



Application of Mechanical and Electronic Devices to Legal Literature

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WHILE THE DEVELOPMENT of electronic computers has resulted in closer collaboration between lawyers and scientists during the past ten years, it is interesting to note that this concept is not alien to the area of law, but one that has been sought after for many years prior to this current venture. Judge John R. Brown, in an article in the *Yale Law Journal*, quite aptly quoted Cardozo's opening lines from *The Paradoxes of Legal Science*:

'They do things better with logarithms.' The wail escapes me now and again when after putting forth the best that is in me, I look upon the finished product, and cannot say that it is good. In these moments of disquietude, I figure to myself the peace of mind that must come, let us say, to the designer of a mighty bridge. The finished product of his work is there before his eyes with all the beauty and simplicity and inevitableness of truth. He is not harrowed by misgivings whether the towers and piers and cables will stand the stress and strain. His business is to know. If his bridge were to fall, he would go down with it in disgrace and ruin. Yet withal, he has never a fear. No mere experiment has he wrought, but a highway to carry men and women from shore to shore, to carry them secure and unafraid, though the floods rage and boil below.

So I cry out at times in rebellion, 'why cannot I do as much, or at least something measurably as much, to bridge with my rules of law the torrents of life? . . . Code and commentary . . . treatise and law-report, reveal the processes of trial and error by which they struggled to attain the truth, . . . All these memorials are mine; yet unwritten is my table of logarithms, the index of the power to which a precedent must be raised to produce the formula of justice. My bridges are experiments. I cannot span the tiniest stream in a region unexplored by judges or lawgivers before me, and go to rest in the secure belief that the span is wisely laid.¹

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Within the last several years some of the leading members of the legal profession have suddenly become aware of the existence of the computer and the possibility of automating some of the various aspects of legal research. There has been increasing interest among members of the legal profession in technology and tools used in the operation of legal research. The American Bar Association, at its last three annual meetings, has had exhibits demonstrating the use of computers² and has established a special committee to investigate the application of electronic legal research, which has resulted in a serial publication entitled *MULL (Modern Uses of Logic in Law)*.³ The American Law Institute, in conjunction with the American Bar Association and the joint Committee on Continuing Legal Education, has had three annual conferences on Legal and Practical Problems Involved in the Use of Electronic Data Processing in Business, Industry, and Law.⁴ The University of California, Los Angeles, Law School, in conjunction with the Systems Development Corporation, has sponsored two national interdisciplinary conferences on law and electronics.⁵ For several years now the American Association of Law Librarians has had a Committee on the Application of Mechanical and Scientific Devices to the Law. Both the New York State Bar Association and the New Jersey State Bar Association have committees on electronic data processing and the law, and many more state and local bar associations are creating such committees. There has also been an increasing amount of writing on this subject in the various legal periodicals.⁶⁻¹⁶ A considerable number of lawyers, judges, and law professors are becoming confident that electronic brains will eventually relieve lawyers of the tremendous amount of tedious and painstaking research on statutes and precedents. They are confident that these machines will be able to perform routine research more accurately and in a fraction of the time that the lawyers can perform it themselves.

Electronic legal retrieval is increasing in importance because the greatest problem facing lawyers today is that of finding the law. The economics of practicing law can no longer allow lawyers the luxury of the time-consuming tasks of finding books, statutes, periodical articles, opinions of cases, and other legal materials which contain information that will be useful to them. The library of legal literature has been increasing at a most formidable rate, until there are close to 3,000,000 reported opinions in the United States today, and this number will be increased at the rate of 3,000 a year. There are more than 900 volumes of existing statutes, and new statutes will be enacted at a rate approaching 35,000 per legislative biennium.

In addition to this tremendous bulk of case law and statutes, there has been a steady increase of social science literature related to law. The increasing complexity of society has created whole new bodies of law in such fields as taxation and administrative regulations. The subjects of conflicts of law and patent law have taken on an even more significant role with the advent of the space age. These developments have confronted the lawyer with a research task of alarming proportions in the daily practice of advising clients and litigating cases. The volume and diversity of legal source material have reached such immense proportions that lawyers cannot hope to be sure that they have cited all the pertinent legal materials. They can only hope that their efforts have been more exhaustive than those of their opponents. As our country grows and the complexity of government bodies increases, it becomes more difficult for a lawyer to render adequate service to his clients. It becomes quite obvious that if the lawyer is to continue to render the high standard of professional performance necessary to advise his clients, there is a need for automatic devices to handle this great corpus of legal literature. Abraham Lincoln is credited with having said, "A lawyer's time is his stock in trade." The more time the lawyer can spend using his experience and judgment and the less spent in searching, the more effective he becomes. Ready access to source materials is essential to informed legal practices. It is to this problem that various groups throughout the country are directing their efforts to help eliminate the laborious process of finding the law and to enable the lawyer to devote more of his time to the analysis, judgment, and interpretation for which he has been trained. Recent developments in electronic legal retrieval demonstrate what the future can hold for the profession.

One of the most successful projects in this area has been conducted at the University of Pittsburgh's Health Law Center. John F. Harty, director of the program, has concerned himself with the electronic indexing, storage, and retrieval of statutory law, administrative regulations, and attorney general's opinions. The complete text of all statutory law of the state of Pennsylvania and about 20 per cent of the statutes of Arizona, California, Florida, Illinois, Maryland, New York, North Dakota, Ohio, South Carolina, Washington, and of the United States are stored on magnetic tape. These statutes were "memorized" by recording them verbatim on a magnetic tape computer, and this "memory" used to look up statutes pertinent to given questions. Also available for searching are the Constitution, Court Rules, and Rules

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of Evidence of the state of New Jersey, as well as those opinions of the Attorney General of Pennsylvania which are pertinent to education. New Jersey statutes are in the process of preparation at the present time.

The late Robert T. Morgan, Professor of Business Law at Oklahoma University, had all the federal gift and tax regulations, plus a body of related court decisions, recorded on magnetic tape and fed into a computer. The computer was then given key phrases pinpointing the issues in a specific case involving the highly technical question of whether the administrators of a trust fund for minor children were entitled to annual gift tax exclusions. The computer proceeded to "read out" the pertinent regulations and precedents, which made clear that the answer to the question was in the negative. The computer took just two minutes to dig up this relevant material. It would have taken a lawyer at least one to two days to do a similar job.

In Texas, the Southwestern Legal Institute, under Professor Robert Wilson, has a program for the electronic indexing, storage, and retrieval of case law in the field of arbitration. Cases in the field of arbitration law for five states are stored verbatim on magnetic tape and assigned document numbers by the IBM 1401. Each significant word in the text of any case will also be assigned a number called the "route index number." These numbers are electronically collated with the document numbers to permit retrieval of the stored case as well as any other case relevant to a particular search. Search requests consist of one or more key words which characterize the significant aspect of the searcher's problem. The machine produces citations to those document numbers in which all the desired search terms occur. If desired, the full text of the case can then be printed out at a high speed.

Reed C. Lawlor, a patent attorney in Los Angeles, has developed a mathematical theory of *stare decisis* (using Boolean algebra) in formulating a program concerned with the electronic prediction of the United States Supreme Court decisions. The theory and the program have been tested *ex post facto* on the IBM 7090 data processing system, utilizing the "right to counsel" cases of the United States Supreme Court.

Also in Los Angeles, a committee of seven judges under the chairmanship of Judge Richard F. D. Hayden and in association with Professor Edgar A. Jones of the UCLA Law School, and a computer expert, Eldridge Adams of Systems Development Corporation (a non-profit research company), are studying the legal interpretations of

the 120-judge Los Angeles Superior Court; the interpretations are to be put into "language" a computer can handle. This committee is called the Special Committee on Automation of the Los Angeles Superior Court.

The Graduate School of Public Law at George Washington University, Washington, D.C., in collaboration with Datatrol Corporation of Silverspring, Maryland, has developed a pilot project for the electronic indexing, storage and retrieval of public law. This test project uses an IBM 1401 to determine the feasibility of using computers as legal research systems in the field of federal public law. Simulating manual searching techniques, the indexing system includes courts of law, ideas, fact patterns, statutes, commodities jurisdictions, judges' names, etc. The search technique, which makes use of association factors and relevancy numbers, offers the flexibility of searching by analogy; that is, an automatic extension of the inquiry includes not only the terms specified, but also other related search terms even though not specified. The product of the search is a full citation plus from 15 to 75 descriptive terms and a summary index. The effect of this technique is the production of a "machine thesaurus."

Carl Paffendorf, a Long Island attorney and president of Computer Planning and Assistance Corporation (COPAC), has devised a program utilizing the IBM 1401 to process the client's estate through a detailed hypothetical probate. This is devised so that the lawyer, working with an estate-planning problem, can delegate the very complicated figuring to a high-speed machine and make it possible to consider a larger number of variations of plans than the lawyer could possibly do by using the customary procedure.

The American Bar Foundation has a project concerned with legal research methods and materials, the basic objective of which is the advancement of law and legal scholarship through improvement of methodology in the development of tools for legal research. This project has developed a system using electronic computers with the IBM Keyword-in-Context (KWIC) system to index current legislative bills in the 50 states by prepared titles. Beginning with the legislative sessions of 1963, the Bar Foundation will offer a computer-produced index service to subscribers. This electronic technique makes it possible to create an up-to-the-minute index every two weeks.

The Foundation has also published an index to legal theses and research projects.¹⁷ It is the first publication in which the methods of electronic data processing have been used to sort and index volumi-

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nous amounts of legal materials. The process has effected significant time-saving both in the compilation of the index and in the time it will take a reader to find information. The index also uses the KWIC system. Under this system a computer alphabetically lists every significant word in the title of each research project mentioned in the book. This has the advantage of particularizing the area of research. The reader need not look under "criminal law" to find research projects concerning arrests; he may go directly to the word "arrest."

At the Center for Documentation and Communication Research at Western Reserve University a pilot project was conducted recently by Professor Bensing of the School of Law and Jessica Melton of the Center to determine the feasibility of searching statutes using a form of key words. The work was done with the Sales Section of the Uniform Commercial Code. To minimize the production of irrelevant information, or "false drops," the device of "role indicators" was adopted to preserve some of the syntax of the original text.¹⁸

In addition to the various studies relating to the electronic applications to the research of law, there have been several projects concerned with semiautomatic methods. One of these is Project Lawsearch, under William H. B. Thomas of Washington, D.C. Project Lawsearch has been engaged in the development of a simple, manual, mechanical search system for the law. Three law publishers, the Michie Company, of Charlottesville, Virginia; The Bureau of National Affairs, Inc., Washington, D.C.; and Matthew Bender and Company, Inc., New York City, have concerned themselves with indexing the decisions of motor carriers and claims for personal injury. The Jonkers Business Machine, Inc., Gaitsburg, Maryland, under the auspices of a contract with the Council on Library Resources has handled the equipment development. The American Association of Law Libraries has been acting as consultant to this project. The system is specifically designed for law office or law library use by the individual searcher. It is primarily a card index, the distinguishing feature being the capability of combining several cards at one time to pinpoint the details of the search question ("Peek-a-Boo" system).

Basically the Lawsearch system consists of four elements. The first is a list of index terms resembling rather closely the familiar descriptive word index. It contains terms of fact and of law, with appropriate cross references and other aids to the user. The second is a series of cards capable of being drilled or punched with holes in specific, numbered positions throughout the body of the card. The cards have a

vertical scale along one margin and a horizontal scale on the adjacent margin, each containing one hundred numbers from 00 to 99 and providing thereby the coordinates of 10,000 specific, numbered hole positions. Each card represents an individual index term from the list of index terms; each hole in a card stands for a document indexed, which might be a judicial decision, for example, in which the index term represented by the card is found. Thus, each card can refer to 10,000 documents indexed by the same term. The third element is a read-out or scanning device containing a light source behind a translucent plate, against which the cards may be placed singly or in combination. This illuminates the position of holes coincident with or common to all the cards. Identification of the number of any given hole, and hence of a document, is accomplished by reading the coordinates of the hole's position from the numbered scales on the edges of the card, as one would read "x-y" coordinates on a graph. Lastly, there is a table of cases or other materials indexed and arranged serially in the order of their document numbers. Reference to this table by document numbers obtained from the cards provides the name and citation of materials found in the search. By way of illustration, if it were desired to locate all cases in California involving an intersection collision when the highway is icy, one would refer to the list of terms, select the terms "California," "intersection," "collision," and "highways-icy," remove these term cards from the file, and superimpose them on the read-out device. The coordinates of any holes through which light appeared would determine the number of the particular holes and hence the pertinent cases.

Another coordinate indexing system is the IBM Port-a-Punch Card which is designed to provide lawyers with a simple, inexpensive system of recording notes, reminders, research memos, and briefs which have future value. Prescored Port-a-Punch index cards usually provide for 480 positions in which a set of references numbered from 1 to 480 may be recorded. If the desired number exceeds the capacity of 480, additional sets of cards may be used. Documents may be indexed by the use of key words or subject headings. A card is made for each key word or subject heading, and the document numbers which contain these words or headings are recorded by using a pencil to make a hole at the corresponding position. The documents themselves may be filed separately in serial number sequence or entries made in a separate notebook. Items are retrieved by selecting and superimposing cards with desired key words or subject headings and then noting which

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holes in the cards match up. The numbers of these holes are document numbers which may contain the information sought.

Another application of modern techniques to legal research has been the use of microfilm techniques. Research and Documentation Company of Long Island, New York, has developed a collection of legal materials utilizing microphotography to collect, organize, and utilize research and documentary information in the handling of a client's problems in a law practice. The material documented will be law review articles, abstracts of monographs, prospectuses, proxy statements, and similar documents not readily available but valuable as research or precedents in orienting the lawyer and his client in the practical problems involved and how others have solved them. The fields to be covered are those of intellectual property; SEC Prospectuses; mergers, acquisitions, and sale of businesses refinancing, recapitalizations, and other corporate changes; pension, profit sharing, stock option, stock purchase, deferred compensation, insurance, health protection, and other employee benefit plans.

The application of electronic techniques to law provides an opportunity for the reform of law. Professor Bayless Manning of the Yale University Law School recently stated that "There can be no doubt that law will change." He stated further that "Our system of law has become unknowingly obsolete and . . . there is an intellectual crisis in the legal profession. The legal system is applicable to the Greek City State or rural England, not the organized America of today and tomorrow. We live with an elaborate apparatus of the case system that died twenty-five years ago."⁵

If our legal system is to progress, then members of the profession should strongly urge the establishment of a law research institute to make appropriate studies, determine where the computer can and should be used, and outline necessary controls to prevent political control of the system and to educate the lawyers and judges of the nation to its use. The possibility of such an institution is realized in the creation of the Walter E. Meyer Institute of Law at Yale University. The purpose of this Institute is "through investigation, research and study and through the publication of the results . . . to throw light on matters which will be of aid in securing to humanity a greater degree of justice whether through the law as administered by the courts, through legislation, through government, local, national or international, or through a better understanding only of human relations." The possibility of Meyer Institute's entering into this area of

legal research has been proposed in a recent publication by Layman Allen, Robin Brooks, and Patricia A. James.¹⁹

To conclude, a statement made recently by Martin Kalikow, Consultant to General Electric Company, seems apropos:

The time for making the requisite analysis and for planning the main outlines of large searching centers has also arrived. Most professions, whether technical, legal or medical, have now been alerted to the acute problems inherent in the engulfing volume of published material, and the imagination of the public as to the potentials of mechanized information data processing is being captured. Money in fairly large quantities is being proffered by both public and private sources and will be forthcoming in even larger quantities as programs are tendered having promise of long-range success.²⁰

The future is indeed encouraging.

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3. MULL is the newsletter of the American Bar Association Special Committee on Electronic Data Retrieval and is published quarterly in March, June, September, and December in collaboration with the Yale Law School. Copyright 1962 by the American Bar Association. Publication and Subscription Office is MULL, American Bar Center, 1155 East 60th St., Chicago 37, Illinois. Subscription rates are \$4 for one year.

4. These conferences have resulted in the publication of three separate volumes of proceedings, which can be obtained from the American Law Institute, 133 South 36th St., Philadelphia, Pennsylvania.

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