducted in the United States. More than twenty different approaches to educating poor children from kindergarten through third grade were funded at a cost of $500 million over a ten-year period. The program was designed to follow the popular Head Start effort which was focused on the pre-school years. An evaluation effort was commissioned to compare the standardized tests results of the various approaches in order to determine which one was "best". (Stebbins et al, 1977). Presumably the government would endorse and disseminate the programs considered most successful, an entirely new role for Washington in education. The evaluators concluded that "basic skills" approaches were best, and this finding was seized upon by the mass media and headlined across the country, thus fueling the back-to-basics movement, which had not existed when the Follow Through program had been initiated ten years earlier. In fact, the evaluation findings were strongly contested as being misleading and mistaken. Gains recorded on the standardized tests were minor.

Of considerable potential policy significance, the test gains in the

Follow Through evaluation varied substantially from one community to another. The same approach, apparently, would do well in one town and poorly in another. It was difficult to justify the government intent, namely certifying one program as being best. Furthermore, few schools adopted any of the Follow Through approaches in pure form, though the existence of the clearly distinguished approaches seemed to have influenced thinking significantly about early childhood education and the materials produced by commercial publishers. Thus, this government effort resulted in sharper diversity of approaches, materials, and training than had existed before the project, even though the valuation did not resolve the issue of which approach was best. Perhaps the more visible diversity did underscore the point, however, that professionals in the field of education are not certain about which programs are most effective. If professionals seem not to be sure of themselves, then perhaps politicians and lay groups think themselves more justified in advancing their own preferences.

In the mid-sixties the federal government created and funded thirty or so regional educational laboratories and research and development centers. The change strategy they followed was the development of generic materials similar to the NSF pattern. Fifteen years later one of the original lab directors assessed the lab efforts; "If sales are the measure of success, then you can say they failed. If program quality developed over time is the measure, then they have succeeded" (Robinson, 1970).

In developing and disseminating new materials, the labs and centers ran afoul of commercial publishing. The linear development of materials envisioned by the federal government did not include publishers, and publishers were successful in preventing large sums of money from being spent in dissemination (Robinson, 1979). The labs encountered difficulties in getting their materials into use.

Those project materials that were marketed by commercial publishers also had problems. For example, materials from an aesthetic education project were marketed in large, expensive, multi-media kits. No one in the central office particularly cared about the materials, and many elementary teachers were threatened by them. Commercial salesmen, who were used to selling conventional textbooks, had a problem in making their sales pitch. In the first year of dissemination, the lab itself accounted for $300,000 of the $350,000 in total sales and was stuck with an expensive inventory of unsold materials. "The whole scheme was wrong," according to the lab director.

In short, the labs and centers produced voluminous materials for which there was no market. On the one hand, national development was funded by the federal government (rather than consumers), which insisted that the materials fulfill an important "need." One the other hand, dissemination and use of the materials depended on what the consumers, the teachers and administrators wanted and could afford. The government wanted something new, but the educators wanted something they knew how to use (Robinson, 1979).

The lead time for material development was seven or eight years, which meant that the developers were trying to anticipate use of the materials fifteen years hence, an uncertain business in a society in which educational fads last only a few years. Long-range development was high risk, and there was "no orchestration" between development and demand. On the other hand, commercial materials were often not well conceived, developed, or field-tested.

In the face of such an unstable market, a mixed strategy often makes sense. The government might support a limited number of long-term, high risk projects (which might succeed through indirect influence on commerical publishers) and also develop open-ended materials that teachers could change and more likely use. Small, free-standing units of materials are more likely to fit into the

existing school structure. Early federal policies prohibited this type of development since it was not different enough from current practice (Robinson, 1979).

One such program which seems to have been successful was the Experience-Based Career Educcation program developed by four regional laboratories (Farrar et al, 1979). Each lab developed a model of education for its region, complete with extensive materials. During implementation, the local schools frely adapted the materials to their own preferences and circumstances, deleting and revising without hesition. In some sites entirely new components were added.

The schools also made changes in the way they operated to accommodate the EBCE program, but far more extensive changes were made in the program itself. Often the EBCE materials (disseminated with vocational education funds) were used in totally unexpected ways. The EBCE program was voluntary, rather than categorical, and depended on incentives such as recognition, free training, and materials. Researchers characterized the development of local programs as evolutionary (Farrar et al., 1979).

Several federal curriculum development efforts sought to foster categorical development: Title III (innovative projects) of the Elementary and Secondary Education Act of 1965, Right-to-Read, Title VII (bilingual projects), and the vocational education exemplary projects. These initiatives, which generally involved work directly with local school districts, provided funding for a three to five year period with the expectation that the programs would be continued with local support.

The Rand Corporation was commissioned by the Office of Education to study the effects of these programs. The conclusion reached was that there seemed to be no class of educational interventions that had been found consistently to lead to improved student achievement, that successful projects had difficulty sustaining their momentum for more than a year or two, and that individual projects were not easily replicated or disseminated. In the Rand study, perceptions of success were viewed as the outcome measure. The availability of external funds often led to the adoption of projects but did not insure successful implementation. The Rand investigators found that "the net return" to the federal investment was the adoption of many innovations, the successful implementation of few, and the long run continuation of still fewer..." (Berman and McLaughlin, 1978, page 6). A Ford Foundation study had reached similar conclusions.

The difference between success and failure usually depended on how the school districts implemented their projects, not on federal guidelines. Local concerns and characteristics overshadowed federal strategies, and this result was evident regardless of educaitonal methods or cost of the project.

In several studies it also was noted that the principal's role was critical. The principal had not only to approve but also cactively promote the project for it to succeed. Success was also enhanced by systematic teacher education, teacher participation in decision-making, the participation of the principal in special training programs, local development of materials, regular project meetings and practical problems, classroom assistance from project and district staff, and teacher observation of similar projects -- all methods of engaging attention and participation.

Another federal effort to develop site-specific curricula was the Experimental School Program (ESP). In the early seventies, the ESP sought comprehensive change at the local level that would not emanate from the "top". It attempted to elicit local commitment to the change effort by allowing teachers and administrators more control over the development and management of the local ESP project. Local autonomy was the policy.

The ESP staff reasoned that previous federal change efforts had failed because of a lack of site-level commitment and a resultant fragmentation of effort. Truly comprehensive change in the local school district would include change in curriculum development, community participation, staff development, administration, and organization. Although the ESP staff allowed each school district to develop its own plan around a central theme of the district's choosing, they did expect the plan to be characterized by these five major elements. (Cowden and Cohen, 1979).

Relatively few local districts applied for the substantial funds available. In those that did, local administrators were unable to devise plans that satisfied the ESP staff. The school administrators could not provide the degree of coordination that the ESP staff expected. Local principals were interested only in their own schools, and local teachers had little knowledge of the programs.

ESP staffers attributed this reaction to local resistance to federal plans and intentions. Federal officials continued to believe that change

could be managed in a centralized way by the administration of the local school district, failing to comprehend the loosely structured, decentralized nature of school districts (Cowden and Cohen, 1979).

Federal preconceptions sometimes conflicted with local values. Many local administrators saw more community participation in school affairs, which the ESP staff wanted, as leading to even less coordinated control, which the ESP staff also wanted. For failures in the program the federal monitors held the local administrators accountable, interpreting the absence of tight local coordination as lack of will or lack of intelligence, or both. Local administrators saw the federal officials as thick-witted, heavy-handed, and undermining of local authority.

Federal reformers also thought that coherent change could be facilitated by new knowledge generated by research and evaluation. Local practitioners had little use for such social science knowledge. The ESP staff assumed that social science knowledge was superior to ordinary and professional knowledge. In fact, the new knowledge was perceived by local practitioners as either irrelevant or threatening. The federal staff wanted a "holistic" picture of educational change, but none of the evaluators was able to provide it.

In their analysis of why ESP failed, Cowden and Cohen (1979) contended that the federal staff had a naive view of how school districts function.

In fact, local schools are semi-autonomous from the district's central administration. Whereas federal officials saw the primary task as one of reforming the local schools, the local practitioners on whom the projects depended saw the primary task as one of maintenance.

Looking beyond adoption of specific projects in gauging the impact of the federal role in curriculum development, it is possible to detect a range of changes, some of which may be more profound than modification of a particular course in biology or a particular second-grade program designed to improve the teaching of reading. Conceivably the major legacy of curriculum activity by the federal government in the 1950s and 1960s is the federal presence itself in this field. Because there was such a high degree of consensus about national goals and because the first federal curriculum activities were in science and mathematics which were fields initially associated unambiguously with progress, a monumental change in the country's educational traditions took place with hardly a murmur of dissent.

In the late 1970s, as consensus diminished and controversy increased about the purposes of schooling, it was difficult to reorient the terms of the debate to focus on the constitutional question of a legitimate federal role. Also, by this time, schools were under extraordinary financial pressure. The eight or nine percent of the local education budget provided by the federal government turned out not to be marginal but essential. School districts had learned to depend on federal money. While there are frequent and loud Congressional as well as state-level protestations affirming the principle of local autonomy in education,

as on the occasion of Congressional debate surrounding establishment of the new Department of Education or in the MACOS furor, such rhetorical flourishes show little sign of leading to a diminution of the federal role in any aspect of education, including curriculum.

One of the more salutary results of federal involvement in curriculum development may have been the power of the model that was presented to textbook publishers and teachers. Especially in the NSF-supported projects, experts in the subject matter fields were involved in the preparation of curriculum materials. Also, field trials of potential text material were employed extensively. These features of instructional-materials production are now commonplace. Field trials are often required, in fact, by state textbook-adoption agencies. While there are no studies of the matter, it seems reasonable to assume that as a result of participation by specialists textbooks are more accurate than they were before the advent of federal activity.

One way that government becomes an influential participant in education-related decisions is by requiring that certain procedures be employed even if there is no direct suggestion about the curriculum to be used. The major rubric whereby the federal government becomes involved in such matters is to assure fairness for all groups under the civil rights provisions of various laws and the Constitution. For example, a key requirement of the Education of All Handicapped Children Act is that there be "Individual Education Plans" for youngsters and that parents be involved in the formulation and approval of these plans. This federal law, intended by the Congress to assure that the rights of the handicapped are protected, represents one of the sharpest intrusions of the federal

government into the details of teaching practice. Professional obligations are specified in elaborate detail. The passage of this law had the full support of the special-education community in the United States. One searches long and hard through the hearing record for even a hint that the requirement of an individually prescribed program of a particular type would represent a precedent-setting infringement not only on professional autonomy but on state-held prerogatives.

This particular law reflects, perhaps, a culmination in specifying precise teacher behavior that may, in retrospect, be seen as an inevitable result of federal activity, particularly in a time of dimming consensus. When everyone agrees on general goals and there is at least implicit confidence in the ability of teachers or any other professional, there is considerable latitude for the specialist inasmuch as it is assumed that he or she shares in the consensus. However, if consensus is in doubt, there is accompanying uncertainty about the values and practices that guide professional activity. Government becomes a major instrument in holding professionals to account in meeting goals and adhering to practices that are determined more overtly in the political arena. By such a line of reasoning, federal curriculum development efforts can be seen as a step in the link to greater federal control because it challenges rather than buttresses confidence in teachers and school administrators.

Continuing in a speculative vein, the curriculum development movement may have contributed not only to a loss of teacher autonomy but also to a narrowing of their range of responsibilities. New specialized roles were defined in curriculum development projects: text writer,

subject-matter expert, test developer, classroom manager, program evaluator, curriculum planner. Before the curriculum development movement, the teacher considered it part of his or her professional responsibility to assume each of these roles. To a significant degree, teachers designed a curriculum and certainly their teaching styles to suit their own sense of priorities and abilities. They often constructed their own tests. They worked with small groups and large ones. They played a strong counseling role. They often devised their own equipment. Now each of these functions -- perhaps necessarily -- was seen as requiring the skills of a specialist, and the teacher's responsibilities tended to become more directly associated with didactic instruction. Thus the curriculum development movement, with its attendant proliferation of specialties, may have contributed to "deskilling" and "deprofessionalizing." Versatility is associated with autonomy; autonomy is unnecessary if the act of teaching is not seen as requiring skilled selections from a broad repertoire of possible actions. The craft-like elements of teaching are thereby emphasized leading to a loss of opportunities for professional initiative.

Such developments are seldom the result of direct redefinition of a teacher's responsibilities. Rather they are a side effect of an attempt to introduce greater precision and productivity in the classroom. Such a trend need not necessarily deprofessionalize a field, but if the tasks that remain for the professional are seen as largely mechanical and capable of mastery by virtually anyone, the image of the well-trained expert exercising sensitive and sophisticated judgment is severely damaged.

Another point: While it would be an oversimplification to attribute to the curriculum development movement a general reduction in the amount of time teachers spend in direct association with children, it seems to be the case that professionals in teaching are called upon increasingly to participate in conferences, committee meetings, and other planning exercises. Even if it is not demonstrable that the hours spent with children have been reduced, it is fairly clear that the percentage of work-related time that teachers spend with children has decreased. We would argue the possibility that some loss of teacher effectiveness may be associated with the fact that a greater share of their working day is outside the classroom and that federal involvement in education at the local level has been a contributing factor both directly and indirectly -- directly in the case of individually prescribed instructional plans required by the Education of All Handicapped Children Act and indirectly in focusing attention on the extra-classroom aspects of a teacher's responsibilities.

— All this having been said, it must be emphasized that the specific effects of discrete federal activities probably have been overwhelmed by other influences, primarily demographic, cultural, legal, political, and economic. It is difficult and unwise to try to seek simple or single causes for changes that are detected in schools. As just one example of a demographic shift that probably has had a strong influence on public attitudes towards schools that in turn have led to a greater demand for explicitness, teachers become a dramatically younger group in the decade from 1960 to 1970. There was a marked teacher shortage as schools expanded and new graduates from teacher education institutions filled the breach. They were hired in large numbers directly out of college. Being younger,

they reflected the attitudes of a younger cohort. They were mor informal. They "dressed down". They seemed to identify more strongly with students. This relatively rapid change on a large scale probably was disquieting to many parents because it suggested instability in what had seemed a solid institution. The new instability seemed to demand more systematic attention from authorities external to the schools.

At the same time, as has been indicated, both courts and the legislature were attempting to use the schools as a primary vehicle for effecting social change. The schools became a front-line agency in the attack on racial prejudice starting with the Brown decision of 1954 and continuing to the present day. Particularly when courts (rather than legislatures) require significant changes and people do not generally support the new policies, there is a tendency to strike at the institutions themselves that are used by the courts to effect the unpopular change. Thus, as a result of initiatives of the federal judiciary, considerable resentment was directed against the schools because people objected to their newly assigned role in attempting to eliminate racial segregation. Judges are remote. Schools are not. While the federal judiciary is quite different, of course, from the National Science Foundation or the Office of Education, it is another manifestation of a federal presence in a field that just two decades earlier had been left largely to local policy initiatives.

It is possible to view two decades of increasing federal involvement in the schools, then, as having produced relatively few changes in the curriculum. Despite a strong attempt to change teaching methods, they remain essentially similar to what they have been for decades. Topics

of study have been modified somewhat and modernized, and there probably is greater accuracy in the text materials produced for children. However, federal activity has altered both the perception of teaching held by professionals and the role to be played in determining education policy by the body politic. It is now acceptable in a fashion unimaginable twenty years ago for the Congress of the United States to specify the details of a teacher's behavior in meeting his or her responsibilities. While it probably would be an error to attribute such a development to federal curriculum development efforts alone, we have tried to establish the case that the curriculum activities -- because they were uncontroversial in the early years -- helped to create a climate in which such intrusiveness seemed natural.

FEDERAL POLICY

In 1971, Kirst and Walker outlined some major features of curriculum policy-making in the United States. They portrayed a system in which ultimate decisions about curriculum matters were made at the local level. Teachers had autonomy in their classrooms but selected from materials provided to them and operated within fairly narrow limits of acceptability. Much of the external power for determining the curriculum resided in nongovernmental agencies like accrediting organizations, textbook publishers, and testing agencies.

Traditionally, conflict over the curriculum was perceived as a conflict of ideas, not as a conflict of interests or competing factions. Within this configuration of local, state, and private influences over curriculum, it was apparent that federal influence was expanding rapidly, and that decisions on curriculum matters were becoming increasingly politicized, with frequent factional differences appearing at all levels of decision.

By the late seventies control of the school program had become more centralized than ever (van Geel, 1979; Boyd, 1979; Orlich, 1979). There was a strong centralizing trend toward the national level, of which the federal government was one part. Private national organizations, such as testing agencies, also had considerable influence. In particular, more control was vested in the federal Congress and courts and in state legislatures and state courts. The losers in this shift of control were local schools, particularly local parents and teachers (van Geel, 1979).

The source of federal power was the ability of the Congress to tax and spend for educational purposes and to attach conditions for receipt of the federal funds. Most of the changes instituted by the federal government after 1965 were justified by an appeal to equal rights for racial minorities, the handicapped, and the non-English-speaking groups. Yet it was also true that federal initiatives were by no means neutral regarding the types of programs supported. The furor in the Congress over the NSF-supported MACOS project was the most dramatic example of particular ideas being favored over others.

This national trend toward centralization was also apparent in educational research and development. In 1965, colleges and universities received seventy-seven percent of the federal educational awards. By 1974 this had declined to twenty-nine percent. Most of the federal research and development funds were concentrated in seventeen federal laboratories and centers, in twenty-two major contractors, and in ten school districts (Orlich, 1979).

Yet these centralizing trends were only trends. Control of the curriculum was still diffused in numerous agencies. On the one hand, there was decreasing consensus on social and educational goals and, on the other hand, there was an increasing concentration of curriculum influence at the national level. It was perhaps not surprising, as Schaffarzick (1979) notes in a survey of sixty professional and lay organizations, that the classical curriculum questions were overshadowed by a desire to be involved, a desire motivated by the view that someone else was in control. Participation of interested groups, dissatisfaction with experts and rational models, and issues of

legitimacy and control of decision making dominated the concerns of professional and lay groups (Schaffarzick, 1979).

In an organization as massive as the federal government, and one segmented into several semi-autonomous parts, there is no single policy regarding curriculum development. There are, in fact, policies for different agencies that change over time. So any characterization of federal policy is always a little inaccurate. Nonetheless, the general outline of federal policy is consistent with the "center-periphery" model (Schon, 1971).

In innovation diffusion, the center-periphery model posits that the innovation exists fully realized prior to its diffusion; that diffusion is the movement of the innovation from the center outward to its user, and that directed diffusion is a centrally managed process of dissemination, training, and provision of resources and incentives. In other words, this is a centralized view. This view of innovation has prevailed in education as the "research, development, diffusion" (RD and D) model of educational change. (See Chapter 9 in House, 1974, for an exposition and criticism of such a policy.)

Policy formulation and implementation may be similarly viewed from such a center-periphery model. Issues are taken as given, development is separate from implementation, and implementation is seen as the imposition of policy on the locals. Evaluation is for the purpose of efficiency, and inquiry is the responsibility of the center, in this case the federal government (Schon, 1971).

In policy formulation, ideas in "good currency" merge into the main stream, mediated by certain social roles. Disruptive events -- crises--precipitate the new ideas. Before a crisis, novel ideas which are incompatible with prevailing conceptions are likely to be repressed or suppressed within the social system. These incompatible ideas are formulated and kept alive by people in marginal, vanguard roles (Schon, 1971).

During a crisis, these ideas may be released. Their diffusion depends on information networks and the mass media. These ideas become the focus of controversy, conflict, and debate, but they cannot be recognized publicly until they are diffused to large numbers of people. In this diffusion process, the media and the brokers in networks are critical. "Back-to-basics" is a good example in education. It was propagated by the mass media and by key officials.

Before they are accepted, though, the ideas become issues in power struggles. That is, the ideas gain acceptance through the energies of those who "ride" them to power. According to Schon, there are only so many "slots" for new ideas because the ideas are attached to their advocates, who are in turn competing for power positions. Only a few policy ideas can be prominent at a given time. Inquiry around the ideas becomes political and is linked to dominance of some people over others. Still there is one more step. The ideas must become legitimated by benediction from powerful and authoritative people. Only then can the ideas become public policy. By the time the ideas came into good currency, they have become "obvious" to everyone.

Again, according to Schon, this process of formulation can display serious pathologies. The best ideas, especially ideas opposed to entrenched interests, do not always emerge. Schon suggested increasing public attention to the process by which ideas come into good currency, the deliberate support of vanguard and marginal roles and of brokers of ideas. Evaluation must also be reformed since much evaluation practice inhibits the emergence of novel ideas.

Once these ideas come into good currency and are accepted as public policy, the question of implementation arises. In the center-periphery conception of implementation, it is assumed that the policy exists prior to its implementation, that it will be applied informally, and that its management will be centralized. There are several strategies available. First, the center may simply promulgate the policy and expect people to execute it. Or the center may seed demonstrations to convince, provide trainers to teach, or provide resources necessary for implementation. All these strategies assume that only learning is required for the policy to be implemented.

Alternatively, the center may enforce the ruled, regulations, or laws by surveilance. Or the center may extend control into the periphery by attempting to supervise the policy directly. The last two strategies assume that some coercion is required for successful implementation of the policy.

A common system of central control over local innovation is the "propose-dispose" approach in which the locals write proposals, usually under instructions from the center, and submit them to the center for approval. If the center judges these favorably, resources are granted to the locals. This approach assumes that the central policy is applicable to all locals, that central specification of guidelines and promise of monetary resources are adequate to stimulate local conformity, that it is feasible to monitor local behavior, and that local behavior will continue to conform after the monitoring has ended. Most of the categorical aid programs in education are of this type.

Under these circumstances the interaction between the central authorities and the locals becomes something of a game with the federals trying to inculcate behavior consistent with federal policy and the locals performing ritually in order to obtain the money and pursue their own objectives. The federal authorities look for better ways to enforce compliance, and the locals look for ways to avoid strict compliance. The moves of the game become highly sophisticated, as in the desegreation controversies.

Only when there is a negotiated innovation in which the interests of both parties are truly represented does the prospect seem to result in results acceptable to both sides. The Rand studies refer to this as "mutual adaptation" of the federal programs to the local situation. Since the locals are the agents who must implement the policy, the ultimate disposition falls in their hands, and there is a sense in which the federal authorities are powerless to change this. This is true even in highly centralized systems of education. Under these circumstances, evaluation is limited to the role of retrospective justification of the

lower system to the higher (Schon, p 157).

In their analysis of the Experimental Schools Program, Cowden and Cohen (1979) also see the federal agencies as dependent on the local agencies if they wish to produce local school reform. They see the potential resources for pursuing such reform as being money, power, and knowledge. The federal agencies are quite short on money, at least compared to total educational expenditures, and also lack the political power necessary to enforce compliance with federal policies.

Consequently, federal agencies have relied heavily on knowledge, particularly social science knowledge, to produce change in local schools. This approach, according to Cowden and Cohen, has not been particularly effective because social science has not produced convincing arguments and conclusions about school practices, at least not arguments persuasive to school practitioners.

They believe that there is an imbalance between federal resources and federal aspirations for local school reform. Federal officials need local performance for the success of their programs much more than local practitioners need federal officials for the success of theirs. Cowden and Cohen advance the possibility that federal agencies should act more like foundations in granting funds to local schools through a propose-dispose system but not expecting too much of the local schools in return.

Our own interpretation is that Cowden and Cohen have events turned around. Originally, the federal agencies thought that knowledge -- a very particular type of knowledge produced by government experiments -- would be sufficient to stimulate reforms. It was only after this approach

seemed to fail or fall short that government agencies and policy analysts turned seriously to monetary inducements and coercive power. This shift in federal perspective accompanied the splintering of consensus.

It is worth distinguishing between the kinds of knowledge that the federal and local agencies find relevant. Central-periphery systems depend on stable, simple messages spread uniformly over the periphery. This is the kind of information ascertained through social science experiments. For example, the Follow Through evaluation attempted to answer the question of which early childhood approach to teaching disadvantaged youngsters was "best" -- a simple message. The evaluation results were more complicated -- some approaches worked best in one town, some in another. The results were distorted into the simple message that "basics are better" and purveyed throughout the country. This was a distorted message even to the evaluators themselves.

The fact is that many local circumstances and factors determine which program works best within a particular town or even school, but it is very difficult for the center to transmit or act upon that information. Opportunity for knowing usually exists in the periphery, in the situation itself, not in the center, and this knowledge is likely to be of a different nature than that of the center. The locals are also likely to know their own needs far better than those at the center and to recognize those needs faster.

A different role for the center to play is to detect shifts at the periphery and to pay diligent attention to the emergence of new ideas. It can arrive at themes for central policies by inducing them from local

concerns. It can facilitate the flow of knowledge by facilitating local learning rather than by always being the trainer itself. Effective social learning may occur from periphery to periphery rather than from periphery to center to periphery (Schon, 1971). Central authorities can act more as initiators, facilitators, organizers, and entrepeneurs.

We would label such an approach "meta policy". Rather than centrally defining a policy and trying to spread it uniformly throughout the periphery, meta policy would consist of discerning ideas among the locals and building on these ideas for the themes of federal policy. Meta policy would include negotiating the changes with local authorities.

In order to act effectively at a national level, the central organizer needs to bring together diffuse groups whose interests impinge on a particular area. Schon (1971) suggested that for an intervention to be effective, it must organize the following groups:

- legislators at the state and national levels
- administrators of agencies, at all levels
- parents' organizations
- middle-level bureaucrats in relevant agencies
- officials of regulating agencies
- innovators and entrepeneurs of new services
- officials of city and state governments
- key figures in professional associations
- journalist and media representatives

To this list, we would add the researchers and professional schools connected with the particular area of social service. The organizer must bring together and coordinate these groups in some way. Perhaps the group

most successful in affecting the classroom behavior of teachers has been the special educators. All over the country, for better or for worse, special education teachers are writing prescriptions -- individualized educational plans -- for each child in their classes. Whether this practice facilitates or impedes instruction is still unclear, but the teachers classroom behavior has been dramatically changed. Special education is one area where all these groups have been brought together.

The most recent federal legislation in special education, The Education of All Handicapped Children Act, was the result of years of organizing and entrepreneurial effort. The federal budget for education of the handicapped increased from $75 million in 1964 to $1.2 billion in 1980. Within each branch of Congress is a group of legislators who identify with and champion the handicapped legislation. Special education administrators and bureaucrats at all levels of government and in all parts of the country are actively organized to promote the interests of special education programs.

Federal and state judges have decided favorably on cases brought before them on the rights of handicapped children. Regulating agencies have been responsive to the needs of the handicapped in areas such as building construction. Innovators and entreprenuers have been especially active in developing new techniques and equipment for training the handicapped and in promoting their techniques throughout the country. Colleges and universities have established highly specialized programs for training teachers of the handicapped. School districts have been quick to hire special education teachers and to establish special education classes.

State education agencies have defined categories of teaching certificates and special requirements for special education teachers. Many researchers work exclusively in the special education area. Almost all the thousands of studies focus on the effectiveness of programs for the handicapped. Few or none examine possible deleterious effects of education policy for the handicapped on other students. Newspapers and mass media provide generous coverage for events relating to the handicapped.

Most of this activity is coordinated by an extremely active professional organization -- the Council on Exceptional Children. All the various parties and participants in the special education establishment belong to or are involved in CEC. Unlike most professional organizations, teachers and researchers and parents all attend the annual CEC convention. All in all, the professional organization is a mirror of the various groups. It works closely with its federal counterpart, the Bureau for Education of the Handicapped (BEH). Directly or indirectly most of the money comes from BEH, and in turn CEC and its participants provide intellectual and political support for BEH operations.

To say simply that special education has acquired political support is to miss much of the point. The political support is partially dependent on a defined technology, supportive research, and organized lay support. At Congressional hearings it is possible to draw upon any of a number of researchers to provide favorable commentary. In turn, the researcher's activities are supported by federal funds. All these various segments are organized into a mutually reinforcing system that acts in concert.

It is also significant that special education is organized as a special interest group. As we indicated earlier, the eroding social

consensus in American Society has resulted in special interest groups capturing policy in the area of particular concern. There is litt[illegible] overriding national or public concern to which those interests are subordinated. Hence, in a particular area, like trucking or medicine or even oil, the groups concerned with those particular issues dominate policy making in that area. The special interests are organized on a functional or industry basis rather than on a regional or territorial basis. They look to centralized government, particularly federal government, to provide resources for problems they feel should be addressed. Special education is perhaps the most successful of these groups in education, but other education groups aspire to such success. Overall, as we have suggested, the federal government seems to be operating as an assortment of such special interests.

This fragmentation leads to some areas expanding at the expense of others. Public schodl districts have been spending twice as much on each handicapped student as on students in regular programs, and the rate of increase in expenditure has been twice as great for the handicapped. This trend has elicited a sharp protest from the National Association of School Boards. The NASB said it was concerned about the use of the goal of educating the handicapped "to disguise policies to wear away the ability of local communities to govern themselves" (Maeroff, 1979).

This report, in turn, brought a sharp rejoinder from the Council on Exceptional Children, which pointed to other legislative mandates that affected the ability of local school districts to set their own funding priorities. The solution, the Council said, was to persuade Congress to increase the financing level of laws for the handicapped. At least

one educator predicted that the mandating of such laws in the area of the handicapped meant the end of "local control" for small rural districts, which were necessarily included in ever larger service units (Hoke, 1979). There was a sense in which occupational specialization, special knowledge, and special interests worked against the older territorial boundaries. These were subsumed under the name of professionalism. Federal policy was the result of these trends and contributed heavily to them.

POLICY, RESEARCH, AND ANALYTICAL PERSPECTIVES

One key determinant of the extent of federal impact on curriculum development is the relationship among research, analysis, and policy. An indirect method by which federal influence is extended is through research and analysis, in which the federal government has almost a monopoly. But the relationship between research, analysis, and policy is complex.

Professional researchers and analysts seem to think about curriculum innovation from only a few basic, usually implicit, conceptual perspectives that we will call technological, political, and cultural. Each of these perspectives is a framework for thinking about educational change, a framework that provides the basis both for comprehension and for policy formulation. By framing the social phenomena, the interpretive framework serves as a guide to what is important and as a guide to action. In research, it sets limits to what is considered useful inquiry, and in policy it limits the very language, concepts, and arguments that one uses to formulate policy. Choices thus are defined, justified, and legitimized, but they rest on tacit assumptions about what is rational and acceptable, and are partly the result of professional and public consensus on these matters.

The research on innovation can be considered in the light of these three prospectives. (For a fuller account see House, 1980). Policies on curriculum development and change were partly derived from them. The three perspectives affected events in curriculum development

and were significantly altered by larger social trends, such as the erosion of social consensus.

The technological perspective emerged in the early sixties as both teaching and the process of innovation came to be seen as technologies rather than as crafts based on implicit knowledge. The focus was on the innovation and its expected results. As the social consensus around education began to weaken in the early seventies, there emerged a political perspective, which interpreted events as the interaction of competing factions whose interests were not necessarily synonomous. The focus was on the innovation-in-context. More recently, in the mid-seventies, with the further erosion of social consensus and the increased fragmentation of society into special interest groups, there has emerged a cultural perspective which perceives society as comprised of separate groups or subcultures who not only have their interests in conflict but perhaps differ on fundamental values. Different subcultures, such as teachers, not only have different interests but also different sets of beliefs. The focus is on the context itself, rather than the innovation.

As outlined here, the initial period of curriculum development beginning in the early fifties was marked by a strong degree of consensus as to the purpose of education. After Sputnik the federal government began its strong intervention in the name of national defense, and this intensified the belief that the students, teachers, parents, and public shared common values, common interests, and common goals. Only the means for achieving these were at issue.

During the initial period there was a discernible shift in authority

in curriculum development from the classroom teacher to the university scholar, particularly the scientist. Increasingly, curriculum content was defined by recognized subject matter experts, rather than the teaching profession. Still, teaching was perceived as a craft, as a profession learned by apprenticeship and seasoned by experience, a craft residing in tacit knowledge. The means for improving education were through developing curriculum materials that teachers might use in the classroom and training teachers in their use. Retraining 30,000 secondary science teachers through workshops did not seem out of reach for the National Science Foundation.

In the late sixties, however, faced with a more massive problem of educational change, teaching came to be perceived by many as a technology. Many educational materials began to be used on specific learning objectives, and it was advocated by many that teaching should be too. Teaching was conceived as a technical procedure, a technique in which there was a specific objective and a means of meeting that objective. Teaching could be analyzed into a series of separate tasks (as could an industrial job), and the achievement of these specific tasks could be ensured by specially-designed materials, and by measuring the results. Teaching was envisioned as a specifiable technology, a technically rational act, based on explicit knowledge, rather than a craft based on tacit knowledge derived from experience and tradition. Education was being modernized.

In this transformation there was another shift in authority. The university scholar, the charismatic project leader, was not so much the authority as was technical rationality itself. Presumably, curriculum

materials could be based on scientifically verifiable principles rather than on professional opinion. Behavioral psychology, manifested in such things as programmed materials and teaching machines, could modernize and revolutionize education, just as technology had revolutionized other industries. Educational research joined the search for this technology.

The technological perspective was also employed to interpret the process of innovation itself. The modernization process was analyzed into separate sequences and tasks, and presumed to proceed from an authoritative technology. Proper technology was conceived to consist of research, which established the principles of teaching and learning; development, which converted these findings into appropriate materials; diffusion, in which the materials were systematically distributed to potential users; and adoption, which saw the actual implementation and institutionalization of these materials in the school curriculum. Not only was teaching conceived as a technology, but the process of innovation itself was technically rationalized.

The emergence of the technological perspective coincided with large-scale involvement in education. Federal involvement itself was predicated upon the pursuit of national purpose. If education was to strengthen the national defense, it was reasonable that educational research and development be targeted to specific national purposes. Agencies of the federal government would both fund and direct the enterprises. The scope of the problem itself suggested a technological solution. Here were not 30,000 science teachers, but 3,000,000 teachers of all types. Workshops for each one would be horrendously expensive. Techniques and materials

that were reproducible and transferable, that could be used in any setting, were necessary.

Based on the technological perspective in general, and the research, development, diffusion paradigm in particular, the federal government funded a network of thirty or so regional laboratories and research and development centers, the purpose of which was to produce the techniques and materials that would modernize education. Thousands of specialist jobs were created to perform the tasks necessary to the production and utilization of new knowledge and techniques.

The technological perspective portrays society as a place in which there are common goals, interests, and values. The task is to define the desired objective and achieve it. It is assumed that its achievement will benefit everyone, or at least insofar as that can be done. Action can proceed assuredly, even aggressively. Confidence is not a problem.

Most government approaches to developing materials and techniques are still based, explicitly or implicitly, on the technological perspective, as is much government-sponsored research. For example, the focus of much research on implementation is usually on "fidelity" -- the degree to which the implemented innovation meets the criteria of the developers (Fullan and Pomfret, 1977). Research methods are usually narrowly focussed and highly prespecified, and collected by tests, observation schedules, or highly structured questionnaires.

Another government program which reflected the technological perspective was the Follow Through Project. Faced with the problem of how to address

the special needs of disadvantaged children in kindergarten through third grade, government planners decided to fund a massive "planned variation" experiment. The purpose was defined as improving tghe educational performance of these children, and to this end more than twenty different approaches were funded over a ten-year period. These were the means to the given end.

These programs were then evaluated to determine which worked best, i.e., maximize educational performance (operationally defined as gain on the third year Metropolitan Achievement Test). The results of this evaluation, in itself a highly technical affair, were used to determine which approaches were successful and should be disseminated by the government.

Similarly, for the past fifteen years, the evaluation of Title I (though not the structure of the program itself) has taken shape from the technological perspective (McLaughlin, 1975). Currently, Title I evaluators must use one of three special evaluation "models" developed by Research Management Corporation at Office of Education expense (Barnes and Ginsberg, 1979). Each model requires that students be administered a standardized achievement test which can be converted to "normal curve equivalents" and the results agregated at the state and national levels. Title I programs can then be compared on costs as well as effectiveness. In fact, most federal evaluation is conducted from a technological perspective, and generally the technological viewpoint remains the dominant view of educational research, development, and innovation at the federal level.

At the state level the technological perspective is reflected in objectives-based statewide testing programs. Presumably by specifying

in behavioral terms what students should know and by testing for this knowledge, education will be improved. Special programs, materials, and effort can be directed toward these particular learning objectives, and perhaps the tests themselves. Many of the state testing programs were strongly stimulated by federal funds, but the technological perspective is by no means confined to the federal level.

Before the end of the sixties, however, the appropriateness of the technological perspective for educational development and improvement was called into question. In particular, it appeared that the techniques and materials developed by the R, D, and D process were not being used widely in schools. The R, D, and D paradigm assumed that teachers would adopt the superior materials, that the teachers were, in fact, fairly passive recipients of techniques and materials produced at the other end of the chain. There were various explanation for lack of success from within the technological perspectives, e.g., the materials were not good enough, were poorly disseminated, or "linkers" were needed to help the teachers use the materials. But also a different explanatory framework emerged: the political perspective.

Many of the problems surrounding the new materials and programs appeared to be political ones. The political perspective did not assume that there was an identity of interests among those involved in development and innovation. For example, the interests of the teachers who had to implement the materials might be quite different from those of the developers. And the interests of the parents and children might be quite different from either.

Some analysts began to see innovation as a stage for competing factions to secure their own interests or promote particular ideas. Innovation was conceived as interest-group politics, not only at the point of legislation, but also in formulation, implementation, and evaluation of programs within schools, school districts, states, and entire systems of education. The interaction of local, state, and federal governments was often interpreted this way.

Several analyses employing this perspective were published in the early seventies, but perhaps the study that gave the political perspective its widest circulation was the Rand Corporation study of the effects of several government programs (Berman and McLaughlin, 1975). The Rand study interpreted successful programs as having emerged from a process of "mutual adaptation" in which the local implementing districts identified problems they wanted to solve, and used the federal money to address the problems. In this conception both the local district and the federal program had to "mutually adapt" to one another.

Underlying the political perspective are the ideas of negotiation and compromise. The political perspective does not assume an identity of interests but does assume that there are enough common interests or shared values that a compromise can be successfully reached by the contending parties. Pluralist politics is an example of this conception of change.

During this period of time the political perspective was stimulated, and perhaps made relevant, by the eroding consensus within the society as a whole. Both national politics and educational politics were marked by a lack of common purpose and the emergence of strong special interests. Educational matters were increasingly politicized over disputes about

desegregation, teacher militancy, and the pursuit of bilingual, handicapped, vocational, and other special interests.

Studies conducted from a political perspective investigated who gained what from an innovation. Which faction opposed? Which advocated? What were the terms of compromise? Who were the key influentials? The passage of educational programs in the legislature, like ESEA, had always been seen as political, as an extension of pluralist politics on a grand scale. Now the administration, implementation, and evaluation of the programs began to be seen as political as well. Many specific policies, like parent advisory boards, were written into legislation and administrative guidelines in order to increase sensitivity to relevant interest groups by increasing public participation. The political perspective became a major framework for viewing educational change and development.

The third perspective is the cultural perspective. If one envisions subgroups, such as teachers and innovators, as being so different that they can be considered separate subcultures, then one has adopted the cultural perspective. Perhaps the most intense analysis of this type has been Wolcott's Teachers versus Technocrats (1977). In studying the introduction of a programming, planning, and budgeting system into a local school district, Wolcott protrayed teachers and innovators (technocrats) as members of distinctly different subcultures. The teachers had a belief system quite different from that of the technocrats, and this difference was so great that it led to misunderstanding and conflict. The same events were interpreted differently within the traditional teacher

culture and the rationalistic technocratic culture. To this analysis Wolcott brought anthropological concepts, like moiety and reciprocity, and anthropological study methods, like participant observation. Most studies conducted from a cultural perspective are not so heavily anthropological.

Unlike the technological or political perspective, the cultural perspective is based on the idea that differences in values may be more significant than the similarities. The political perspective assumes that there are differences of interests that can be negotiated and compromised, but the cultural perspective suggests that the differences may be deep value differences not so susceptible to compromise. At the extreme, different groups may interpret the same events differently, so that social exchange may become problematic. The society is seen as fragmented into many subcultures.

In cultural studies a major focus is to understand the viewpoint of participants. Researchers try to elicit "indigenous definitions" of the situation from participants. "Meaning" is a primary concern. Policies and programs based on the cultural perspective will somehow take account of the diverse meanings as construed by participants. They must be based on the values of the people involved. Change itself is seen as far more gradual. Concepts like cultural evolution and ecology apply.

The ethics of change are also different from the other two perspectives. As in introducing a steel axe into a stone age culture, it is not always possible to predict the consequences of a given innovation, program, or policy. Action becomes far more tenuous. If the ethics of change in the

technological perspective can be construed as authoritative, and that of the political perspective as contractual, the ethics of the cultural perspective are relativistic.

The cultural perspective is perhaps most strongly manifested in resurgent regionalism and localism in education. The strong anti-Washington outbursts can be interpreted not only as the protection of local and regional interests, but also as the preservation of cherished cultural values against modernism and the encroachments of corporate and federal bureaucracy. The deep-seated value base accounts for their strength, frequency, and intransigence. Basic value differences are not easy to compromise. Local and regional control are often perceived as the mechanisms of protection.

Although some studies have been conducted from a cultural perspective, few federal policies have been so originated, perhaps because of the very nature of the cultural perspective. In its purest form a multicultural perspective would simply grant money to different groups and permit them to use it as they saw fit. This is not likely to happen in a federal capital, though it is sometimes suggested. Such a view of change is far too slow and uncertain from the technological and political perspectives. A federal capital is not in the business of granting full autonomy to its constituent parts.

Some federal programs, such as Title III, ESEA, have offered incentive money to local districts to develop their own programs, subject to substantial federal guidelines and regulations, of course. In the area of curriculum

development perhaps the program that has come closest to the cultural perspective is the Experimental Schools Program. This program granted a very substantial sum of money to a few local school districts to develop whatever type of alternative school program they chose. Within this conception, it was clear that different localities might develop quite different programs. Also each evaluation could be tailored to the particular local program. The evaluations themselves were meant to be relatively autonomous. In other words, in conception at least, the Experimental School Program emphasized the value of autonomy, which lies at the heart of the cultural perspective.

To a certain extent, the federally funded Teacher Center effort reflects a cultural perspective. It is assumed that teachers share a value orientation such that interaction in a special center would be helpful. On the other hand, teacher centers also originated in part from a political perspective in that teacher unions saw the centers as being in their interest and were given a strong role in governing them. Often it is difficult to separate values from interests, as with the teachers, but it is sometimes critical to do so in order to ascertain where the public interest resides.

As this example indicates, it is not always possible to attribute an action entirely to one perspective. Although the discussion has been in terms of pure types, and people do often seem to assume one perspective rather than another, the perspectives are not mutually exclusive. For example, it is possible to conceive teaching as a technology and also perceive a conflict of interest among participants. In fact, this seems

to be the direction in which many early technologists have moved.

The proliferation of minimum competency testing programs seems to reflect a technological-political perspective in which teaching is a technology based upon objectives and tests but in which it is anticipated that there is a conflict of interests between the public and the teachers. Minimum competency testing forces the teachers to attend to the proper tasks, in this view. Generally, many of those holding a technological perspective have become more political in orientation in recent years.

It is even possible to hold a technological-cultural perspective. One can believe that teaching is a technology based on behavioral objectives and tests, but that the objectives and tests should be locally developed and interpreted, thereby based on local values. Such a position leads away from the centralizing tendencies. This would seem to be the position that Ralph Tyler holds.

The technological perspective seems most attractive to executive planners in its simplicity and accessibility. Reasoning can be based on what is logical for one rational person to do, i.e., which alternative a single actor would choose to maximize pursuit of a goal. The political perspective is most natural to legislative politics and the cultural perspective to local and regional concerns. Since each perspective concentrates on a differnt set of explanatory variables, each complements the other in the sense that an event is not fully explained by any one. The employment of all three perspectives can stimulate a reexamination of policies and programs. Insightful analyses probably draw on aspects of all three.

No perspective is in itself superior to the others, although one may offer a more appropriate explanatory framework under certain conditions. There is a need to examine existing explanations, to articulate conceptual frameworks, and to identify the questions being asked in policy analysis and research. There is also a need to do studies which are focused on the factors identified by the three perspectives.

For example, the Follow Through project may be analyzed from any one of three perspectives. Originally it was formulated within the technological perspective. As such the lessons to be learned are that the early choldhood models chould have been more carefully developed, and the evaluation design should have been properly conducted. The fact that there were variations in results from site to site within a given model was taken as a sign that the models were improperly implemented.

More careful monitoring of implementation would result in fidelity of treatment. If the control groups had been properly randomized and the outcome measures appropriately selected, the project would have produced convincing results. That is, the project was supposed to prove which early childhood approach to training disadvantaged youngsters was best, but the evidence proved to be highly equivocal, if not controversial.

Policies based on the Follow Through experience, as interpreted through the technological perspective, would likely consist of procedures for closer monitoring of projects, for conducting "true" randomized experiments, and for constructing better psychometric instruments and statistical techniques. (For such an analysis, see Rivlin and Timpane, 1975).

From the political perspective the Follow Through project was a political enterprise from the beginning. The project was conducted as an experiment rather than a service program like Head Start because there were insufficient funds. Yet, because of political pressures, the administration had to institute some kind of program for disadvantaged youths. The initial weak political and financial position led the original director to fund many sites all over the country, thus increasing the legislative support for the program significantly. The total funding quadrupled, However, adding politically expedient sites seriously comprised the experimental design of the evaluation. Some sponsors operated primarily in large cities, some in small towns, some in only one section of the country, and so on. Yet, the sponsors had to be compared to each other.

In addition, various groups, such as the blacks, complained that none of the models were sponsored by the. New models were added. Throughout the ten year course of the project, the sponsors as a group protested against the nature of the evaluation, but the Office of Education more or less succeeded in insulating theevaluation from these pressures. Eventually the sponsors turned to direct support in the Congress. When the evaluation concluded, the Follow Through program continued to be funded at the same level as before, even though the original purpose of the program had been completed.

In developing policies from a political perspective, one tries to recognize the political nature of the enterprise and take advantage of it. For example, one might accept the premise that various groups will have conflicting interests and try to involve them from the beginning

as a matter of policy. One might establish procedures through which the various groups bargain for their interests. Involving groups like parents or unions is a political strategy. Alternately, one might recognize that these interests exist and try to devise policies for reducing their influence.

One could also analyze the Follow Through program from a cultural perspective. One might view the sponsors as developing models of early childhood education based on the ideas of various ethnic, scientific, professional, technological, and regional subcultures. These models are then grafted onto a traditional subculture of the local school and region. The tribulation of Man: A Course of Study, although not an early childhood model, is an example of the possibilities of misfit between the developer and receiving subculture. Variations in results can be interpreted not as lack of implementation on the part of the sponsor or as a vested interest on the part of the school but as mismatches between the subculture of the model and the local school.

In this fit between two subcultures, the beliefs of the teachers, parents, and students play a large role. Regardless of common interests, values significantly affect the reception of new programs. Federal programs tend to incorporate particular values and not others. Policies based upon a cultural perspective might grant considerable autonomy to localities in working through their own programs. In the case of Follow Through, one would expect some communities to embrace certain of the early childhood approaches much more enthusiastically than others,

possibly even rejecting parts of generic models.

The three perspectives also account in different ways for the penetration of special education programs into the classroom. One may attribute this to the technology of the IEP and the specialized training of special education teachers. Research and development have been more integrated in special education than in other areas. Similarly one may point to strong political factors -- the highly organized parent's groups, the special educaiton lobby in the federal Congress, the pressure of court cases, etc. These have been orchestrated into a strong movement.

Or one may point to a culture in which life is conceived as a race towards success, in which everyone is expected to have an equal chance at the starting line. Aid to the handicapped is supported by a strong system of belief. Other cultural beliefs point to "individualizing" instruction as a particular way of helping and a written prescription as a manifestation and documentation of the effort of help. Other cultures provide help differently. Each of the three perspectives emphasizes different elements in the situation, and each accounts for an aspect of "reality."

Having a particular perspective does not automatically produce a particular kind of program or policy. The situation is analoguous to the difference between a policy and its implementation. There is a sense in which a plan or a concept cannot define the conditions of its implementation. Implementation of a policy is not a unique function of the policy itself. Rather a policy implies a wide range

of possible actions and behaviors. "Worlds of possible practice are packed into a policy idea, as many as the combinations of its potentiality times the actual conditions under which it is transformed" (Majone and Wildavsky, n.d.).

The same is true of the perspectives. They reduce or limit the element of contingency but do not totally determine action. People adopting the same perspectives do not necessarily formulate the same policies or implement the same programs. It is conceivable that two people holding different perspectives might support the same policy. In its actualization a policy or program has only a family resemblance to the anlytic perspective to which it is related.

Our view of how social policy is affected by social research and policy analysis is somewhat similar to that of Cohen and Garet (1975). The traditional view of the relationship is that social policies involve discrete decisions derived from individual pieces of work. It is assumed that research is more authoritative than commonsense and leads to a convergence of opinion. Scientific methodology brings authority.

Cohen and Garet (1975) contend that social policy is a system of knowledge and belief. "A policy, then, might be described as a grand story; a large and loose set of ideas about how the society works, why it goes wrong and how it can be set right" (p. 21). Empirical research is relevant but is held together by larger ideas

and assumptions not empirical in nature. In curriculum innovation part of these assumptions are the perspectives.

Empirical research may erode the policy assumptions but this occurs through a research tradition, not necessarily through individual studies (Cohen and Garet, 1975). The relationship between research and policy is "undisciplined." There is a loose and elusive interaction among applied research, climates of knowledge and belief and public action" (p. 24). Policies and policy assumptions are shaped by fragmentary eficence.

The Follow Through project provides an example of this interaction. The evaluation contributed to the popularly developing belief that "basics are better" even though the evaluation was limited to highly selected disadvantaged youngsters in grades K-3 in strongly atypical sites. The evaluation, begun ten years before, was not designed to answer the question al all. The concept of "basics" was introduced into the study by the analysts in the last year or so of the evaluation in an attempt to categorize and generalize about the Follow Through approaches.

The concept of "basics" was taken from the public and professional social climate and applied to certain early childhood approaches after the fact. The "basics" concept was then seized upon by the media and published as proof that "basics are better." The generalization was

applied to everything and not simply to the Follow Through approaches.

Similarly Cohen and Weiss (1977) have shown that in the issue of race within the schools, both social research and policy followed the "social sea changes" as different "social enthusiasms" came into fashion. Research and policy both contributed to and responded to the larger social trends. The strong interaction between research and public opinion is not well understood.

Going beyond the argument that research affects policy in an undisciplined way, we contend that the interpretive frameworks manifested in the perspectives significantly affect the research in turn. The Follow Through project itself was conceived within the framework of the technological perspective, though it may be understood from the other two perspectives.

The traditional view of social research is that its purpose is to clarify goals and provide objective evidence for choosing alternative means to given ends. It is assumed that there is broad agreement on the goals of social policy in which there is a separation of the determination of ends (which is political) from the determination of means (which is technical) in the Weberian tradition. The justification for applied social inquiry is that it is instrumental in reducing conflict (Cohen and Garet, 1975). This conception of policy and policy analysis is itself derived from a technological perspective.

Cohen and Garet (1975) suggested alternative assumptions about the relationship. They contended that policy-oriented research influences broad assumptions and beliefs, rather than particular decisions, and

that research is more likely to result in public controversy and debate than in convergent findings. Social inquiry is as much an attempt to interpret the world as it is an attempt to predict and explain. As such, it affects the policy climate.

To a considerable degree the federal government has a monopoly on social inquiry. It sponsors an enormous amount of applied research and is partially responsible for shaping the policy climate, even though often government agencies are not fully aware of the effects of the inquiry and the loose process by which it occurs. Consequently, the distribution of analytic resources is a serious matter. Both prudence and pluralism argue for funding research and analyzing policy from all major perspectives, because by affecting underlying assumptions, federally sponsored inquiry significantly affects schools.

SOME CONCLUSIONS AND RECOMMENDATIONS

If there is a single theme that characterizes this monograph, it can be stated as follows: It is unrealistic to expect that curriculum-development policy can be formulated effectively in isolation from economic, cultural, and political influences. That is, strategy based on all that is known today about curriculum development could easily prove ineffective tomorrow because of unpredictable events such as a major depression, broad-scale domestic violence, the rise or fall of particular special-interest groups, a new consensus bred of a rapid decline in the American standard of living, or a new period of American isolationism. Few people predicted that the Soviet Union would be first in space, yet the launching of Sputnik I was probably the single most dramatic influence on federal policy in the curriculum field in the 1950s and 1960s. Similarly, if not quite as dramatically or unpredictably, rising concern about civil rights and the growing power of special-interest groups had deep effects on federal education policy, as we have tried to point out, though few commentators saw these events coming. The difficulty of making predictions with confidence is compounded by the suddenness with which influential events can transpire. A nuclear accident, an assassination, the discovery of large-scale government (or private) fraud, a hostage incident, or a shortage of a major commodity could all have political and economic impact that would be felt quickly in the schools.

Furthermore, there are many actors on the curriculum scene: teachers and their unions, local school board members, textbook publishers and writers, testmakers, writers for the mass media, university professors, charismatic political leaders, and the special-interest groups. It is not

clear that even a well-articulated federal policy, by itself, would be seen to have much of an effect. With the school of thinking currently evident in governmental bureaus, there is a premium on direct, quick, and obvious results. No doubt this demand is itself a reflection of loss of confidence in our educational institutions, but congressmen, as well as legislators at the state level, demand direct evidence of beneficial results of public expenditure. Federal strategies that recognize the complexity of curriculum development and that therefore operate in a fashion that is subtle or indirect may not be politically acceptable. Nevertheless, since we see schools and educational policy formulation as diffuse and complex despite the centralizing trends we have tried to point out, we have no choice but to couch our conclusions and formulate our few recommendations in this light.

First, however, we will summarize some of the conclusions we have reached -- both those already described and a few in addition. Possibly the main result of federal curriculum development activities during the last two and a half decades is the fact that the Congress has become an active participant in attempting to influence the school curriculum. The entry by the federal government initially seemed beneficial, and so met little or no resistance. Now, the federal presence is more controversial, but it is unlikely to diminish. Under the broad banner of improving national defense or protecting civil rights, the national government is likely to continue responding to special-interest groups depending on their power, or, if it emerges, to national consensus about some issue that suddenly seems clear to the American public because of

an unanticipated crisis.

Federal policy to date has resulted in programs that have affected the curriculum measurably, but modestly. There is some change in the biology content now taught at the secondary-school level that can be attributed directly to National Science Foundation-supported projects, though there has been little discernable change in the manner in which teachers organize classrooms or present new materials, and these latter elements represented a major goal of the curriculum reformers. Some of the change in content has been effected through influence on the major publishers and, to a lesser degree, on state-level textbook adoption agencies.

The mass media have used evaluation of federally supported projects to advance certain ideas about a desirable curriculum, such as the use of Follow Through data to create support for a "basics" curriculum. As we have tried to point out, the Follow Through project was not inaugurated for the purposes it later was required to meet. The federally supported evaluation examined factors that loomed as important only after the project had been in progress for many years. Herein lies another potentially important lesson. The time scale for public interest in various education issues is not long. For a while, people are interested in education of talented youngsters. A bit later, the focus may shift to racial conflict and the poor. Still later, the mass media feature stories about "joylessness" in classrooms, and later still the same writers and reporters are talking about the need to return to fundamentals.

In such a climate, the teacher might be forgiven if he or she feels whipsawed, disaffected, and even resentful. Teachers, we think, have been highly desirous of responding to educational concerns featured in the mass media, and they see themselves as having tried earnestly and sometimes valiantly to meet the objectives that seem important at any single time for the schools, but as they become confused and angry because of the rapid change in educational priorities, their resistance to external pressure becomes somewhat stronger. We believe that one unanticipated result of federal activity in the curriculum field has been a diminution of confidence in teachers because of public has heard continually about how the schools fall short, and well-publicized federal programs are developed with a crusading, reform mentality that questions the ability (and sometimes the integrity) of practitioners. In turn, teachers become more resistant to external pressure.

Furthermore, we have tried to point out that federal activity has created new, specialized roles in educaiton like evaluator, counselor, and curriculum developer that have tended to limit the professional range of the classroom teacher and therefore, in a sense, deprofessionalize the traditional role by limiting the area for teacher judgment. The result, to date, has been to stress the didactic factors in the role of a teacher.

While the role of the federal government in classroom practice is limited and indirect, the influence of the government on research is profound. The federal government has a strong influence indeed in deciding what knowledge is generated and how it should be propagated. However, because education priorities seem to shift rapidly and research and

development activities take many years, there often is a mismatch between research results and the alleviation of pressing educational problems. This problem may be getting worse. As the Congress demands research that "makes a difference", there is a tendency to support activities that show promise of rapid payoff. If the expected results in ever-shorter periods of time are not forthcoming, politicians increase their pressure. There is less opportunity for careful and reflective studies that help to increase understanding of educational events.

It seems to us, in thinking about future federal policy, that it might be well to examine more carefully the potential of the federal government in influencing agencies that currently have responsibility for curriculum, specifically textbook publishers and state-level textbook adoption agencies and that studies might be commissioned to provide additional knowledge about how selection committees operate and how textbook publishers design programs. Who serves on text-selection committees? Who is chosen to develop textbooks? Why? How do commercial publishers view the market? What changes do state education agencies expect as a result of textbook adoptions?

Further, might there not be direct associations between federal agencies and these groups to provide analytic support for the critical decisions that are made? What are the legal and ethical dimensions of such relationships? Textbook houses exist to make a profit. What are the problems, then, in using public funds to make their products more suitable in meeting nationally determined needs?

What about teachers? We hold to the view that biological imagery

may be more useful in thinking about educational change than metaphors drawn from factory production. There is enormous natural variation in the American educational system. At any instant, some teachers seem relatively effective in responding to the currently perceived priorities. Other teachers seem less successful. What are the factors that seem to characterize the more "adaptive" program? How might other teachers become aware of and perhaps be influenced by such developments?

This view of educational change contrasts sharply with a mentality that requires fresh and time-consuming development, then promolgation of the results at a time when priorities might have shifted. It suggests instead a reasonably comprehensive monitoring of the educational system such that practices that seem effective can be identified directly and attempts initiated to understand them. In turn, this approach suggests a federal role that is relatively passive, one of sustaining continual description of existing practice, not exclusively or even primarily in terms of test scores that tend to mask as much as they reveal, but also detailed portrayals of teaching practice and classroom events from which can be drawn information of considerable potential use to other teachers.

To accompany such a sensing system, there might be consideration given to periodic examinations of curriculum issues by specially selected experts. Every five years, say, there might be an examination of the mathematics curriculum with a view toward developing recommendations, as was the case with the Cambridge Conference on Science and Mathematics. For this purpose, some appropriate federal agency might work with the relevant professional association -- say, the National Council of Teachers of Mathematics -- augmenting the group with prestigious individuals seen

as representing public concerns.

Such a plan has the virtue of assuring regular review of the relationship among national priorities, subject matter knowledge, and current classroom practice. Depending on the acceptance of reports by such blue-ribbon groups, commercial publishers, teacher organizations, and other influential people might then strive to make modifications in their programs -- perhaps drawing on federal funds to be used as incentives. This type of approach to curriculum development seems to honor both legitimate national interests and local prerogatives.

Another approach that might be suggestive is the one inaugurated with support from the Carnegie Corporation to study issues in higher education. A distinguished national commission under the chairmanship of Clark Kerr embarked on an ambitious series of studies designed to illuminate issues in the rapidly changing field of higher education in the 1960s and early 70s. The reports had no official standing, yet many of them proved highly suggestive as colleges and universities facing problems associated with "open enrollments", financing, accreditation, etc. It may be desirable to consider the possibility of creating national commissions that would examine educational issues beyond the appropriate curriculum in particular subject matter fields. What about the goals of vocational education in American secondary education, for example? Or foreign language education? Or the arts?

The Swedes have prided themselves on the use of special commissions to develop consensus. A disadvantage is that such commissions reflect professional and establishment rather than public viewpoints. It is a

device by which elites shape public views (Kogan, 1979; Kogan and Packwood, 1974). The reports also can tend to be evangelical rather than analytic.

In Britain critics of national commissions, such as the Plowden report, contend that such reports can only aggregate and articulate what the best schools are doing. If successful, they may create new orthodoxies that suppress initiatives. Also, they often are direct projections of government views. On the other hand, in times of great fragmentation, these disadvantages may be outweighed by the commission's stablizing and focusing effect.

Conceivably a regularized process might minimize the dangers of frenetic attempts to address serious problems during periods of rapidly shifting values. Even if such a procedure were not effective, it might in itself inject a stafilizing element in American educational policy. Currently, policy makers simply react to crisis. Perhaps such behavior is an inevitable feature of our political system. But perhaps, too, at relatively small cost, governmental agencies can experiment with approaches that have less the characteristic of accusation and reform and more that of reflection, study, and adaptation.

It is clear that we favor strategies for education change that are based to the maximum degree possible on teacher initiatives, appropriately informed by considerations of public interest and national goals. We are attracted also to approaches that show greatest promise of enhancing the stability of a complex system designed to meet many goals, some of which, under analysis, are contradictory. While we

recognize our social policy preferences and the ideology that undergirds them, like most advocates of stability we see the conclusions drawn in this monograph and our recommendations as realistic. Cycles of educational reform seem neither to have produced many of the intended changes nor have they enhanced the strength of the system. Modest initiatives illuminated by evolutionary imagery may be more effective in a large and complex system than strategies that are directly interventionist.

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