# The Tale of Two ERICs: Factors Influencing the Development of the First ERIC and Its Transformation into a National System

**Lee G. Burchinal**
*President, Assist International Inc., 4141 N. Henderson Road, Suite 1205, Arlington, VA 22203.*
*E-mail: burchinal@erols.com*

**This article describes how the original ERIC was established as a conventional, centralized information center within the Office of Education in 1964, and how this initial ERIC was transformed from into a decentralized national system about 18 months later. The history of the two ERICs also illustrates how knowledge and expertise—in this case, that represented by advances in information systems technology and its applications—combined with interpersonal relationships within a bureaucracy, federal funding decisions, and organizational changes to shape the development of a major national information service. The time period covered by the article is from 1959, when planning for the first ERIC began, to June 1967, when the decentralized system became fully operational. Most of the description and analysis, however, is limited to the 1965–66 period, when the decentralized system was conceptualized and implemented. Important developments in ERIC since 1967 are also described.**

## Introduction

Today, ERIC[1] is well known for its unique, decentralized mode of operation, based on document acquisition and processing conducted by a set of semiautonomous, subject-oriented clearinghouses. Prior to this novel design for a national information system, a more conventional ERIC, modeled after the leading federal scientific and technical information systems of the time (NASA, AEC, Defense), existed as an obscure unit with virtually no funding within the U.S. Office of Education (OE), now the Department of Education. This article presents the story of these two ERICs: how the first came into being in 1964, and how this original ERIC was transformed from a national center within a federal agency into a decentralized national system about 18 months later. The history of ERIC also illustrates the dynamic ways knowledge and expertise—in this case, that represented by advances in information systems technology and its applications—can interact with interpersonal relationships within a bureaucracy, federal funding decisions, and organizational change to shape the development of a major national information service.

[1] ERIC stands for the Educational Resources Informational Center, a national educational information system managed and supported by the National Library of Education, Office of Educational Research and Improvement, U.S. Department of Education.

Received March 3, 1999; revised August 20, 1999; accepted August 20, 1999



## Genesis of the First ERIC

The initial ERIC was primarily the result of the interaction of two sets of factors: (1) the intent of OE research managers to apply the developing information systems knowledge and expertise built up in federal scientific and technical agencies to the field of education; and (2) decision making in the OE based on, or certainly strongly influenced by, personal relationships among OE managers and decision makers.

In the late 1950s, managers of educational research in the OE could only look with envy at the vigorous development of information services in the fields of science and technology, medicine, and in various scientific disciplines. Beginning in WW II and continuing in the then existent Cold War, the federal government invested heavily in scientific and technological research and development. These activities produced a prodigious volume of technical reports for which new forms of bibliographic control and reproduction were required. The result was the creation of information systems in place of conventional library operations, notably by the newly established technical information services of NASA, AEC, and the National Library of Medicine (Adkinson, 1978, p. 650). In 1958, NLM had begun research that led to the development of MEDLARS and later to the computer generation of *Index Medicus*. By 1960, NASA and AEC has some form of computer-based processing for

the retrieval of records describing research reports. Use of computers for bibliographic control and production of indexes and microfiche for the reproduction of reports were quickly adopted by other leading federal scientific and technical information services. Also at this time, NSF, with its newly established Office of Scientific Information Services (1958), had begun funding a variety of science information research and applications activities (Adkinson, 1978, pp. 63–64). Further, development of scientific and technical information services received encouragement from the highest levels in the federal scientific and technological establishment.[2]

In contrast, in the late 1950s, OE consisted of a number of narrowly focused programs staffed by specialists who were allied with the powerful professional associations in their respective fields of interest. Most of these specialists had been hired to administer programs in science, mathematics, languages and area studies, and other fields specified in the National Defense Education Act (NDEA) of 1958, which had been hurriedly passed by Congress in response to the Soviet Union's spectacular achievement in lofting Sputnik into orbit in 1957. Senior managers and administrators cemented these relationships and maintained close relationships with the chairs of committees in Congress, who controlled the federal largess in their fields (Bailey, 1965, pp. 10–12). In this cozy environment, special interests overshadowed general educational goals.

The OE educational research effort was also fragmented in 1959. General educational research, supported under the Cooperative Research Act of 1954, was then funded at $2.7 million. Research on uses of "new media," funded under the National Defense Education Act, and which focused on only one aspect of instruction, received $3.0 million in 1959. Continuing the domination of more narrowly focused interests in education, Congress later added research authorizations to acts for support of foreign language instruction, vocational education, and the education of the handicapped. As described later, appropriations under these authorizations became a boon for ERIC in 1966.

Thus, in 1959, either the Educational Media Research Program or the Cooperative Research Program could have funded an educational research information initiative. Given the close relationship between OE specialists and the fields they represented, it is not surprising that the managers of the Media Research Program were the first to take an interest in developing an educational research information service. With their interest in serving the "media" educational specialists (those who specialized in use of television, motion pictures, and other audiovisual devices), managers of the Media Research Program in 1959 initiated a *Feasibility Study Regarding the Establishment of an Education Media Research Information Service* under the direction of Maurice F. Tauber, an information pioneer, and Oliver L. Lilly, both of the School of Library Science, Columbia University.[3] As expected, their report (Tauber & Lilly, 1960), called for the establishment of a "Media Research Information Service" within the Educational Media Branch of the Office of Education. But events did not happen fast in OE in those days. For one thing, Thomas Clemens, who then was the recently hired project officer for the Columbia study, made a decision contrary to the "special interest" mode of OE operations. He sought to enlarge the scope of the proposed service to cover all educational research. OE was not ready for this radical step: the best Clemens could get was authority to chair an in-house committee of specialists from various programs in their parent Bureau of Research and Development to "study" the issue and report back. This Clemens and his committee did. Clemens and his committee diligently sought an understanding of the then state-of-the-art in information systems technology and its application. They consulted with a number of leading federal, university, and commercial services (Trester, 1981, pp. 5–8). Their report, submitted to Roy M. Hall, the Associate Commissioner for Research, clearly sought approval for development of an information service for educational research like those of federal scientific and technical agencies. They argued for *a central point in the United States where all educational research information is available*, and went on to justify that point as a *national center for educational information* within the Office of Education.[4] Yet, Clemens and his committee must have felt some misgivings in presenting their recommendations, because they added a proposal submitted by Allen Kent, School of Library Science, Western Reserve University, for further development work related to the establishment of a national educational research information service.

Caution ruled again: instead of moving to set up an educational research information service, Hall opted for continued development work, and the proposal submitted by Kent was funded. Kent (1962) produced a 335 page report with the inviting title of *The Library of Tomorrow—Today, an Information Service of Educational Research Materials*. This report played a significant role in the establishment of ERIC in two ways. The Kent report brought the

[2] For example, see: President's Science Advisory Committee (1958); Crawford et al. (1962); President's Science Advisory Committee (1963).

[3] This article relies heavily on documentation provided by Trester (1981) for the content of internal OE memos and events in OE leading to the establishment of the first and the transformed ERIC. Unfortunately, most of the internal OE documents cited by Trester are no longer available. The author is also indebted to Fred Goodman, the initial ERIC consultant who became the advocate of a decentralized system, and who provided copies of notes and memos covering the critical 1964–65 gestation period of the current ERIC system. The explanation of these events, however, is solely that of the author.

[4] The acronym, ERIC, was a product of this committee. According to Trester (1981), two members of the committee, Frank Shick and John Lorenze, then with a library program that was included in the research and development bureau of OE along with media and cooperative research, got tired of writing and saying "educational research information center" every time they wanted to refer to the object of the committee's work, and suggested using ERIC instead. The acronym stuck and Kent freely used the acronym in his report (Trester, 1981, p. 9).

accumulated knowledge and expertise in information systems together in a clear, concise, even compelling manner. It provided legitimacy for a single, consolidated information service for all of educational research and a blue print for the roles of the still future ERIC.[5] But, most important, the need for a system like ERIC got through to the top echelon of OE. Testifying before the Senate Subcommittee on Appropriations on March 27, 1963, U.S. Commissioner for Education Francis Keppel requested four new positions for staffing an Educational Research Information Center based on the results of the "Western Reserve University" study, to use his own words (Senate, 1963, p. 546). At this point, ERIC was conceived as a conventional, centralized information center operated within a federal agency by federal employees. The task of finding a home for this new Center fell to Ralph Flynt, who had become head of the Bureau of Educational Research and Development.

At this point, the push for establishing ERIC came from OE research managers—Thomas Clemens, in particular—who had the vision of creating an educational information system equivalent to those serving the fields of medicine and science and technology. Clearly, this was the path OE managers were trying to follow from 1959 through 1963, but then, as before, the effort bogged down within the OE bureaucracy.

Sometime in early 1964 (Trester, 1981, p. 13), the second factor in the proposed explanation of events affecting ERIC—the influence of personal relationships—precipitated events leading to the establishment of the first ERIC. As noted before, OE had a number of fragmented, specialized dissemination programs. One of these, serving administrators in higher education, was directed by Harold Haswell. He read the Kent report, became an enthusiastic booster of ERIC, and convinced Flynt, a fellow old-timer at OE, that ERIC should be established along the lines recommended in the Kent report. Further, Haswell volunteered to head ERIC. Haswell's arguments, from one insider to another, carried the day. Keppel, who, obviously, was predisposed to support ERIC, issued a reorganization plan for the Bureau of Educational Research and Development on April 20, 1964, effective May 15, 1964, placing ERIC as a branch within the Division of Educational Research, with Haswell as the head of ERIC and reporting to Francis A. J. Ianni, the newly appointed director of the Division.

Thus, the first ERIC was a creature of 5 years of study and review, after which the personal appeal of an enthusiastic OE insider to a senior colleague in the decision-making chain resulted in getting ERIC on the OE organizational chart. ERIC, however, began under inauspicious circumstances.

[5] An unappreciated by-product of this study was the first computerized document resume file in the "soft" sciences, based on 4,000 research reports received by the Media and Cooperative Research Programs up to that time.

## ERIC as a National Center

With a staff of only seven persons, including two secretaries, and no funds for contracts, ERIC certainly did not begin at the level envisioned by Tauber or Kent. Nevertheless, Haswell and his staff found there was considerable demand for consultation and technical assistance to other units in OE. Also, Ianni made ERIC responsible for abstracting and indexing all on-going research projects and reports from projects funded under the Division of Educational Research, ERIC's parent organization. During the remainder of 1964, Haswell was also pleasantly surprised by the number of university departments and other organizations that wanted to participate in developing the ERIC program. Consequently, Haswell and a consultant he retained, Fred Goodman, a professor of education from the University of Michigan with an interest in information processing, began to consider ways in which document acquisition and processing could be spread among participating organizations.

In 1964, all the major federal information systems were centralized operations, either as operations staffed by employees of a federal agency or under contract with a federal agency.

Goodman saw that this arrangement would not work in the case of ERIC. Opposition to federal funding for education remained strong. President Kennedy's educational initiatives were defeated in successive Congressional sessions, largely because of this concern. In addition, to avoiding the "federal control" argument, Haswell and Goodman began to see the value of having at least some of the document processing for ERIC done by contractors. No doubt, they were influenced by the successful operations performed in support of the information systems of NASA, AEC, and other federal agencies. Still, in the Fall, 1964, Goodman and Haswell, perhaps more the latter, continued to plan for Central ERIC, as the ERIC staff in OE came to be known, to acquire and process documents from within OE and other federal sources.[6] The concept of a system of semiautonomous clearinghouses and separate contractors for computer and document reproduction services was still to come.

[6] Based on a memo dated October 6, 1964, from Goodman to Haswell (provided by Goodman). This memo includes an attachment that later helped establish the document selection processes at clearinghouses. Goodman envisioned the document holdings of clearinghouses as resembling a "knows-cone"—an analogy to the inverted V-shaped nose cone of a NASA space vehicle. In the ERIC version, the tip of the knows-cone would consist of documents selected for inclusion in the national database, while the increasingly larger portions of the middle and base of the knows-cone would include valuable, but more specialized documents retained in the local files of each clearinghouse. ERIC Central was also represented with its own knows-cone, with responsibility for acquiring and processing documents from within OE. Responsibility for centralized computer and document reproduction services was not specified at this time. By implication, ERIC Central would have performed these tasks.

## Transformation of ERIC into a Decentralized National System

The movement toward a decentralized system, rather than operations through a national center, was abetted by a decision by the head of OE, Commissioner Keppel, in April, 1965. By then, the landmark Elementary and Secondary Education Act of 1965 was law. Its largest component focused on improving education for the economically disadvantaged. Keppel wanted ERIC to undertake an information program in support of this effort. With Goodman's extensive assistance, Haswell came up with a plan; Keppel approved it; and ERIC was given $150,000 for this purpose. The plan was to collect descriptions of outstanding programs and related materials for educating disadvantaged children, hire journalists familiar with innovative educational programs in their communities to write appealing, brief descriptions of the programs, add an index for identifying related materials, and then to distribute copies of the materials in print and texts of the full program documents in microfiche. Clearly, the task could not be done in-house with the meager ERIC staff. The funds allocated by Keppel, however, allowed Haswell to use contractors, which further reinforced his and Goodman's growing inclination toward fully decentralized mode for document processing by the still not yet completely conceptualized clearinghouses. By the time the last batch of the descriptions and microfiche was mailed in March, 1966, copies of 1,746 documents in microfiche and printed guides were sent to all State departments of education and over 600 selected school districts. In all, nearly 30 million pages of material were disseminated under what Haswell dubbed "Operation Fingertip" (Burchinal & Haswell, 1966). ERIC had delivered and earned considerable credit up the OE hierarchy and ERIC had moved closer to becoming the decentralized system known today.

A new set of personal relationships that benefitted the emerging decentralized ERIC can be traced back to the election of President Kennedy. Kennedy made education one of his priorities. To help push legislation through a suspicious Congress, Kennedy selected Francis Keppel, from the Harvard Graduate School of Education, as Commissioner of Education, with a mandate to pursue bold new ways to improve education. Keppel, in turn, sought younger, talented generalists as opposed to the older educational specialists who then dominated the ranks of OE. Previous to Keppel's arrival, the average age of the new hires at OE was in excess of 50 years of age (Bailey, 1965, p. 10). In this spirit, Francis A. J. Ianni, an anthropologist, who had been a project officer in OE, was selected to head the newly organized Division of Educational Research. But perhaps more important, Ianni became a trusted member of Keppel's "shadow" executive committee that functioned covertly along side the formal administrative structure dominated by "old timers" (Dershimer, 1976, p. 54). Anticipating the expanded research authority then being considered in Congress, Ianni was permitted to hire additional staff to flesh out the new Division and infuse it with new ideas and energy. One of these was Lee Burchinal, a sociologist, who Ianni hired as his deputy in January 1965.

At that time, Ianni's main focus was on the expanded Research Centers and new Regional Laboratory Programs, upon which OE was staking its research future. Burchinal was assigned various other duties, including full responsibility for ERIC. When Burchinal looked into ERIC, like Haswell earlier, he became enthusiastic about its potential. Burchinal was particularly impressed with the plans presented by Fred Goodman, Haswell's chief consultant. As mentioned previously, Goodman argued against the traditional centralized information processing operation recommended by the Columbia and Western Reserve University studies and as expressed in "Center" part of ERIC. Instead, Goodman recommended a decentralized design under which document acquisition and processing would be delegated to contractor-based operations at universities and professional associations. Under this arrangement, subject specialists would be able to continue their professional roles and life styles while applying their expertise in the functions required in support of ERIC—document acquisition, selection, and processing and information analysis. Under this plan, the ERIC staff in OE would focus primarily on system development and coordination and the all-important responsibility of securing funding for the system. While seeing the advantages of a decentralized approach, Burchinal and Goodman were cognizant of the risks involved: acquisition of documents would be fragmented among competing local operations; quality control of abstracts, indexing, and bibliographic entries would be more difficult; and development of a comprehensive thesaurus would be a challenging task. Moreover, the decentralized option would be more expensive. Still, the appeal of the decentralized design was overwhelming. The needed and qualified staff could be obtaining using funds from the greatly increased forthcoming research appropriations. Control of educational literature would be in the hands of traditionally respected guardians of knowledge—faculty of universities and staff of professional associations—and not under the presumed heavy hand of federal bureaucrats.

With several important and far-reaching modifications, Goodman's basic design was accepted as the framework for the decentralized ERIC. Largely because it was clear that authorization for hiring new staff would be limited, OE management decided against any document processing by ERIC Central staff: All processing would be assigned to what became known as the ERIC clearinghouses. Also, based on the experience with the earlier microfiche production for Project Fingertip, ERIC managers obtained approval to use the newly granted authority to contract with profit-making firms to manage the computer operations for the entire system and to produce and sell microfiche and hard copy of ERIC documents. With adequate funds, the quantity and quality of staff for all operations, OE management reasoned, could be obtained under contract arrangements. In retrospect, the naivete of everyone in the approval

chain about the enormity of the risks involved in setting up a decentralized information system was an asset. Had anyone in the decision-making chain up through the OE to the Bureau of the Budget realized all what was involved in establishing and then effectively managing a decentralized information system in an unstructured field such as education, and one that had little experience with this kind of undertaking, the entire effort might have not have been approved.[7]

With these decisions made, the transformation of ERIC from a national information *center* to a national information *system* was complete. Document acquisition and processing were assigned to subject-based, semiautonomous clearinghouses to be operated under contract with universities and professional associations and with centralized computer and document reproductions services handled by separate commercial contractors.

## Gaining Information Systems Knowledge for the Development of ERIC

In addition to giving Burchinal a free hand with ERIC, Ianni expressed confidence in ERIC's potential by also approving recruitment of first two and then later additional staff for ERIC. The new staff brought critical "tacit" information systems knowledge, previously lacking in Central ERIC, from their experiences in other federal and commercial information services, including the FAA, Armed Services Technical Information Agency, NASA, Army Chemical Service, Smithsonian Institution, Library of Congress, Navy Bureau of Aeronautics, Army Medical Corps, and commercial information firms. With their expertise in library, computer and information sciences, and engineering, ERIC was able to draw on the existing state of the art in the rapidly developing field of information science. Ianni further abetted the development of ERIC by sending the initial plan and budget for ERIC staff up the administrative ladder, unchanged, with his blessing.[8] This resulted in initial funding for ERIC and the award of the first ERIC contract, for the ERIC Document Reproduction Service, in November 1965.

[7] The average ERIC clearinghouse has about 10 full-time equivalents: The total clearinghouse "workforce," at any time, includes between 200 and 250 persons. Staff include educational specialists, information and computer scientists, librarians, writers, and information processing specialists. The directors of each clearinghouse had to recruit, train, and manage operations none had done before. This level of staffing in OE would never have been possible.

[8] Ianni had practical reasons for promoting ERIC. When he ran interference for the development of ERIC, Ianni may have recalled the questioning he had received from Congressman Duncan earlier in 1965 about how reports from the Cooperative Research Program were disseminated. In responding, Ianni referred to "an educational research information center," which would make information from reports "more readily available" (House Subcommittee, 1966, p. 575). Earlier, in the same hearing, Keppel referred to ERIC as the means for disseminating information "on tapes" (p. 336).

## Impact of Political Decisions

Although beneficial for ERIC, the positive personal relationships between Burchinal and Ianni and from Ianni to Keppel and his lieutenants, by themselves, would not have produced the transformed ERIC. Implementation required funds. These came from appropriations made possible by the Elementary and Secondary Education Act of 1965 (ESEA). President Johnson properly deserves credit for persuading Congress to authorize and fund the first large-scale federal support for American elementary and secondary education. President Kennedy, however, laid the foundation for Johnson's success. In 1961, Kennedy referred to his comprehensive education bill as "probably the most important piece of domestic legislation of the year." Congress, however, declined this and Kennedy's later requests for supporting fundamental improvements in education, including a substantial expansion in the Cooperative Research Program of OE. Kennedy's vision of "multipurpose education research, development and demonstration projects," however, reappeared as the expanded Research Center and Regional Laboratory Programs authorized under Title IV of Johnson's Elementary and Secondary Education Act of 1965. Johnson succeeded where Kennedy had failed, by focusing federal funding on specific areas of widely accepted need. Most funds were for improving educational opportunities for the disadvantaged (Title I), as part of Johnson's "War on Poverty." Other funds went for special purposes as well, each of which has a constituency in Congress. These included local schools, libraries, and the publishing industry, which benefitted from the authority to purchase books and library materials (Title II); school districts interested in implementing innovations in curriculum and teaching they could not afford on their own (Title III); increased support for educational research, which appealed to the university community (Title IV); and support for expansion and improvement of state educational agencies (Title V). Under Johnson's legendary political prowess and with the election of 80 liberal-oriented Democratic Congressmen (Bailey, 1965, p. 6), the ESEA was passed in less than 2 months and signed into law by him on April 11, 1965, at a ceremony held in the one-room school that Johnson had attended in Texas.

Under Title IV of this Act, the Cooperative Research Program was replaced with substantially expanded authority for research, development, demonstrations, and *dissemination*. Effective legislative work and lobbying by Keppel and his aids, including Ianni, persuaded Congress to provide funds to start a number of educational research programs. The most prominent of these was the Regional Educational Laboratory Program, which became the driving force for securing substantially increased funding for other educational research initiatives, including ERIC. Although ERIC's slice of the total budget of nearly $75 million was minuscule, just $1.0 million, it was enough to get the system started. For the next several years, however, the total expenditures for ERIC exceeded the amount listed under the

research request for those years. This was because Burchinal persuaded managers of the handicapped, vocational, and foreign language research programs to fund clearinghouses in their areas, thereby increasing funds for the total system. Also, changes in the OE budget language helped secure funding for ERIC. In 1967, a line-item for "dissemination" was added, which elaborated the earlier general authorization for dissemination activity as expressed in the ESEA, Title IV. For the Fiscal Year ending June 1968, this language was expanded to include "support . . . for a network of information centers which select, evaluation, index, abstract, and disseminate information on experiments in education . . ." (The Bureau of the Budget, 1967, p. 415). With this further change, ERIC's was, in effect, recognized as a visible entity with its own line item in the OE budget.

## The Freeing Impact of Organizational Change

Meanwhile, massive and far-reaching organizational change was in the offing, one that would sweep away the *ancien regime* and make the Office of Education a major federal agency. Keppel was keenly aware that OE would not be up to the task of administering the coming ESEA. His new deputy, Henry Loomis, who was recruited from the U.S. Information Agency, began planning a house cleaning when Keppel learned that President Johnson had the same idea. An agreement was reached between Johnson's staff and Keppel: at the signing of the ESEA, President Johnson would appoint a high level Task Force to revamp OE and prepare it to administer the ESEA.

Dwight Ink, then Assistant General Manager of the AEC, was named chair of the Task Force. The two other members were high-level officials from the Bureau of the Budget and the Civil Service Commission, two powerful government bodies. The Task Force worked full time for 2 months, and submitted its report to the President on June 15. The report called for a complete overhaul of OE and virtually all its functions. Johnson moved swiftly to implement the Ink recommendations. Less than 2 weeks after its submission, OE staffers gathered to hear the verdict. What they heard was devastating. All vested interests and many careers were shattered. Of the 36 main-line divisions in OE, only two were left unchanged. Only 8 of the 25 old supergrade personnel kept their old jobs or one of equivalent responsibility and status. Bailey (1965) described the situation as:

> The anguish can only be imagined. The ensuing, if temporary, administrative chaos was shattering. For days and weeks, people could not find each other's offices—sometimes not even their own. Telephone extensions connected appropriate parties by coincidence. A large number of key positions in the new order were vacant or were occupied by acting directors who were frequently demoralized by status loss. Those who could not live with the status loss resigned. And all of this came at a time of maximum workload. ( p.14)

## Launching ERIC as a Decentralized System

The transformed ERIC was created in this crucible of change. As part of the reorganization, the previous Division of Educational Research was upgraded to become the Bureau of Research with a new set of divisions. Among these was the Division of Research Training and Dissemination, headed by Burchinal. ERIC was one of the branches of this new division. While directing the development of the new research training program and some other dissemination programs, Burchinal gave primary attention to ERIC. With Ianni in full support, Burchinal, Goodman, and the ERIC staff fleshed out the fully decentralized plan for ERIC, based on operations at subject-oriented clearinghouses, two central contract operations—one for document reproduction and distribution and one for centralized computer operations, and with Central ERIC providing the overall management, support, and responsibility for vocabulary control and system development.

The decision to base operations on semiautonomous clearinghouse operations demanded careful development of a controlled vocabulary. One of the two first persons hired for new ERIC, James Eller, was assigned virtually full time as manager of the Panel on Educational Terminology. This panel included representation from the Western Reserve University team that produced the initial guide for ERIC functions; North American Aviation, which was then providing the ERIC computer services; a representative of the Department of Defense team that was engaged in Project Lex, the mammoth DoD thesaurus development; and Fred Goodman. Following the lead of the Engineers Joint Council and Project Lex, PET settled on coordinate indexing and issued various interim thesauri, although the first published version did not appear until 1970 (CMM Information Corporation).

In October 1965, Burchinal presented the plan to top OE staff in a meeting in Keppel's conference room. The concept was approved, but this was more of a *pro forma* event for, with Ianni's approval, Burchinal had already obtained clearance for implementing the first element of the ERIC system. This was the competitively awarded contract for operation of the ERIC Document Reproduction Service, awarded to Bell and Howell in November 1965, and which began the use of commercial firms for the centralized operations of ERIC. If the Federal Clearing House for Scientific and Technical Information (now NTIS), which had been asked to produce the microfiche needed for Project Fingertip, ERIC's first major dissemination effort, had agreed to do so, ERIC's use of a commercial contractor for document reproduction might not have happened. When asked, the FCSTI declined, indicating that producing microfiche for an educational program was outside their mission. ERIC managers then turned to AEC, which agreed to have their contractor do the job. Thereafter, Central ERIC decided to go with a commercial contractor rather than a federal facility. This decision set the precedent of relying on sales of products to users, which generally was contrary to federal operations

then. Later, this decision may have helped save ERIC from more serious budget cuts, as budget examiners were impressed by the volume of products users were willing to buy.

This contract and that for the first ERIC Facility also show the beneficial impact of applying existing knowledge and expertise in the development of ERIC. During the 1960s, federal scientific and technical information programs had agreed on use of microfiche for technical reports and a standard for producing these. These standards were specified in the EDRS contract. Consequently, with their expertise, Bell and Howell staff were able to generate ERIC fiche quickly and at the specified quality.

In May 1966, the contract for the first ERIC Facility was awarded on a sole source basis to North American Aviation, which soon thereafter became North American Rockwell. Justification for this sole source award—an unusual and difficult feat—was the perfect match between what NAA had to offer and what ERIC needed in early 1966. By then, ERIC was reviewing unsolicited bids for several clearinghouses and had solicited proposals for establishing additional ones. What ERIC needed was a means for combining the output of the proposed clearinghouses into a monthly file for printing the proposed announcement bulletin, *Research in Education*, and for combining accumulated output from clearinghouses into the ERIC Document file. NAA had exactly that kind of capability. The first information scientist hired for ERIC, Eugene Kennedy, had learned of NAA's system at a national conference. NAA had developed software for integrating the holdings of nine technical libraries across the country into a single database, which, in 1965, was a notable achievement. The ERIC staff recognized the value of this capability, and knew it was just what they needed. NAA could not only solve the immediate requirement of merging the separate files of the various clearinghouses into a central file, but its expertise would give ERIC the fast take off it needed to show results quickly and, thus, be in a strong position in negotiating the 1967 budget mark. The case was made for proceeding with this contract, and ERIC immediately gained a vitally important side benefit. NAA's extensive expertise was used to provide training in abstracting, indexing, resume development, and other document processing skills for personnel at the first 12 clearinghouses, established in the Spring of 1966.

Without this valuable assistance, implementation of ERIC would certainly have been delayed, perhaps fatally, as it would have been much harder to make a case for ERIC in the changed Bureau of Research. Ianni, who had supported ERIC, was gone, and competition for funds was getting keener. But with NAA's technical assistance, ERIC began full-fledged operations quickly. Another six clearinghouses were established in the following June. (Thereafter, the number of clearinghouses varied, as some were combined or subject areas were redefined.) In July 1967, documents processed by the clearinghouses appeared for the first time in *Research in Education*. This marked the end of the beginning of the decentralized ERIC system.[9]

Also in 1967, the name for ERIC was changed from the Educational *Research* Information Center to the Educational *Resources* Information Center. At the same time, the name for *Research in Education* was changed to *Resources in Education*. These changes were designed to communicate what ERIC had become—an information system in support of all areas of education and not just an instrument for making R&D reports available. Earlier, ERIC managers had tried to make this point by arranging for the production of various "Special Collections" of documents in support of programs of other bureaus of OE.[10]

Over the next several years, ERIC's parent organization changed several times with the addition and deletion of other dissemination-related programs, but ERIC remained as an unchanged, intact unit. Its budget, a crucial indicator of any federal program, grew from the initial $1.0 million for the 1966–67 period to over $3.0 million for the following year.

## Beyond 1967

By 1967, ERIC was an established program within the OE able to stand on its record and compete for funds and staff resources. Two of the four formative factors in the establishment of ERIC had faded by then. Decision making based on personal ties among managers and upper-level officials, while never absent in a bureaucracy, had given way to more deliberate and tougher program and budget reviews. Although battles over the form of federal funding for education persist today—block grants to states versus greater control by the Department of Education staff—funding for ERIC under the Department's research authorization has continued.

The effects of the two other factors remain strong today, but in different form. ERIC remains one of the lasting effects of the massive reorganization of the OE in 1965: ERIC became a branch within a division devoted to dissem-

[9] The most complete description of the "early" ERIC system is provided in the Special Issue on the ERIC system in the Journal of Educational Data Processing (Borko & Mathies, 1970). Kent and Hall (1993) provide a comprehensive review of the development of ERIC through 1992.

[10] These collections are described in Burchinal (1968a), which also summarizes the status and accomplishments of ERIC through the Summer of 1967. Another report by Burchinal (1968b) tried to make the case that ERIC served more than just the research community, which had been a persistent criticism leveled by budget analysts, and which motivated ERIC mangers to try to improve the image of ERIC by changing its name. Despite widespread use of ERIC by educational practitioners, this criticism has remained (Bencivenga, 1987; Vinovskis, 1998). The latter rely on reports from Greenwood and Weiler (1972, p. vii) and Sproul (1978, p. 19), despite Fry's report (1972) of extensive use of ERIC products and services by a wide range of users. Today, the upper echelons of the Department of Education recognize that ERIC serves a wide audience, as documented by the 600,000-plus weekly Internet uses of ERIC plus thousands of daily searches via commercial databases and CD-ROM discs in libraries (Smarte, 1998, p. 9).

ination at that time and has persisted as a core element in the dissemination programs of the OE; then of the National Institute of Education, to which it was transferred with all other research dissemination programs in 1972; and now is the most visible, used, and effective element in the newly established National Library of Education, which has remained part of the research arm of the Department of Education. Likewise, the original influential factor, application of information science systems to the field of education, has continued to be a vital factor in the further evolution of ERIC. ERIC's operations at all levels have benefitted from the continued advances in hardware, software, and systems applications. Above all else, the Internet has stimulated a second creative burst in ERIC operations. The entire ERIC file, now approaching one million records, is available via the Internet under several search engines. The full texts of all ERIC Digests, short, interpretative summaries of research on critical topics, are also available free on line from several sources. All ERIC Clearinghouses have attractive and informative Web sites. Some of these feature announcement of new documents months before they will be available in the central file. Internet technology also gave rise to AskERIC. This program provides responses within 2 working days to e-mail queries for information from the ERIC document base. The AskERIC web site also provides a wide array of educational resources ⟨http://www.askeric.org⟩.

A number of documents describe these and other ERIC developments since the late 1960s. Trester (1981) provides a detailed history of ERIC's development through 1979. Two appendices are particularly informative: (1) "The ERIC Chronology," which lists all important ERIC developments and events from 1958 to 1979 (Trester, 1981, pp. 347–349); and (2) "ERIC System Improvements," compiled in 1979 by the ERIC Facility and which described each of about 125 major system improvements in ERIC. Stonehill and Brandhorst (1992a, 1992b) offer a review of developments through 1992, including a description of the changes stemming from the ERIC Redesign Study of 1986–87. The latter added the first new elements to the ERIC system since it was founded. Foremost among these is ACCESS ERIC. Operated under contract, ACCESS ERIC provides marketing, publicity, and training of users in behalf of the entire ERIC system. Adjunct Clearinghouses, sort of miniclearinghouses covering specific or specialized areas within the scope of one of the 16 major clearinghouses, were created to give greater flexibility in document coverage. The local support of these Adjunct Clearinghouses also, in effect, extends the ERIC budget. There are now 13 Adjunct Clearinghouses (Smarte, 1999a, pp. 21–23). The third innovation was the creation of ERIC Partners, who, in exchange for certain free services and products, agree to help extend use of ERIC products and services in various educational arenas. Brandhorst (1993) provides the most comprehensive coverage of literature related to ERIC from 1960 through 1992. This document provides abstracts and citations to journal articles and reports related to ERIC as well as subject, author, and institutional indexes. The encyclopedia article by Kent and Hall (1993) also provides details of the origin, development and the 1987 redesign of the ERIC system. The Central ERIC staff also arranges for distribution of constantly updated information about ERIC, mainly through publications produced by ACCESS ERIC.[11] The most current information about ERIC is readily available at the Web sites maintained by ERIC Central ⟨www.ed.gov/NLE/eric.html⟩, ACCESS ERIC ⟨www.accesseric.org⟩, or by any of ERIC clearinghouses.

## Concluding Note

If all four factors described earlier—information science and systems knowledge, decision making strongly influenced by personal ties among OE managers and officials, the achievement of large-scale federal funding for education, and the massive reorganization of the OE—had not come together in serendipitous ways in a few short months in 1965, it is almost certain that the first ERIC would have died in the fierce competition for personnel and funds in the next several years, and it is possible that the then young successor ERIC would not have matured sufficiently to survive the inevitable assaults from within the bureaucracy of OE, and still later within the caldron of the National Institute of Education, to which ERIC was transferred in 1972. As it was, these four factors combined to allow first the establishment of ERIC as a unit within the Office of Education and for its subsequent transformation some months later into a novel, decentralized, national information system.

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[11] See the attractive, well designed and formatted reports such as *All About ERIC* (Smarte, 1999a), and the latest *ERIC Annual Report* (Smarte, 1999b).

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