Chapter 9

Federal Role in Education

One room school house, Brown County, Kans., 1935

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The Federal Government has long been involved in encouraging or providing financial assistance to State and local educational agencies. The first Federal aid to education occurred with the passage of the Land Ordinance in 1785. Federal aid continues today in a very expanded capacity.

Most Federal education initiatives often attempted to address or remedy issues not directly related to education. For example, the early land grants were designed not only to ensure public education in the newly formed territories but also to "make public lands more attractive to prospective buyers."[1] In the 19th century, the Merrill Act was enacted to respond to the growing educational need for practical higher education in the areas of science, agriculture, and industrial training. Similarly, in 1917 a vocational education act was passed to reorient local education programs to meet the needs of changing labor markets.

By the 1950's, an expanded Federal role in providing educational services was deemed necessary. Support came in numerous forms, from grants for school construction and veteran assistance to impact aid programs. By 1965 a Federal role in education had been generally accepted. The questions raised were no longer, what role, if any, should the Federal Government play; instead, Congress sought to determine what type of investment should be made and where and how it would be most effective. The "how" signified the next important shift in the educational debate—from Congress to the courts. Today many educational issues are resolved in the judicial arena. In resolving these issues the courts rely on interpretations of the constitution as well as on recent educational legislation.

[1]L. E. Gladieier and T. R. Wolanin, *Congress and the Colleges* (Lexington, Mass.: Lexington Books, 1976).

Education Legislation

The Early Years: 1642-1860

In 1642, the Massachusetts General Court passed the Massachusetts Bay Law establishing a precedent of local responsibility for education. This act and the subsequent legislation of 1647, the Old Deluder Law, which called for the creation of local public schools according to population size, were extended on a national scale in 1785 by the passage of land ordinances. Under these ordinances, moneys were set aside from the sale of lands and dedicated to the maintenance of public schools. This principle of Federal aid was consistently affirmed through a series of land grants (Statehood Acts) throughout the next century. Historians have debated the intent of the legislators in these actions—whether this effort signified a concerted attempt to preempt State rights in educational matters. Nevertheless, 98.5 million acres had been set aside for educational purposes by the Federal Government.[2]

The omission of education from express inclusion in the constitution has often been the focus of the debate concerning the extent of the Federal Government's role in the educational system. Despite its absence, the framers and other leaders of the time repeatedly called for such a Federal role. Most of the proposals, however, were directed at higher education. For President Washington, a Federal role was important for three reasons. First, there was a desire to encourage a strictly American rather than a European education. Second, he perceived that nationally sponsored education would eliminate sectional and local prejudices. And third, as indicated in his Farewell Ad-

[2]S. W. Tiedt, *The Role of the Federal Government in Education (New* York: Oxford University Press, 1966).

dress, Washington considered "the promotion of political intelligence as a national safeguard." Despite his urgings and the urgings of other leaders, the principal of local control as set forth in the Massachusetts Bay Law remained constant.[3]

The land grants and the Enabling Acts or Statehood Acts are the most comprehensive Federal policy implemented during this time. Other individual educationally oriented projects were passed by Congress but they were aimed at specific educational concerns such as the founding in 1802, of the U.S. Military Academy at West Point.

Other Federal aid during this era took the form of surplus revenue from the Treasury Department. Moneys were distributed to the States but had no specific target. Much of the surplus revenue was channeled into the public schools by the States. Also the Preemption Act of 1841 and the granting in 1849 of lands to the States by the Federal Government converted further Federal moneys to the public schools.

During this time, universal public education became accepted. This new system of public education was accompanied by the development of a professional class of educators. By the closing years of the 19th century, this group became a highly effective educational lobby.

The Years 1860-1930

Between 1860 and 1930, the role and influence of the Federal Government in the educational system increased markedly.[4] Although this growth was, to a great extent, the result of the Civil War, it was also dictated by the Nation's shift to an industrial society, coupled with great demographic changes. More importantly, the U.S. Government in the post-War period pursued many heretofore State and local concerns of which education was just one.

Much of the post-Civil War activity was directed at rectifying regional inequities in the South. Educational measures enacted by the Republicans allowed for unprecedented Federal influence in southern institutions. Also, the illiteracy rates in the Nation, particularly in the South (42 percent rate of illiteracy), were extraordinarily high, necessitating some sort of Federal remedy.

The passage of the Merrill Act of 1862, which set aside land for the establishment of schools, signified the first such Federal aid to schools.[5] However, unlike earlier land ordinances, the act's target was institutions of higher education. The arguments in the debate over the Merrill Act are strikingly similar to those raised in educational debates today: its constitutionality, the preemption of States rights, its selectivity of focus, and the cost of the legislation, were all cited as cause for defeat. In its favor were arguments citing a demonstrated need for agricultural, industrial, and scientific and technological training, and citing regional inequities in need of remedy.[6]

The next significant Federal initiative was the creation of the Office of Education in 1867. The debate concerning its establishment, while continuing to focus on what role, if any, the Federal Government should play in traditional State and local affairs, also raised the question of public v. private education. A Federal role was seen as posing a threat to private education, and the Catholic Church lobbied extensively against the bill. The education department that ultimately emerged was empowered to collect educational data and statistics, to disseminate information concerning education, and to encourage educational endeavors. Establishing a Federal role, the creation of the Office of Education lead to the formation of congressional committees with specific educational responsibilities. In 1869, the Department of Education was relegated to bureau status and was transferred to the Department of the Interior. By 1930, the bureau was affiliated with the Federal Security Agency and

[3] G. Lee, *The Strategies for Federal Aid: First Phase, 187@ 1890 (New* York: Columbia University Teachers College, 1949).
[4] Tiedt, op. cit.
[5] Lee, op. cit.
[6] Ibid.

later with the Department of Health, Education, and Welfare.[7]

Two other acts were passed before the close of the century, the Hatch Act of 1887 and the second Merrill Act. The former added agricultural experimental stations to the land grant colleges, and the latter committed additional Federal funds to certain areas of higher education.

A number of other educationally related proposals were considered but not passed. These are pertinent because in many ways they formed the framework of the educational debate that continues today. The Hoar bill, introduced in 1870, sought to establish a national system of education. It proposed the creation of "satisfactory common schools, and where the States failed to do so, to authorize the Federal Government to provide them."[8] Hoar envisioned his proposal as one of". . . protection for American economic interests. No American statesman will be unwilling to give the American workman the advantage in the great industrial competition which results from superiority of knowledge."[9] The bill did not specify Federal aid, but instead advocated that a Federal standard be set nationally for schools. As such, it represented to some an intrusion into State concerns. As with other initiatives of the time, it was specifically targeted at southern institutions.

The Hoar bill resulted in the coalescing of positions of professional groups concerned with educational issues. It also created an awareness in Congress of the issues involved in an educational debate. The National Education Association (NEA) roundly denounced the legislation because it specified a Federal role but not Federal assistance. The Catholic lobby viewed the legislation as an intrusion into Catholic educational practices and as an attempt to create one educational norm for the country. Moreover, this bill, along with others discussed below, raised issues concerning the Federal role and Federal assistance that were not resolved until 1965 with the passage of the Elementary and Secondary Education Act (ESEA). The issue of equity associated with a single national standard is in many respects similar to those parts of ESEA that allocate moneys for the educationally disadvantaged.

Two bills, the Pearce bill of 1872 and the Burnside bill of 1879, proposed a national fund for public education from the sale of public lands. The earlier bill sought to assist States that would provide free education to children between the ages of 6 and 16. The moneys raised were to be used for teachers' salaries. It is interesting to note that the bill was amended to recognize segregated schools; thus, it signaled a recognition of race as an issue in the educational debate. The latter bill differed in that land grant colleges were eligible to receive one-third of the educational grants from the land sales. In addition, the educational fund was to be supported with surplus moneys from the Patent Office. These revenues, combined with those from the land sales, were to be invested in U.S. bonds, thus establishing a permanent educational fund. Both bills failed to pass both houses. They also signified a return to the segmented as opposed to a national approach to educational concerns.

Although no education bills were passed in this decade, they did serve to raise issues central to the education debate. A concurrent development was a significant growth in organized educational advocacy groups and lobbies. For example, NEA experienced unprecedented development and growth as a professional group and lobby that could, wholesale, either support or reject education measures. This had not happened previously.

The education legislation considered in the 1880's differed from previous funding mechanisms in that it sought to provide Federal revenue for education directly to the States. It also proposed temporary aid as opposed to

[7] Ibid.

[8] Ibid; and S. Tiedt, *The Role of Federal Aid: First Phase, 18701890 (New* York: Oxford University Press).

[9] Brookings Institution, *The Effects of Federal Programs on Higher Education* (Washington, D. C.: Brookings Institution, 1962); and C. Dobbins (cd.), *Higher Education and the Federal Government, Programs and Problems* (Washington, D. C.: American Council on Education, 1967).

long-term aid. In this regard, the Blair bill, introduced five times in this decade and passed by the Senate three times, is of particular interest. It stipulated that Federal aid should be provided for 10 years to address emergency conditions in the South, that States were to supply matching funds, that funds were to be distributed according to State illiteracy rates (of persons over 10 years old), that denominational schools were to be excluded, and that the funds were to be granted within Federal guidelines.[10]

More than any other education legislation, the Blair bill brought educational issues to the fore. None of the measures incorporated into the bill had ever been addressed together, in such a comprehensive way, before. Public awareness was stimulated and pressures were exerted. Groups that actively participated in the Blair bill debate included not only NEA and the Catholic lobby but also Protestant denominations, business interests, agricultural interests, the press, and political parties. For the first time, education was included as a platform issue by the Republican Party. The Democratic Party strongly advocated State's rights and local authority over education policy.

The first education-related proposal enacted in the early part of the 20th century was the Smith-Hughes Act of 1917. It provided matching funds to States for developing curricula in agricultural, industrial, and home economics; for administrative costs; and for teachers' salaries. This act was amended continuously until 1968. The George-Barden Act of 1946 increased the number of vocational education programs and placed administration of these programs in the Office of Education. From then on, the amendments to the legislation reduced the Federal role in agricultural areas and placed more emphasis on education for the disadvantaged.

Very little educationally oriented legislation was considered or passed during the next several decades. Between 1935 and 1943, the National Youth Administration (NYA) channeled funds to a number of institutions in support of work study programs. Over 600,000 students benefited from the NYA programs.[11] Some teachers and some school construction were funded under a variety of New Deal programs (CCC, WPA, and the Federal Emergency Relief Administration), but none of these measures signified an increased Federal role. This scarcity of legislation was due primarily to the Nations' fiscal crisis and to the fear by legislators that any program once instituted would become permanent.

Several education bills were proposed during the 1930's and 1940's that reintroduced the concept of general Federal aid, but none were successful. A bill for a student loan program, the first of its kind, passed in 1943. Juniors and seniors in high school and graduate and professional students in the fields of science, health, and engineering were eligible for federally sponsored loans if, following completion of their studies, they joined the war effort. Also, the Serviceman's Readjustment Act of 1944, the GI bill, and Public Law 16 for disabled veterans were passed. The GI bill was amended to include Korean veterans. As with the case in secondary education, a pattern of connecting educational legislation to other national concerns was also set in higher education. "Its (the Government's) interest was confined to using higher education to deal with specific national problems. "[12] The legislation did revive the religious and racial controversies. Federal aid to education was mentioned in the Democratic Party platform in 1944 with the stipulation that any aid provided be administered by the States. Aid to education was not included in the Republican platform until 1948.

The Expanding Federal Role: 1950-1970's

By proposing school construction grants to local communities, most of the congressional

[10] OP. Morgan, "Academia and the Federal Government," *Policy Studies Journal*, vol. 10, September 1981, p. 75.

[11] Ibid.

[12] J. L. Jundquist, *Politics and Policy, The Eisenhower, Kennedy, and Johnson Years* (Washington, D. C.: Brookings Institution, 1968.)

initiative relating to education in the 1950's sought to circumvent the divisive religious issues inherent in the educational debate. It therefore became politically attractive to support this form of Federal aid, which was based on the increasing numbers of children entering the school population (baby boom.) In 1941, the Lanham Act was passed providing assistance to local communities in lieu of tax revenues to soften the impact of the war effort on State and local governments. Moneys were allocated to nursery schools and other school-related needs and were later expanded into the Impact Aid programs. The funds and scope of the Lanham Act were increased by Public Law 815 and Public Law 874, which provided construction and operating grants to State and local districts.

The continuing debate concerning an appropriate Federal role led to President Eisenhower's establishing a White House Conference on Education in 1954. The task force recommended that the Federal Government should provide financial aid to State and local communities for educational purposes. It concluded that there was an appropriate role for the Federal Government in educational matters.

The National Defense Education Act (NDEA) of 1958 was passed as a consequence of the widely held belief that the educational system was inadequate in mathematics, science, and foreign language instruction. This belief was directly related to the successful launching of the Soviet spacecraft, *Sputnik*. Moneys were provided on a matching basis to public schools and as long-term loans to private institutions for needed equipment in these instructional fields, for curriculum development, for guidance counseling, for vocational education in defense-related fields, and for teacher training in foreign language instruction. The passage of NDEA resulted in a substantial increase in Federal aid to education. Since Federal dollars had to be matched by State and local funds under provisions of the act, the overall investment in NDEA programs was large. Between 1958 and 1961, $163.2 million in Federal money were dispersed. Approximately 75 percent of these funds were directed at developing science curricula.

The passage of NDEA led to an examination of Federal role in postsecondary education. This examination was also fostered by the increasing numbers of students entering postsecondary institutions. The educational legislation passed in the 1950's, which included postsecondary provisions, together with the legislation passed in the 1960's paved the way for major legislation in the 1970's. This steady growth of Federal involvement, culminating with the passage of the Education Amendments Act of 1972 (Public Law 92-318), was similar in process to the development of the Federal role in secondary education.

Two major pieces of legislation that Congress passed in the 1960's were the Vocational Education Act of 1963 and the Higher Education Facilities Act of 1963. The former was a much expanded version of the Smith-Hughes Act of 1917, establishing a permanent program for vocational education and setting aside 10 percent of the annual appropriations for research and development (R&D) projects in vocational demonstration projects. Concomitant to the passage of the Vocational Education Act was the passage of two amendments to NDEA, that extended the act and increased the amount of funds available for student loans. The latter provided Federal aid for construction of facilities at postsecondary institutions. This act was aptly named the "bricks and mortar act. " Community junior colleges were covered by this legislation as was the construction of libraries at these institutions.[13]

The next major educational act, the Elementary and Secondary Education Act (ESEA), was passed in 1965. Its passage signaled an unprecedented entry by the Federal Government into educational affairs. Between the passage of these two landmark educational acts, Congress and members of the educational community continuously debated what an expanded Federal role in education should en-

[13]Ibid.

tail. In 1964, during the Johnson administration, the War on Poverty had become a domestic priority. ESEA, which was one outcome, focused on the poor and disadvantaged child. It incorporated a wide range of programs which, while ensuring the acts passage by their complexity, ultimately seriously hindered its effectiveness. However, a diversity of interests rallied to support the act. As with previous educational legislation, a constituency was built around a noneducational issue. At this time the three main issues to overcome in enacting any educational legislation at this time were church and state relations, State rights versus Federal control, and race relations.[14]

ESEA provided funds for educational R&D, for promoting educational innovation, and for assisting State agencies to establish these programs. The five original titles addressed many issues. Title I provided Federal funds to areas with concentrations of educationally and economically deprived children. Other titles of the act were designed to assist State agencies in various areas: title II—school libraries, textbooks, and instructional materials; title III–educational services and resource centers; title IV–educational R&D; and title V–State administrative needs. (See appendix of this chapter.)

Initially, two poverty indicators were used to distribute ESEA funds: based on the 1960 census: 1) the number of children between 5 and 17 from families with an income of less than $2,000, and 2) the number of children between 5 and 17 from families with income exceeding $2,000 receiving aid under title IV of the Social Security Act, Aid to Families With Dependent Children. Responsibilities for administering the act rested with both the Commission of Education and State and local education agencies.

The act was amended several times. The supplemental enactments titles focused on the issues of Federal regulation and grants, assistance to the handicapped, and bilingual education. ESEA was designed so that its programs would be administered by the State agencies with local input. The Federal role would be to distribute funds and to influence the work of the States. Accordingly, control was maintained in the State and local communities, resolving one of the major conflicts in the educational debate.[15]

Many of the amendments and changes in ESEA were effected for political as well as for educational reasons. One unanticipated outgrowth of the legislation was the use of ESEA as a means of desegregating schools. Title VI of the Civil Rights Act of 1964 stated that "no person in the United States shall, on the ground of race, color, or national origin be excluded from participation in, be denied benefit of, or be subjected to discrimination under any program or activity receiving Federal financial assistance. " ESEA was chosen as a conduit to enforce this title and to desegregate schools. Another reason for modifying ESEA was because its meaning was confusing. Every title involved different interested parties and different funding mechanisms and addressed different educational concerns. Enforcement and distribution of the funds was administered by the Office of Education (OE), which traditionally relied on the State and local agencies for advice and enforcement. OE was split over what this massive and complex educational legislation meant and how to implement it. Many of the changes in the act reflected an attempt to resolve these problems.

Many of the original concerns surrounding ESEA still exist; its complexity, the amount of funding, and dissatisfaction by State agencies over Federal regulations. Disillusioned by

[14] F. J. Munger and R. F. Fenno, *National Policies and Federal Aid to Education* (Syracuse, N. Y.: Syracuse University Press, 1962); and J. L. Jundquist, op. cit.

[15] J. S. Berke and M. Kirst, *Federal Aid to Education: Who Benefits? Who* Governs? (Lexington, Mass.: D.C. Heath, 1972); F. M. Wirt and M. Kirst, *The Political Web of American Schools* (Boston, Mass,: Little, Brown & Co., 1972); F. M. Wirt and M. Kirst, *The Political and Social Foundations of Education* (Berkeley, Calif.: McCutchan Publishing Corp., 1972); and M. Kirst, "The Growth of Federal Influence in Education, " in Uses *of the Sociology of Education,* C. Wayne Gordon (cd.) (The 73rd Yearbook of the National Society for the Study of Education, Part II) (Chicago: National Society for the Study of Education, 1974).

their concerns, both its proponents and opponents sought to amend the act.

The total funds allocated to federally sponsored programs appear to be a sizable Federal investment in education ($8.8 billion in fiscal year 1978-79). But when viewed as a proportion of a State and local education budget, the Federal investment seems less significant. Federal funds have accounted for between 6 and 9 percent of State and local education budgets. Monetarily, then, this influence is relatively small.

Concerns by local and State officials over regulations designed to enforce provisions of the act have been extensive and numerous. Many of the regulations resulted from the original complexity of ESEA and from the need to target funds to discreet groups with special needs. Concerns and fears relating to Federal control over State and local education programs have not been realized. This has resulted from a combination of factors: the small investment in each program per community or per State by the Federal Government; staffing constraints at the Federal level, making "control" or extensive influence difficult; provisions written into the act prohibiting such authority; and, finally, State pressures against increased Federal influence.[16]

[16]M. Timpane (cd.), *The Federal Interest in Financing Schooling* (Cambridge, Mass.: Ballinger, 1974).

With the passage of education legislation in the 1960's and 1970's, the role of the Federal Government in education is, generally speaking, fivefold:

- Promotion of equal opportunity as exemplified by ESEA, the Education Amendments of 1972, by grants and legislation for the handicapped, by desegregation efforts and bilingual decisions, and by others.
- Innovation and stimulation of education reform through research grants, teacher training, vocational education, reading improvement programs, and others.
- Provision of grants in support of educational research–the results of which could have broad applications in the Nation's schools.
- Promotion of educational preparation for employment, which can be traced to the Smith-Hughes Act of 1917. "The school's potential contribution to economic productivity was thus the first, and for a long time, the only expressed national interest in education. ' '[17]
- Provision of limited funding targeting specific needs areas such as planning grants for management purposes on the State level, equalization reforms for State finance mechanisms, instructional equipment, and others.

[17]Ibid.

The Courts and Education

As ESEA moved into the implementation phase, the educational debate moved into the judicial arena. The courts have addressed numerous education-related issues ranging from questions of student and teacher behavior to those of access to educational resources. These issues, traditionally addressed on the State and local level and more recently by Congress, have now become the work of the courts.

> The schools have been caught up in the complex multiracial and ethnic societal problems of our times which involve great moral and political issues and which the legislative and 'executive branches of the government seem unwilling or unable to resolve. Although lawyers and law courts in general possess no special expertise in educational matters, they have nonetheless been called upon to lend a helping hand with these school problems, which are fundamentally a function of social change taking place in society over the past twenty years or more. [18]

[18]J. Hogan, "Law, Society and the Schools, " in Uses *of the Sociology of Education, C.* W. Gordon (cd.) (The 73rd Yearbook of Education, Part 111) (Chicago: National Society for the Study of Education, 1974), p. 411.

The involvement of the courts in educational issues can, from a historical perspective, be divided into three phases. Prior to 1850, educational issues were considered by the judiciary as State and local matters with no court role. Between 1850 and 1950, the court maintained this stance. When many parents brought cases before the courts, the courts usually found that the 10th amendment declared education to be a State and local responsibility. The third stage, from 1950 to present, can be characterized as one of active judicial involvement in educational issues, particularly by the Supreme Court. During this period the courts were involved in all aspects of education, including administration, program development, and organization.

Desegregation. –Court involvement in educational matters began in 1954 with the landmark *Brown v. the Topeka Board of Education* decision. In the *Brown* case, the courts declared that schools that were deliberately segregating children on the basis of race were inherently unequal and thus were creating a situation that was unacceptable. "Separate but equal" was found to constitute a violation of the 14th amendment. This decision not only paved the way for desegregating schools in the South; it also opened up many other legal issues that are still being contested today. Nevertheless, the *Brown* decision did not truly become effective until the passage of the Civil Rights Act of 1964. Since the *Brown* case, courts have addressed such questions as those relating to church and state relations in the schools, to free speech, to the financing of education, to curriculum, and to student and teacher rights. Most of these cases focused on the first and 14th amendments. In general, the courts held that State and local governments should retain their authority over most educational matters.

Religion in the Schools.—In one major area of court involvement, church and state relations, the first and the 10th amendments have been used to balance competing constitutional questions. The courts have drawn a very fine line in their decisions regarding religious issues in education, and no clear pattern has emerged. The courts have ruled, for example, that there can be no direct aid to parochial schools, yet the States may lend textbooks to these institutions. In addition, parents can be reimbursed for transportation costs to parochial schools. With regard to principles of free speech, State laws requiring prayers in public schools and those preventing the teaching of the Darwinian theory of evolution in public schools have been found to be unconstitutional. Similarly, the courts have ruled that enforced pledging of allegiance or saluting the flag is in violation of the first amendment. In general, questions or issues that impose specific standards of conduct on students and teachers have been found to be unconstitutional.[19]

Parental Right to Educate.–Another area of limited court involvement has been the question of parental right to educate children in the home. Since questions arise from State to State as to the legality of home instruction, most parents do not openly acknowledge removing their children from the public school system for fear of reprisal from State agencies and ensuing court actions. It is estimated that there are 1 million parents engaging in home instruction. Thirty-two States now have legal provisions for home instruction, but again, these vary from State to State.

State and Local Funding Mechanisms.– Nearly one-third of all State and local expenditures are education related. With increasing pressures from the courts, from parents, from interest groups, and from the Federal Government to provide educational services, local districts are reexamining the means by which their programs are funded. School finance reform comes at a time of declining enrollment in many parts of the country and in a climate of reduced funding both on the State level (taxpayer revolts) and nationally, with budget reductions and challenges to the traditional means of funding-property taxes. A brief historical examination of funding mechanisms is merited because funding reforms will affect the ability of State and local districts to in-

[19] Ibid.

troduce information technologies into their schools.

The educational structure in most Northeastern States largely followed that of Massachusetts, in which towns were divided into districts that retained responsibility over educational matters including school finance-a practice that continued through the 18th century. In the early part of that century, Northern States began to exercise minimal control over inspection, curriculum, and similar institutional concerns. Increasing State involvement gave rise to the growth of State boards of education and, by the 19th century, the State exercised a good deal of control over educational matters through these boards. Throughout this time of expanded State jurisdiction, financial control remained a local responsibility.

The South, unlike the North, generally relied heavily on the States for both administrative tasks and financial support. This practice became widespread in the post-Civil War period, at which time a system of State financing of local districts was firmly established.

In the 20th century with the rise of industrialization and increased urbanization, localities turned more and more to the States for financial relief from the growing educational burden. It became evident at this time, as in many of the cases before the courts today, that there were wide discrepancies among districts on the amount of funds expended per child and per school. Some States did increase the funding allocations, though the impact was minimal and inequities remained.

By the 1960's, spending on elementary and secondary education was increasing at an annual rate of 10 percent, with enrollments growing by about 30 percent. In the 1970's with the rapid decline in enrollments, court challenges to the finance systems, and pressures from taxpayers, made school finance reform become a topic of debate in most State legislatures. Every State established commissions to examine the financing systems, and 18 passed legislation to remedy recognized inequities. Thus, the early 1970's was a period of heightened activity within the State legislatures concerning school finance reform. The latter part of the decade was a time of court interpretations of State laws as well as a time of interpreting new legislative actions.[20]

More recently, cases before the courts have focused on financing mechanisms employed by State and local governments for school districts. A series of cases have challenged the means by which local communities finance educational services, specifically property taxes. In 1971, the California Supreme Court struck down the State's system of financing education in the *Serrano* decision. The court found that the California system, because it discrimin ated against those living in property-poor districts, violated the equal protection clause of both the U.S. and California constitutions. In the *Rodriguez v. San Antonio Independent School District*, the U.S. Supreme Court rejected claims similar to those in the *Serrano* decision. In this instance, the court declared that, although there was inequity in the financing system in this Texas district, there was "the absence of any evidence that the financing system discriminates against any definable category of poor people or that it results in the absolute deprivation of education—the disadvantaged class is not susceptible of identification in traditional terms.""

Although the *Rodriguez* decision found that Texas' financing system was not unconstitutional, numerous cases before State courts continue to challenge State financing systems. In early 1981, 31 cases relating to *Serrano* issues were before the courts. The latest challenge, in New York State, found that that State's financing system was, "constitutionally deficient" in that it discriminated against children living in poor districts. Reliance on property taxes to raise educational revenues has lead to wide disparities in New York State. In the decision it was noted that, although education is not a Federal constitutional right, nor "such a fundamental State constitutional right as to

[20] W. N. Grubb and S. Michelson, States *and Schools (Lexington, Mass.: D. C. Heath, 1974).*

[21] D. L. K@ and M. G. Yudoff, *Educational Policy and the* Law(Berkeley, Calif.: McCurhan Publishing Corp., 1974), p. 587.

invoke special constitutional protection, it is an interest of great State importance. " Therefore, the equal protection requirement of the State constitution was invoked.

Federal Role in Museums

Federal support of museums is very recent and began with the creation of the National Endowments for the Arts and for the Humanities in 1965. The first program grants to museums were initiated in 1971 by the National Endowment for the Arts. The endowments provide grants for projects or specific endeavors. These funds may not be used for operational purposes to support general programs.

Federal support for the general operation of museums became available with the establishment of the Institute for Museum Services (IMS) in 1977. IMS, now within the Department of Health and Human Services, is designed to provide funds for rent, heat, lights, and the like to museums. This institute has no funding support in the current fiscal year. Another avenue for support of museum programs, again in a limited fashion, is through the National Science Foundation, which allocates funds to science museums, though the educational division funding has been curtailed.

One of the most crucial forms of Federal support, albeit indirect, is through gifts or donations to museums by individuals or corporations. Tax deductions, made possible through legislation, provide important incentives for donors.

Federal Role in Libraries

Libraries began to receive significant amounts of Federal aid only in the 1960's, when the Federal Government undertook a major effort to provide services and opportunities to the disadvantaged members of society. The major pieces of legislation that provide for assistance to libraries include the following."

- The Library Services and Construction Act (LSCA) of 1964. Replacing the Library Services Act, this legislation provided a major impetus to the use of and interest in libraries. Continually reauthorized since then, it has served as one of the major channels through which the Federal Government has provided assistance to libraries.
- The Elementary and Secondary Education Act of 1965. Title II of this act authorized $100 million to be spent by States for school library resources. As a result, libraries were established in the elementary schools in many hundreds of cities and rural areas.
- The Higher Education Act of 1965. Title I of this act specified that 22 percent of the funds provided be allocated for public community colleges and technical institutes. Title II provided Federal assistance to college libraries. It authorized funds not only for the purchase of books, periodicals, and other library materials, but also for library training programs and for R&D for new ways to program, process, store, and distribute information.
- The Federal Government has also provided continued support to the Nation' s-research libraries-the Library of Congress, the National Library of Medicine, and the National Library of Agriculture.

The momentum that developed in the 1960's in support of libraries began to wane in the 1970's. The Nixon administration eliminated

[22] V. H. Matthews, *Libraries for Today and Tomorrow* (Garden City, N. Y.: Doubleday & Co., 1976.)

from its budget appropriations for all non-Federal libraries. The Carter budget for 1980 also reduced library funding. It called for a $388 million reduction in Federal aid to schools and libraries; it eliminated funds for college library resources, training, and demonstrations; and it significantly cut back funds for library services, interlibrary cooperation, and library materials. Similarly, the Reagan administration's proposals for libraries also call for greatly reduced funding. Funding, for example, under ESEA has been incorporated into block grants under the Education Consolidation and Improvement Program.

Notwithstanding these significant reductions in the subsidies for libraries, the Federal Government continues to provide substantial support, most of it channeled through State agencies. In fiscal year 1982, for example, total Federal appropriations for library services under LSCA was $71,520,000, total appropriations for libraries and instructional and total Federal appropriations under title II of the Higher Education Act were $8,568,000.

Effect of Federal Telecommunication Regulation and Legislation on Education

Regulations, statutes, and ordinances at all three governmental levels have shaped the growth and structure of the telecommunication industry and have significantly affected the use of telecommunication technology by educators. A number of regulations have attempted to foster the application of communication services to education directly (e.g., Federal Communication Commission (FCC) rules governing instructional fixed television systems).

However, while the focus and legislative intent of some regulations have been on the provision of educational services, others have focused exclusively on telecommunication per se, disregarding their potential effects on education. These latter regulations, although necessary to effect the provision of telecommunication services, have inadvertently affected the use of modern telecommunication technology for educational purposes by forcing educators to compete for its use with wealthier and more politically powerful interests. This situation has had a detrimental effect on education by preventing and inhibiting educators from realizing the benefits of this technology. It has become increasingly apparent that telecommunication regulators must recognize the impacts of their decisions on education and must begin to take into account the interests and needs of education in formulating national telecommunication policy.

Governmental Control of Telecommunication

Telecommunication is regulated at all three governmental levels. On the local level, programming options are weighed and decisions are made. For example, Instructional Television Fixed Service (ITFS) licenses are, by their very nature, confined to local delivery of information. Once FCC has granted an ITFS application, the local operator/licensee controls its programing input and the extent of its output. States have the authority to regulate cable franchising by local municipalities and to set up rate structures for the public utilities. Most of the regulation of telecommunication, however, takes place at the Federal level, and it is this level which is of primary interest here.

Governmental Control of Education

Education is largely controlled at the local and State levels. At the local level, it is carried out primarily by local school boards; while accreditation and licensure functions are performed at the State level. The State's exclusive power over education derives from the

Reserved Powers Clause of the 10th amendment.[23] Thus, Federal laws relating to education usually include a reference to the primacy of the States.[24] For example, the *General Education Provisions Act* states that: "No provision of any applicable program shall be construed to authorize any department, agency, officer or employee of the United States to exercise any direction, supervision, or control over the curriculum, program of instruction, administration, or personnel of any educational institution . . . "[25]

The traditional role of the States in controlling education may, where telecommunication technology is concerned, run into direct conflict with Federal laws and Federal policy. Specifically, State educational policies concerning telecommunication may conflict with the interstate commerce powers of the Federal Government, the express provisions of the Communications Act, and the general principles of the first amendment.[26] For example, the power of the States to control education is often exercised through the process of licensure of educational institutions and services. However, licensure requirements vary widely from State to State. Thus, an institution that seeks to offer programs, such as telecourses, on a regional or national basis must deal with several different licensure statutes. The question then arises as to whether the State receiving the service has jurisdiction to impose its licensure requirements on the offering institution, especially where the institution has no other contacts within the State.

The more fundamental issue, however, is whether these State licensure requirements operate to circumscribe various available services and thus impose an undue burden on interstate commerce, in violation of the Commerce Clause of the constitution.[27] [28] In other words, can the several States constitutionally control the delivery of multi-State educational services flowing into their borders or are such services covered under this clause subject to Federal control? The issue has not yet been resolved, but it is clear that in the near future it will demand greater attention and will require resolution by the courts.[29] In the meantime, State licensing authorities are free to adopt discriminatory and protectionist regulations that have a potential chilling or inhibitory effect on the provision and delivery of educational programs and services.

The Federal Communication Commission and Educational Telecommunication Services

Various Federal rules and regulations governing telecommunication also affect educational programs and services. Under the 1934 Communications Act, FCC has jurisdiction to allocate the broadcast spectrum among communications services. In the past, the commission has made several policy decisions directly intended to promote educational access to the broadcast spectrum. The clearest example was the commission's reservation of 242 channels in the very high frequency (VHF) and ultrahigh frequency (UHF) bands for educational use. In 1938, 1945, and 1952, respectively, the commission announced that several radio and television channels were being reserved for the use of nonprofit educational

[23] The powers not delegated to the United States nor prohibited by the Constitution to the States, are reserved to the States respectively, to the People.

[24] M. B. Goldstein, "State Licensure of Instructional Telecommunications: An Overview of a Constitutional Problem," *Telescan* 1(3):3, January/February 1982.

[25] *General Education Provision Act, sec. 432, 20* U.S.C. sec. 1232a).

[26] M. B. Goldstein, *A Survey of Key Policy Issues Affecting Higher Education and the Adult Learner,* discussion draft prepared for The Ace Commission on Higher Education and the Adult Learner, October 1981, p. 39.

[27] The Commerce Clause gives Congress the power to regulate interstate commerce. U.S. Constitution, art. I, sec. 8, clause 3.

[28] M. B. Goldstein, "Federal Policy Issues Affecting Instructional Television at the Postsecondary Level," *Adult Learning and Public Broadcasting,* report of a project conducted by the American Association of Community and Junior Colleges with support from the Fund for the Improvement of Postsecondary Education (FIPSE), 1980, p. *45.*

[29] This argument was recently raised in an action by Nova University, to prevent the State of North Carolina from regulating the offering of education services in that State when the degree conferred was authorized by the school's domicile State, Florida. While the case was ultimately decided on narrow statutory grounds, the issue of State v. Federal powers was strongly enunciated in the arguments put forth by both sides. *Nova University v. University of North Carolina, No.* 110A81, N. C., Mar. 3, 1982.

organizations advancing an educational purpose. These decisions presaged the beginning of educational or instructional television and directly provided for community educational programing.

The commission's original intent in setting aside these channels was to promote noncommercial educational broadcasting. FCC took a broad view of such broadcasting, and no programming requirements were assigned to its instructional and cultural components. It has been claimed that the failure to define the term educational broadcasting more narrowly had, in fact, the effect of diminishing the amount of instructional programing, which resulted in a public broadcasting system that serves a wider audience.[30] In the absence of a narrowly drafted set of regulations governing educational broadcasting, market forces took over and influenced decisions on programing content by licensees and broadcasters. The programing on the channels originally reserved for educational broadcasting became predominantly cultural in content.

Instructional Television Fixed Services

The regulation of ITFS is a further illustration of the effect of regulation on the educational use of telecommunication. ITFS is a point-to-point communication system that can transmit up to four channels of programing at one time to predetermined reception points located from 5 to 20 miles away. Therefore, it is a method of transmitting television signals directly to the classroom.

ITFS was established in 1963 when FCC opened 31 channels in the 2500-to 2690-MHz frequency range for this private distribution system. It was intended to satisfy the need for a more economical and efficient means of distributing high quality learning materials to the classroom. In the 1970's, FCC issued rules and regulations that provided for the licensing of 28 of the 31 available channels to educational institutions. The remaining three channels were to be assigned to municipal or State governments for operation of a similar service, Operational Fixed Service (OFS).[31]

Soon after ITFS was established, FCC received many construction permit requests for the use of its assigned channels. However, the cost of the components necessary to operate an ITFS system, (transmitters, receivers, studio equipment, down converters, etc.), prevented most educational institutions from utilizing this technology. ITFS was thus installed and used predominantly by larger universities capable of affording it.[32] Once installed, the system was economical to operate. Currently, ITFS is being used to provide a variety of educational services, including adult and professional continuing education courses. Some universities, such as the University of Southern California, use an ITFS system to transmit graduate engineering courses to nearby businesses and firms with staff engineers. The future of this system and its use as an educational tool is uncertain.

In 1980, FCC began proceedings to reallocate the 31 channels in the 2500-to 2690-MHz frequency range, the assumption being that educators were not taking full advantage of the channels allocated to ITFS.[33] Faced with an increasing demand and a growing number of applicants for Multipoint Distribution Services (MDS) and Private Operational Fixed Microwave Services (POFMS), FCC proposed to redistribute these channels by allocating 10 each to MDS and POFMS, leaving ITFS with the remaining 11.[34] As satellite distribution of programing made MDS more profitable and as the market demand for MDS grew and developed, FCC proposed to offer MDS operators use of part of the spectrum allocated to ITFS. Similarly, as business and industry found new uses for POFMS, demand for fre-

[30] S. A. Shorenstein, "Pulling the Plug on Instructional TV," *Change,* vol. 10, November 1978, p. 37.

[31] OFS is functionally equivalent to ITFS. It is a short-range private distribution service intended for governmental as opposed to instructional use.

[32] As of Jan. 1, 1981, there were 180 ITFS licensees in the United States, *Television Factbook,* stations volume, 1981-82 ed. No. 50.

[33] General docket Nos. 80-112; 80-113; 80-116.

[34] MDS is a common carrier service, delivering pay-TV programing from a central transmitter to several line-of-sight reception points.

quencies to operate this service has grown. Thus, FCC proposed to reduce the number of ITFS channels to make room for MDS and POFMS systems.

Here again, FCC had created by direct regulation a system primarily for offering educational programing. Yet, because of high installation costs, along with budget cuts, ITFS has not been used by most educational institutions. Although FCC has not yet acted on this proposal, clearly a reduction in ITFS channels will have an effect on cities like New York and Los Angeles where ITFS is widely used. While it is possible that such large metropolitan areas, which have as many as 25 operational ITFS systems, may have to curtail their use and reduce the number of educational services offered, it is more likely that FCC will "grandfather" (allow them to continue under the new system) active channels as long as the present licensees retain their control. Only assigned but inactive ITFS channels would be reassigned for commercial spectrum use. A further consequence of the proposed cutback in ITFS channels is that it may affect the recent Public Broadcasting Service (PBS) application for ITFS facilities.

The Public Broadcasting Service

PBS and its member public television stations have applied for ITFS channels to set up the National Narrowcast Service to extend their distribution of instructional, educational, and cultural programing to meet specialized, educational needs. The system is designed to reach those who live where educational programing is not readily available and to create a local means for expanding the educational services offered by PBS stations. If FCC decides to reallocate the ITFS frequencies, this proposed service will be in jeopardy. With fewer ITFS channels available, PBS will have to compete for channels with other educational users. While the FCC proposal will, if adopted, increase the number of channels available for commercial MDS and POFMS systems, it w-ill also limit the availability of educational services to the community through ITFS systems. In effect, another educational resource would be reduced and replaced by services unlikely to be available for educational programing.

Low-Power Television and Direct Broadcast Satellites

While low-power television (LPTV) and direct broadcast satellite (DBS) systems may become available for distributing educational programing, they are not equivalent substitutes for ITFS. LPTV applications will be granted on the basis of an available broadcast spectrum, and educational institutions wishing to apply for such frequencies will have to compete with other users for a frequency allocation. In other words, allocation by FCC will occur entirely apart from the needs of the educational community. In addition, although DBS service has the potential to reach nationwide audiences, it is unclear whether DBS applicants will, in fact, transmit educational programming to the public or whether educational institutions will be able to afford satellite time. The answer to these uncertainties will be known in time if rules and regulations are adopted to govern both LPTV and DBS systems. Given the present emphasis on deregulation, it is unclear whether LPTV and DBS will be regulated to provide educational services.

Cable Television

Another area where telecommunication regulation has affected education is illustrated by cable television requirements. FCC rules originally required that all cable systems serving more than 3,500 households provide opportunities for "educational access with no cost for use of the system."[35] At present, only a few universities (e.g., Purdue and Oregon State University) use this resource. Furthermore, specialized, educational programing generally comprises a very small part of cablecasters' offerings. The regulation of telecommunication via cable is in transition.

[35]These requirements have been overturned by the courts. See *Midwest Video Corp. v. FCC*, 571 F. 2d 1025, 41 R.R. 2d 659 (8th Cir. 1978) (Midwest Video II), cert. granted, 47 U. S.L.W. 3187 (No. 77-1575). However they would be reinstated to some extent by the passage of S. 2172.

Telecommunication Legislation and Educational Services

The Senate Commerce Committee has recently introduced a bill to move primary jurisdiction over cable regulation from the cities and States to FCC.[36] The bill also requires that cable systems with more than 20 channels dedicate 10 percent of such channels for use by public, educational, and governmental programers and 10 percent to leased channel programers, all on a first-come, first-served, nondiscriminatory basis.[37] This bill represents one of many congressional efforts to revise telecommunication regulations and set national telecommunication policy. Although this legislation explicitly provides for educational programing, other bills, such as those dealing with revision of the 1934 Communications Act, often do not address educational interests. Such congressional consideration is necessary to ensure the low-cost availability of telecommunication services to educators in both the public and private sector.[38]

As with FCC regulation, telecommunication legislation may have both a direct and indirect effect on the means by which educational services are provided and on the ability of educators to utilize telecommunication for disseminating educational materials. Legislation can affect the cost of interconnections, the means of delivering services, and the nature of educational programing.

Congress has directly influenced the manner and scope by which educational services are provided both in approving appropriations for the Corporation for Public Broadcasting (CPB) and by enacting legislation like the Public Telecommunications Financing Act.[39] Congress has also proposed legislation which, although dealing with telecommunication, could indirectly set a precedent regarding the provision of educational services. For example, a bill introduced by the House Subcommittee on Telecommunications, Consumer Protection, and Finance, which revises and updates title II of the 1934 Communications Act governing the provision of telephone and telecommunication services, may have important implications in the educational arena.[40] Access provisions under the proposed legislation may affect the costs of interconnections for home computers. This, in turn, could affect the demand for such terminals. Similarly, issues of maintenance, ownership, and technical grades of lines and wiring may affect the quality of data communication and ultimately the supply of information for educational purposes. These issues need to be considered by legislators in their efforts both to rewrite the 1934 Communications Act and to set national telecommunication policy.

As the foregoing discussion has shown, telecommunication regulation often indirectly discriminates against educational services by overlooking the stake educators and institutions have in telecommunication resources. An issue entirely separate from that of telecommunication legislation and its effect on education, however, is the issue of Federal regulation of education and its effect on the use of telecommunication. Although warranting more consideration, it can only be dealt with briefly here.

The clearest example of how educational regulations can have a chilling affect on the educational use of telecommunication is a Veterans Administration rule restricting and prohibiting reimbursement and educational benefits to veterans for curricula that use courses taught via television and radio. While the rationale behind this regulation may have been to prevent veterans from claiming credit for sham courses, it clearly discriminates against technology-based delivery systems and hence can be deemed overbroad. Less restrictive al-

[36] "Where Things Stand," *Broadcasting,* Apr. 5, *1982,* p. 26.
[37] U.S. Congress, Senate, *A Bill To Amend the Communications Act of 1934, S. 2172,* 97th Cong., 2d sess., 1982.
[38] A. B. Shostak, "The Coming Systems Break: Technology and Schools of the Future," *Phi Delta Kappan,* vol. 62, January 1981, p. *359.*
[39] U. S. Congress, *Public Telecommunications Financing Act,* Public Telecommunications Financing Act, Public Law 95-567, 95th Cong., Nov. 2, 1978.
[40] U.S. Congress, House, *A Bill To Amend the Communications Act of 1934 to Revise Provisions of the Act Relating to Telecommunications,* H.R.5158, 97th Cong., 1st sess., 1981.

ternatives must be found to meet the Veterans Administration's proper concern without compromising and discriminating against telecommunication technology .41 As with telecommunication policy, the interests of educators must be weighed and considered in drafting Federal regulations.

[41]Goldstein, op. cit., 1980, p. 42.

The Protection of Information Software: An Overview

In recent years, the software industry has been plagued by an everincreasing incidence of piracy .[42 43] As software costs have risen, informal duplication of programs has increased and has held down revenues for software publishers.[44] Similarly, piracy via illegal duplication and distribution has diminished incentives for software producers to further development of novel and innovative software packages, particularly for educational use. Although technological solutions are being devised to prevent piracy, various legal methods for protecting computer software from illicit misappropriation are the focus here.

Given the fact that for the present, at least, piracy does and will occur, the question to be resolved is how to protect the software producer or proprietor from infringement of his creative property rights. Such protection is necessary to ensure that adequate incentives exist for development of innovative software, to protect the considerable investments in its development, and to preserve legal means for public access to creative works.

There are five currently legal methods that can be used to protect computer software: trade secret protection, trademarks, patents, the doctrine of unfair competition, and copyrights.[45] None of these, however, provides a well-defined, reliable form of protection for novel developments in software.[46] The law regarding software protection in each case is hazy and complicated and still in the early stages of development. Thus, it may be necessary to use several methods simultaneously, with or without technological protection, to achieve maximum legal protection for certain software. While copyrights and trade secrets are the most widely used and advocated forms of protection, each of the five methods can afford some degree of security against unauthorized reproduction of costly and innovative software.

Types of Software

All computer software has three basic components. These are the supporting documentation, including manuals and flow charts; the algorithm or process, i.e., the underlying ideas or information implemented in the software; and the program or data base itself.

The program itself is embodied either in human readable form, such as listings, or in computer readable form, such as magnetic tapes, disks, or paper punch cards. These distinctions are important, because the utility of the various methods of legal protection may differ depending on the type of software

[42]The term software is meant to include any programs and data bases designed to be used on computers, video disks, cable, etc.

[43]D. U. Gagliardi, "Software: What Is It, " *APLA Quarterly Journal 8(3), 1980,* p. *239.*

[44]When programs are copied without permission, publishers do not receive royalties for their use and their profits are thereby reduced. See "Trends in Personal Computer Software Publishing," A Research Memorandum, *LINK,* NRM, vol. 2, No. 10, August 1981.

[45]It should be noted that there is a diversity of views as to what forms of legal protection are currently available and what forms should be available in the future for software products. Not all legal scholars agree that the five methods surveyed here are available or should be used for protection.

"H. Levine and A. E, Hall, "Computer Software Protection and Licensing, " a paper presented at the Second Annual Talmis Conference, Chicago, Feb. 28, 1982.

component and the formal representation involved in a particular case.

In addition to the three software components, computer programs can be broken down into three formats or formal representations: the source code, the linkable formats, and the object code.

The source code, or "the code at its source," is a computer program written in a high-level (computer) language. This representation is the easiest to read and comprehend and hence to pirate, modify, and expand. The linkable format results from the processing of the source code by the computer's compiler or program converter. At such a level, it is more difficult to reconstruct and, hence, to appropriate. The object code results from loading the linkable format into the computer in a form that it can execute. In this format, the program's underlying concepts are the most difficult to assimilate, comprehend, and appropriate.

Legal Protection for Software

Trade Secret Protection

Trade secrets are defined as formulas, processes, mechanisms, compounds, or compilations of data not patented but known only by certain individuals using them in business to obtain a commercial advantage.[47] The classic and most widely cited example of a trade secret is the Coca-Cola formula, which is known only to certain select Coca-Cola personnel and has never been patented.[48]

For a trade secret to exist and be enforced, several requirements must be met. The first is secrecy; a bona fide secret must exist and must be contained within the business of a particular enterprise. Thus, those who are privy to the secret must be under a duty not to disclose it. This situation is generally achieved by a confidential disclosure agreement or contract between the proprietor or software marketer and his employees, contractors, licensees, or leasees. The contract may require those with access to the software to take actions to limit its proliferation. The second requirement for trade secrets to exist is novelty—i.e., where the subject matter is unknown to the general public and the trade.[49]

Beyond these two formal requirements for trade secrecy, the courts have placed some reliance on economic criteria in determining whether a protectable trade secret exists. The amount of money or labor expended in developing information and the value of the information itself are factors which courts might consider in making this determination.

It is well established that computer programs and certain program materials are protectable as trade secrets through civil and criminal enforcement actions. However, the boundaries of trade secret protection for software are unclear. Some courts have protected algorithms along with the computer programs, while others have declined to extend protection to "general information."[50] The nature of the software, the circumstances of the taking, and the intent of the taker can each influence a court's determination regarding trade secret protection.

In deciding whether to utilize trade secret protection for certain software, a proprietor or marketer considers the following drawbacks. First, trade secrecy can be easily lost. If a secret becomes widely disseminated, the software protected may become part of the public domain and thus no longer eligible for trade secret protection. Thus, trade secrecy may be difficult to maintain where public sales or large-scale marketing of software is contemplated. Trade secrets can also be lost by carelessness, by intentional or negligent breach of contract, or by discovery and disclosure by competitors, e.g., reverse engineering and subsequent disclosure. The courts are split as to whether trade secret protection is

[47] *Restatement of Torts, SS 757,* Comment (b), 1939.
[48] *LINK,* op. cit., p. 18.
[49] Novelty for purposes of trade secret law is a relative concept unlike novelty for purposes of patent protection. In the latter case, novelty is absolute; D. Bender, "Trade Secret Software Protection," *APLA Quarterly Journal, vol. v, No.* 1, 1977, p. 51. It should be noted that novelty is not required by all States. See R. Milgrim, *Trade Secrets, SS 2.03, 2.08(2), 1979.*
[50] R. Smith and E. R. Yoches, "Legal Protection of Software Via Trade Secrets," *APLA Quarterly Journal* vol. *8, No. 3, 1980, p. 240-241.*

lost where software is appropriated by memory. The majority rule is that trade secrecy does protect against appropriation by memory .51 Similarly, there is some debate about whether trade secrecy is lost where a software proprietor registers his software for copyright protection. The issue here is whether such registration constitutes publication and hence destroys any legal claim under the trade secret method of protection.[52]

In addition, trade secret protection, like the law of contracts and unlike copyrights or patents, is controlled by State statute or common law, as distinguished from Federal statutory law. Thus, protection for trade secrets differs from jurisdiction to jurisdiction. In order to maximize his protection, a manufacturer or licenser may wish to seek an additional mode of protection, such as copyright, to ensure uniform legal treatment of his software. Trade secret protection alone, however, can provide a fairly reliable and economic means of shielding software innovation.

Trademark Protection

Trademarks generally include "any word, name, symbol, or device or any combination thereof adopted and used by a manufacturer or merchant to identify his goods and distinguish them from those manufactured or sold by others. "5[3] While they are used extensively to protect product names, they have been used only in a relatively minor manner to protect computer software. The reason for this is that in the past computer software has had a relatively short life, and thus there was no basis on which to build a proper trademark. The current trend of "longer life" computer programs may no longer sustain this reasoning.[54] In addition, trademarks do not directly protect the contents of the software from unauthorized use, appropriation, or duplication by another. However, trademarks can serve as a complement to other methods of protecting the concepts contained in computer programs. Computer program trademarks can protect important proprietary interests in software by preventing software competitors from using the same or similar marks on their programs.

The U.S. Patent and Trademark Office has recognized for some time that computer programs are "goods" within the purview of the Trademark Statute.[55] Thus, a trademark on an item of software represents and is identified by the public with the goodwill and reputation of the business that produced it. If the manufacturer's reputation is good, consumers may tend to buy software based on the strength of the mark, even though competing products may perform as well. Whether the strength of mark will be the sole criteria used by consumers in selecting software, or whether the capabilities of various programs will also be taken into account in making a selection, is an open question. In either case, though, consumers will probably place some reliance on the source of quality control identified through the trademark.[56] In this manner, trademarks provide a relatively inexpensive and simple means to protect indirectly computer programs.

Patent Protection

At present, there is much uncertainty about the applicability of title 35 of the United States Code (patents) to computer software. The case law is inconsistent and confusing, and no clear-cut consensus has been reached. In addition, to the extent that some patent protection for software is available, it would apply only to protect the programmable process embodied in computer programs.[57] Thus, patent protection for software is often difficult to obtain except in conjunction with a patent-

[51] Turner, *The Law of Trade Secrets 169, 171, 1962.*

[52] In a recent case, the court held that this was a question of fact and not a question of law. *Barrington Associates, Inc. v. Real-Time Engineering Associates, Inc., 522* F. Supp. 367 (N.D. Ill., 1981).

[53] *The Lanham Act of 1946, 15* U.S.C. SS 1127.

[54] T. G. White, "Trademark Protection of Computer Software," *APLA Quarterly Journal,* vol. *8, No. 3, 1980,* p. 281.

[55] *The Lanham Act, 15* U.S.C. SS 1051 et seq.

[56] White, op. cit., p. 280. In addition, although service marks could also be included here, they are beyond the scope of this brief overview and hence excluded from the discussion of trademarks.

[57] Bender, op. cit., p. 67. See also Diamond v. *Diehr* and Diamond v. *Bradley,* footnote 15.

able piece of computer hardware. Given the unpredictable nature of software patent law and the relatively high cost of securing patent protection, a software owner may therefore wish to seek other available methods of legal protection for his works. Once clarified, though, patent protection for certain software may prove to be superior to other legal methods.

There are several reasons why patent protection may be preferable to other legal safeguards of software innovation. One is that patent protection is very broad in scope. A patent provides its owner with the exclusive right to the inventive work for 17 years. Thus, he has the right to exclude others from making, using, or selling that work. Infringement occurs when either the work is copied or it has been independently developed. Another reason is that patents protect the underlying ideas or concepts of a computer program, not merely the expression of a program, as copyrights do. Thus, while an adaption of a program for use in a different computer may not be a copyright violation, it could be found to be a patent infringement.

The issues concerning the patentability of software are twofold. The first problem is whether software is statutory or within the categories of innovations and discoveries which may be patentable. The law is that an invention is patentable if it consists of "any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof. "[58] Abstract ideas, laws of nature, and physical phenomena are excluded from patent protection.[59] The question is, do computer programs fall under any of the categories of patentable inventions? The answer is that they may, if patentable, fall into the categories of processes, machines, or manufactures.

Several recent cases have overturned the courts' previous reluctance to hold software patentable.[60] Thus, the court has held that a statutory claim does not become nonstatutory simply because it uses a mathematical formula, computer program, or digital computer." Currently, the law seems to be that algorithms or methods of calculation in the abstract, like the laws of nature, are not statutory subject matter. However, claims reciting algorithms or formulas, or presumably computer programs that implement or apply those formulas in a structure or process (e.g., transforming an article from one state or thing to another), are statutory within the meaning of the patent law.[62]

If certain software is found to be statutory then it must also meet four conditions to be found patentable: novelty, utility, nonobviousness, and adequacy of disclosure.[63] Numerous programs should meet these requirements. However, many others may implement an obvious process in an obvious way and are valuable solely because of the man hours saved to achieve the result." They would, thus, be ineligible for patent protection. The problem then lies in the definition of "obpiousness. " So far, there is no clear consensus about the appropriate standard or test to be applied to determine if a claim meets the nonobviousness condition. Judicial or legislative clarification is necessary before the patentability of certain software can be determined with any degree of certainty.

It should be noted that the patentability of computer programs may also depend on the subjective application of Patent Office guidelines by patent examiners, and ultimately on the manner in which patent applications are drafted. Future clarification of the boundaries of software and computer program protection, however, awaits the outcome of further litigation.

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[58] *35* U.S.C. Ss 101.

[59] *Diamond v. Diehr, 450* U.S. 175, 209 U.S.P.Q. 1, 7 (1981).

[60] Earlier landmark cases include: *Gottschalk v. Benson, 409* U.S. *63, 175* U. S.P.Q. 673 (1972); *Dann v. Johnston, 425* U.S. 219, 189 U.S.P.Q. 257 (1976); *Parker v. Flook, 437* U.S. *584,* 198 U. S.P.Q. 193 (1978). Two recent decisions indicating that patent protection may be available for computer software are: Diamond v. *Diehr,* 450 U.S. 175, 209 U. S.P.Q. 1 (1981); and *Diamond v. Bradley, 450* U.S. *381, 209* U. S.P.Q. *97 (1981).*

[61] *Diamond v. Diehr,* op. cit.

[62] Levine and Hall, Op. cit., p. 19.

[63] 35 U.S.C. 101, 102, 103, 112 (1979).

[64] Bender, op. cit., p. 67-68.

Protection Under the Law of Unfair Competition

Original software (both source and object code), computer programs, and data bases may be protected by the law of unfair competition. Evolving from the landmark case of *International News Service (INS) v. Associated Press,*[65] the law protects the originator against misappropriation by competitors of his work product and his investment capital risks. The rationale for the doctrine lies in the equity court philosophy of preventing and mitigating unjust enrichment. Until recently, however, the courts tended to limit the application of the unfair competition doctrine to the facts in the *INS* case. In one recent case, the courts stated that a valid, unfair competition **claim** had been advanced where, for commercial advantage, a competitor had misappropriated the benefits and property rights of and had exploited his business values.[66] Similarly, where reproductions of original recordings were pirated and marketed under a different label, another court upheld the plaintiff unfair competition claim.[67]

While the doctrine has had an underlying effect in cases dealing with unauthorized appropriation of data bases, today it is becoming grounds for equitable relief on its own merits. Therefore, it may be possible to bring a valid cause of action based on the common law right against unfair competition where a competitor copies and sells another's software for profit. This method of software protection may be of benefit to proprietors who seek to protect both source and object codes. The law of unfair competition would most likely make no distinction between the two for purposes of protection. However, it should be borne in mind that unfair competition is a common law doctrine and thus may vary from State to State.

[65] *International News Service* v. *Associated Press, 248 U.S. 215, 39 S.* Ct. 68 (1918).

[66] *Data Cash Systems, Inc. v. JS&A Group, Inc., 480* F. Suppl. 1063 (N.D. Ill., 1979), aff'd on other grounds, 628 F. 2d 1038 (7th Cir. 1980).

[67] A&M *Records, Inc., et al. v. M. M. C. Distributing Corp., et aL, 197* U. S.P.Q. 598 (Sixth Cir., CA) (1978).

Copyright Protection

By far, the fastest growing legal mechanism of software protection is the copyright law. It is now well settled that copyright law is available as a method for protecting software and computer programs. The question to be resolved, however, is the scope of the protection to be accorded computer programs by this body of law.

The Copyright Act of 1976 protects original works of authorship fixed in any tangible medium of expression from which they can be perceived, reproduced, or otherwise communicated, either directly or with the aid of a machine or device.[68] Computer programs and data bases, to the extent that they incorporate authorship in the expression of original ideas as opposed to the ideas themselves, fall within the category of "literary works, " and thus within the subject matter of copyright.[69] The actual processes or methods embodied in a computer program, however, are not within the scope of the copyright law.[70]

In 1980, the Computer Software Copyright Act was passed by Congress.[71] Incorporating the recommendations of the national Commission on New Technological Uses of Copyrighted Works, the act revised section 117 of the 1976 Copyright Act dealing with rights in conjunction with computers and information systems.[72] The new section 117 dispelled all doubts concerning the copyrightability of computer programs and made it clear that the reproduction or adaption of computer programs would constitute acts of infringement. The act also created an important exemption for the input or reproduction of computer programs from copies which are sold.

The courts have not reached agreement on the limits of computer software copyright protection. For example, there is still much debate

[68] 17 U.S.C. SS 102(a).

[69] 17 *U.S. C.* SS *101(a).* U.S. House of Representatives Report 94-1476, 94th Cong., 2d sess., p. 54.

[70] 17 U.S.C. SS 102(b).

[71] *Computer Software Copyright Act of 1980,* Dec. 12, 1980, Public Law 96-517, sec. 10.

[72] *Final Report of the National Commission on New Technological Uses of Copyrighted Works,* July 31, 1978.

as to whether object codes can be protected by copyright law. In order to be accorded the protection of the copyright laws, a computer program must be "an original work of authorship. '[73] Clearly, if a programer is the "originator" of a source code, than he qualifies as an "author" within the meaning of the copyright law. However, the case law is still developing on whether this source code authorship is preserved in the object code. Since the object code can be viewed as being physically produced by a machine, the question arises as to whether the object code is an expression of authorship or merely a utilitarian work outside the scope of copyright protection. Only original expressions of authorship, ''writings, are protected by copyright law. There is little doubt that source codes are writings within the purview of the copyright statute, but the status of object codes is not so clear.[74] [75]

Other issues associated with the copyrightability of computer software are preemption of trade secret protection and the meaning of "substantial similarity, " (necessary for copyright infringement) in the computer context.[76] In addition, problems with computer software copyright protection arise because the act of copying is incidental to use of a computer program. In other words, computer input (i.e., of a program) constitutes the making of a copy and is thus a potential infringement of copyright. The 1980 amendment to section 117 of the Copyright Act remedied this problem by providing that it was not an infringement for an owner of a copy of a computer program "to make or authorize the making of another copy or adaption of that computer program, " provided that the copy or adaption "is created as an essential step in the utilization of the computer program in conjunction with a machine."[77] It is important to note, however, that this exemption only applies to copies of computer programs that are sold. Thus, if a copyright owner chooses to make the program available only by lease or by license arrangement, copying is permitted only under the terms and conditions specified by the copyright owner. Otherwise, computer input can constitute infringement.

Another troublesome area concerns the copyrightability of video software. Copyright protects only the expression of original works of authorship, not the ideas, methodology, or processes embodied in the software or adopted by the programer. Thus, copyright law protects the audiovisual aspects of video software as a display, but does not protect the underlying "idea" itself. Protecting the expression of a game program may necessarily also protect the system or process embodied in the game program or video display, a result violating the principles of the copyright law.[78] Thus, manufacturers of video games may protect the visual display of their software by registering a videotape of their screens with the Copyright Office. While registration is not a condition of copyright protection, it is a formality related to the ability to sue for infringement. Manufacturers of videogames, however, cannot preempt others from manufacturing and distributing games utilizing the same inherent ideas (e.g., mazes and dot gobblers) regardless of how inextricably linked they are to the program's original expression. In those cases where an injunction has been sought against distribution of allegedly similar games, it is not clear whether the courts relied on the doctrine of unfair competition or on copyright law in granting the requested relief. Although the courts apparently applied copyright law in these cases, they may have been influenced by unfair competition principles.[79]

[73] 17 U.S. C. SS 102(a).

"For illustration of this conflict see: *Data* Cash systems, kc. v. *JS&A Group Inc., et al., 480* F. Suppl. 1063 (N.D. Ill. 1979), aff'd on other grounds, 628 F. 2d 1038 (7th Cir. 1980); *Tandy Corp. v. Persona/Microcomputers, Inc., 524* F. Suppl. 171 (N.D. CA 1981). And more generally, *Goldstein* v. *California*, 412 U.S. 546 (1973).

'SD. T. Brooks and M. S. Keplinger, *Computer Programs and Data Bases: Perfecting, Protecting and Licensing Proprietary Rights After the 1980 Copyright Amendments,* Law & Business, Inc., Harcourt Brace Jovanovich Publishers (1981).

[76] Thus, would translation of a program from Fortran to Basic bean infringement? Or, how much retrieval of a work from the computer is necessary to constitute substantial similarity?

[77] 17 U.S.C. Ss 117(1).

"Matthew Bender, *Nimmer on Copyrights, sec. 2.18(J)* and *8.08 (1980).*

'*Wee Stern Electronics, Inc. v. Kaufman, 213* U. S.P.Q. 75 (E.D. N. Y., 1981), aff'd — F. 2d. — (2d Cir., filed 1/20/82).

The most that can be said with certainty is that some aspects of computer software can be legally protected via copyright. Programs tangibly fixed in books, catalogs, and instruction manuals are subject matter of copyright. Programs fixed on cards or magnetic disks that can be perceived directly or otherwise communicated, e.g., by means of a computer print-out or terminal, are protectable under the copyright law.[80] Other software, including object codes, may or may not be within the purview of the copyright law. Future developments both in Congress and in the courts will hopefully resolve the issues relating to this body of law.

Another issue relating to audiovisual software is that of copyright and home recording. The U.S. Court of Appeals for the Ninth Circuit held in *Universal City Studios v. Sony Corp.* (the *Betamax* case) that home videotape recording of over-the-air copyrighted television programs violates the Federal copyright law.[81] While the Court's decision will be reviewed by the U.S. Supreme Court next term, the Ninth Circuit Court ruled that home video taping for private, noncommercial use was not a "fair use" under the 1976 Copyright Act.[82] Furthermore, the court held that manufacturers, retailers, distributors and advertising agents for video cassette recorders could be held "contributorily liable" for this infringement.

While the decision has raised considerable debate concerning the rights of program producers to control the use of their productions and the rights of consumers to utilize new home electronics, it may also have an impact on the educational community. Thus, the educational community, and more specifically Action for Children's Television (ACT), has requested congressional legislation designed to permit home recording of television programs for education use. They argue that home taping would permit children to watch educational programs broadcast while they are in school.

Although a legislative solution to the *Betamax* debate is being sought by many interested parties, educational groups are concerned both that the type of programing software currently being broadcast and the cost of video cassette recorders may change (with or without royalty assessments) as a result of the present controversy .[83] Thus, one major concern is that schools that now buy video cassette recorders and use videotaped programs in the classroom may no longer be able to afford them. Also, education groups speculate that advertisers may support fewer over-the-air educational programs as a result of advertisement deletion by video cassette recorder owners. Although these problems remain to be resolved by the legislature and the courts, it is clear that producers of educational program software will be affected by the present taping/copyright controversy. As with computer software, the law of copyright in relation to audiovisual software is uncertain and still developing.[84] However, as demonstrated by the *Betamax* case, copyright is a viable and reliable means of protecting both computer and audiovisual software.

Legal Protection: Issues and Educational Options

It is clear that all five legal mechanisms for safeguarding software offer some degree of protection against misappropriation and piracy. Each method of software protection has different remedies for discouraging piracy

[80] Nicholas Prasinos, "Legal Protection of Software Via Copyright," *APLA Quarterly Journal*, vol. 8, No. 3, 1980, p. 257.

[81] *Universal City Studios v. Sony Corp.*, 659 F. 2d 963 (9th Cir. 1981). The Supreme Court has recently granted certiorari to review the decision of the Court of Appeals, Ninth Circuit.

[82] Fair use is codified in 17 U.S.C. SS 107.

[83] In fact, there are several pending pieces of legislation dealing with this issue: H.R. 4808 (10/21/81). These bills would exempt private home recording of TV programs from copyright laws, but would not preclude later legislation to establish a royalty fee assessed against recorders.

[84] On Oct. 14, 1981, Rep. Robert Kastenmeier (D-Wis.), Chair of the House Judiciary Committee on Courts, Civil Liberties, and the Administration of Justice, inserted guidelines for off-air taping of copyrighted works for educational use in the Congressional Record. These guidelines were the result of a negotiated agreement between education groups, the broadcast industry, copyright owners, and industry guilds and unions. The guidelines allow fair classroom use of videotaped TV programs within specific time limits without infringing the rights of copyright owners.

and punishing infringement. For example, injunctive relief is available with all five legal methods. However, destruction of infringing copies and continuing royalties are available only for copyright infringement. Similarly, treble, punitive, and statutory damages are available only for copyright, patent, and trademark infringement. In addition, even where monetary and injunctive relief is available, the type of infringement (e.g., copyright, trade secret), may influence the way a court applies these remedies.

Each method of software protection also has its advantages and disadvantages and its legal uncertainties. Many of the still unresolved legal issues stem from the fact that the primary intent of intellectual property law protection of software is to reward and encourage software creation and innovation, not primarily to punish copyists." Yet, as software innovation becomes more costly and piracy more rampant, software manufacturers seek solutions to legal problems and achievement of both purposes of copyright, patent, trade secret, trademark, and unfair competition law. It is hoped that in the next decade, the courts and Congress will provide software manufacturers with reliable methods of protecting their valuable investments in software. Although test cases are themselves costly and time-consuming, the benefits to be reaped by an entire industry may outweigh the economic burdens.

Clearly, the outcome of many of these issues will affect the educational community's ability to utilize and purchase new electronic hardware. Educators need to know their legal rights and obligations, and manufacturers want to ensure effective protection for their software. Thus, it is necessary to answer several questions such as:

- How should software be protected while recognizing the competing interests of groups who use software or benefit from its use?
- How can piracy and the various types of misappropriation of software be better dealt With?*'
- How can the incentives be increased for software innovation, especially educational software, when protection entails costly judicial remedies?

While it may take some time before intellectual property law protection of software is clarified, education groups have been involved in the process. They have proposed that new, uniform legislation dealing only with software be enacted. Alternatively, they have proposed that legislation exempting the educational community from liability for use of copyrighted materials be adopted. They have considered bringing test cases into the courts against pirates of educational software on one or several of the grounds of protection outlined herein. While it is clear that the economic and social stakes are high, these efforts by the educational community are aimed at clarifying the software protection laws for the benefit of all software publishers and users.

[15]R. A. Stern, "What Should Be Done About Software Protection?" *European Intellectual Property Review*, vol. 3, No. 12, 1981, p. 341.

"Ibid, p. 340,

Appendix

- Title I: "To provide financial assistance . . . to local educational agencies serving areas with concentrations of children from low-income families to expand to improve their educational programs (to meet) the special educational needs of educationally deprived children" (Public Law 89-10, title I).
- *Title II:* Provision of grants to public and private schools for school library resources, textbooks, and instructional materials, based on total school enrollments. Those materials used in the public schools required prior approval. Also those States, with laws prohibiting involvement with parochial schools, required the ESEA programs to be administered by the Commissioner of Education.
- *Title III:* Provision of grants by the Office of Education with concurrence by the State Educational Agencies for projects to encourage educational innovation. Such projects included special education centers, instructional equipment, guidance counseling, and similar services.
- *Title IV:* Provision of grants to conduct educational research.
- *TitleV:* Provision of grants to State agencies to strengthen planning, administration, and dissemination of statewide educational data at the State agency level.
- *Title VI:* Placed a restrictive clause on Federal involvement in State and local education programs, specifically over curriculum, personnel, instructional materials, and administration.