Computers and the Legal Profession

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The future will see the law, a guardian of continuity, make increasing use of the computer, an instrument of change. The rate of change in technology and in our social institutions continues to accelerate; it is appropriate, therefore, for lawyers to extend the range of their thinking farther and farther into the future. This consideration of future alternatives must be based on realistic probabilities, and not merely on desirable, but ephemeral possibilities. This article will project the future effect of computer technology on the American legal system over the course of the next ten to fifteen years. Its purpose is not to engage in prophecy but to illuminate the choices we lawyers have in the present.

I. IMPLICATIONS OF COMPUTER TECHNOLOGY

The Computer is far more than a high-speed calculator. Its large, high-speed memory permits the computer to process large volumes of data in many ways. Isaac Asimov characterized the computer well when he said:1

It is not that the computer can do what we cannot do; it’s just that it does in 100 seconds what would take us 100 years. Thus, back in 1609, the German astronomer, Johann Kepler, worked out generalizations that described the orbits of the planets traveling about the sun. For the first time in history, the solar system was correctly described. But in order to work out those laws, Kepler had to begin with many hundreds of observations of the exact position of the planet Mars at different times. He then had to spend years of calculation in an attempt to find out how to relate all those observations.

A couple of years ago, a modern mathematician took all Kepler’s raw data and fed it into a computer. It took him several days to gather the data and prepare a program for it, of course, but once the computer received data and program, it worked out Kepler’s laws in exactly eight minutes!...

It is tragic that Kepler had to waste years on such stultify-

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1. Asimov, Who’s Afraid of Computers, Newsday, Jan. 20, 1968 (Weekend) at 7W.
ing labors. With a modern computer, he could have done the dull part in eight minutes and spent the saved years trying to work out additional creative thoughts. The computer frees mankind from slavery to dull mental hackwork, as power machinery frees him from slavery to the pick and shovel.

Although it has long been recognized that the computer can be a tremendous help in a variety of otherwise "dull" tasks, its general use has been significantly restricted by the high costs of purchase and maintenance, and by the large amount of space required to house the physical plant. Recent technological advances, however, are making these factors less of a problem. Since computers began to go into industrial production in the early 1950's, their memory circuits have decreased in size by a factor of about 1000, and reliability and capacity have increased by roughly the same amount. On the assumption that these trends will continue, some observers have said that within 20 years still more powerful computers than those now available will be able to fit on a desk top. For example, Edward Glaser recently noted that:

On sale today is a memory system, a six-foot cube in size but equivalent to a 300,000-volume library, for about a quarter of the cost of a building to house that library. The access time for specific information is about 0.3 of a second—a snail's pace for a computer but blazing speed for a library.

An early computer, the Univac I, filled a very large room and cost about $1 million. Using new technology, a machine with the same capacities as the old Univac would fit on a desk top and sell for about $20,000 today.

II. TRENDS IN COMPUTER TECHNOLOGY

The Conference Board recently published a significant report on the future of information technology. In this report, it drew on the experience of 42 experts from a wide variety of disciplines. The trends presented here are drawn from that report:

- The cost of storing information in computer-readable form is becoming cheaper than the cost of storing it on paper.

4. The Conference Board, Rep. No. 597, at 24 (1972). The Conference Board is an independent, nonprofit, business research organization which, for more than fifty years, has served as an institution for scientific research in the fields of business economics and business management.
5. Id.
The new technology increases the flexibility of decisions and the evaluation of goals by providing a faster, more precise evaluation of consequences of decisions.

Linked together, communications and computer technology will lead to new distributions in time and space of business, educational, and entertainment enterprises.

Technology of any sort, including information technology, will not itself change the shape of the future. It makes a fine servant and will do exactly what man commands.

Nationwide networks of small, independent systems tied into large systems for limited purposes are projected.

Computer-based training programs will become more economical as well as less time-consuming. Education is thus one of the most promising fields for applying information technology.

The automated, network-linked school library of the 1980's, with rapid access to recorded information, will play a far more important role in the learning process than today's shelves of books.

Information is a fungible resource that can be used, developed, controlled and sold.

Professionals at all levels will be freed to make more effective use of their time.

Each of these trends is discussed in more detail in the following sections of this article.

III. Effects Of Computer Technology On The Law

Computer technology will eventually affect every aspect of the law. For convenience, the discussion of the potential effects is divided into three areas:

A. law schools
B. law practice
C. legislative and judicial operations

Let us examine each of these in detail.

A. Law Schools

The following types of computer-based facilities may be available to the future law student:

By means of TV-like display terminals placed at convenient locations around the University, the law student will have access to the contents of his university library system. He would be able to do
his legal research using traditional legal search methods, although he could search for patterns of words and phrases of his own choosing. He would be able to obtain "demand" copies of texts of opinions, statutes, law journal articles, etc.—by depressing special function keys on the terminal. These would be transmitted to a copy center nearby, ready for immediate student use. Records of copies made would be maintained by the computer in order to determine the amount of royalties due to copyright holders, as well as for debiting the student's service account.

The same type of terminal could be used by the student to view filmed reenactments of events, e.g., the celebrated accident in \textit{Palsgraf v. Long Island Railroad},

\textsuperscript{6} to sharpen his appreciation of the legal principle developed in that case.

The same terminal could be used by the student to engage in an interactive dialog with a computer programmed to instruct him in particular subjects such as Evidence, Procedure or Taxation, which are especially well suited to programmed instruction. The law student would be able to advance at his own rate, and if he makes wrong choices, the programmed course would lead him back to correct answers.

Lest one think that the law school of the future is likely to become increasingly mechanical and dehumanized, it is important to state emphatically that computer technology will enhance rather than diminish the role of the law professor. He will have more time to provide guidance to individual students, and "traditional" courses will become arenas of debate and discussion, illuminated by technological and traditional material, in which the professor can play a much more active role than is possible today.

The traditional "case method" of teaching law need not be jeopardized by the use of computer technology. Because of the ease with which the law school's computer facility can add or modify legal information, the latest cases on a particular point can be incorporated into the computer's program in order to provide the student with the most recent judicial pronouncement on the subject. The teaching of law will thus become more pointed, more dynamically suited to the rapid changes which the last quarter of this century will introduce.

Computer technology also makes possible a means of expanding the consciousness of law students by providing them with a dynamic means of grasping legal concepts. This technology can be applied

\textsuperscript{6} 248 N.Y. 339, 162 N.E. 99 (1928).
equally well to both ends of the ability scale. Special materials can be made available for the brilliant student. Other materials can help the law professor reach the slow learner. For example, a series of interviews with specialists can be incorporated into the memory of a law school computer, retrievable by the law student at any point in the learning process, either to provide him with pointed and sophisticated commentary on more obscure aspects of the law, or to give him the advantage of having a basic point lucidly explained by several different authorities.

These methods support not only the learning of new material; they are also valuable in reinforcing material already learned. The computer places this material at the student’s fingertips throughout his law school career. More important, since the legal profession is well aware that law school is but the beginning of the process of legal education, this material could be made available to a student long after graduation and admission to the bar. Through the use of remote terminals, for example, computer technology will permit this continuous learning process to take place within the law firm as well as in the law school. The implications of this technology for law practice are discussed more fully in the following section.

Such an approach is radically different from that in use today, admittedly. It is nothing less than a revolution in the methodology of teaching law. Yet, it is only a recognition of the revolution going on around us in the methods of creating, storing, processing and distributing information. An intelligent analysis of how this technology might be applied, and a willingness to develop prototypes in limited segments of the law school curriculum, are a valuable means of moving toward the future without major error or miscalculation.

A by-product of this process is a more complete record of individual learning of the law than is now obtained by semester examinations and cumulative averages. The performance of the individual law student can be tracked with many more sample points, comparing his performance with the performance of his peers in his own law school. The law school’s performance can be compared more accurately with a national average. In addition, innovative techniques developed in well-endowed law schools can be shared with others less able to afford professors of national reputation.

The ultimate implications of the development of such a computer-based learning system are vast. The school would have available for future generations of law students, not only the accumulated wisdom of judges and legislators as recorded in our decisions and
statutes, but a proven, evolving body of teaching techniques, as well as a sharing of the best legal minds in the United States without regard for time or distance.

Put another way, the law school able to use computer technology will have available a model of society in which the emerging lawyer could immerse himself to understand legal values, traditions, and methods of legal thinking necessary to serve society effectively. The break in the continuum of learning from law school to law firm, as noted above, will be far less noticeable. The materials would change, but the methods need not. Emphasis on learning to think, to analyze, and to solve problems, always the strong central core of legal education, will in fact become even more important as available information doubles in volume every fifteen years.

In all of this change, a pattern of cyclical growth is becoming apparent. During the 1960's, law schools throughout the U.S. added many new courses, seminars and options to an already rich basic curriculum. This writer detects a review of that area in the future. He sees a move to reestablish the “core” of legal education, and a conscious shift of specialized courses to graduate schools and to the law firm engaged in a particular practice.

Although the discussion here has indicated the potential of computer technology to affect and improve legal education, it must be said that educational institutions have traditionally been slow to innovate. They do not face the competitive pressures which industry faces to become more effective, even though there are many compelling reasons for education to accept the change. The type of electronic classroom described here will probably not become common before the late 1980's, even though such a classroom will be technologically feasible within 5 to 10 years.\(^7\)

B. Law Practice

Based on current trends, it is likely that by the mid 1980's law firms will employ computer technology in such diverse areas of law practice as time accounting and billing, legal drafting, legal research, managing large amounts of evidentiary material, filing deeds, searching land records, managing trusts, and computing planning and estate taxes. The computer is able to function effectively in each of these areas at present but it is not yet widely used. The future will see a gradual expansion of its use as computer costs come within reach of

the ten-man and smaller law firms, which constitute more than two-thirds of all law firms in the country.

It is not unreasonable to project the following changes in the use of computer technology in the practice of law during the 1980's:

- Large law firms will gradually acquire medium-size computers to handle most administrative functions, such as time accounting, client billing, document preparation, storage and retrieval of internal memoranda, evidence management, tax computations, etc.
- Small law firms will increasingly turn to small, desk-size computers for time-accounting and bookkeeping, and for the retrieval of standard clauses in contracts, wills, corporate articles and by-laws, for document preparation, and for procedural forms which are frequently needed in daily practice. They will also increasingly turn to image technology as an alternative to the storage space required by published materials.
- Law publishers and other services, as well as state legislatures, will offer computer-based research services using their copyrighted indexes, headnotes and digests, keyed to citations available in either hard or soft copy. Law firms will have access to these services from video terminals in their offices. These terminals will be able to supply paper output on demand. Such services will be licensed by the bar associations of the states in which they operate.
- Technology will permit law firms to transmit notices, docket filings and other legal documents to each other and to the courts by means of facsimile transmission systems.
- The organized bar will establish standards to ensure the confidentiality of attorney-client relationships, where computer technology is used.

Although this appears to be an optimistic view of law practice in the 1980's, current difficulties in making our legal system work effectively, and the conviction that the pressures of change on the system will increase in the future, leave us little choice but to adopt this new technology or risk becoming isolated from the mainstream of American business and social life. As Vaughn Ball has observed: 8

The Duke of Cambridge once said, "the right time for making changes is when you cannot help it," and there is a bit of the Duke in all of us lawyers. We said the telephone would be fine for people in trade, but our clients would insist

on speaking to us face-to-face; and the typewriter was all right for others, but a printed letter would never satisfy the client's need for a personal opinion; and so on. If I had lived long enough ago, I could have made a pretty good argument against the adoption of writing itself. "It will," I would have said, "reduce the living language of the law to mere marks on a piece of paper. It will dull men's memories, because they will come to rely slavishly on these marks, and be unable to remember without them." And I would have been absolutely right.

I do not think, however, that notions like this will keep the legal profession from taking advantage of the benefits of computer technology in their own operations, as soon as some meaningful results can be demonstrated at a cost which is not prohibitive.

One example of computer technology providing meaningful results at an acceptable cost was recently described by Judge Lee Loewinger, who pointed out the benefits of the computer-controlled typewriter. As simple as it sounds, such a device can have a variety of uses limited only by the lawyer's imagination. Wherever several drafts of a brief, contract, will or indenture are required, it will be most advantageous to do it on such a device. As each set of revisions is made, the entire text can be displayed and printed at high speed, with the changes properly incorporated, without error and without the pauses and interruptions that are inevitable in human effort. For the lawyer working against a deadline, the saving in time and the assurance of accuracy in retyping can be invaluable.9

The increased use of computer technology by law publishers will have a significant effect on law practice in the coming decade. As more and more legal material is created, edited and composed by means of the computer as part of the printing and publishing process, a growing data base of computer-readable information will be available for distribution to the legal profession in new forms and at lower cost.

Lawyers Co-operative Publishing Company (LCP) now has one of the most complete and sophisticated text processing and photocomposition systems in the United States.10 By taking advantage of

computer and photocomposing technology, LOP has been able to provide the means to reduce both the time and composition cost needed to produce publications. In addition, the company has greatly increased its capacity to provide new information services to readers and clients.

The availability of the machine-readable data base is helping LOP provide new services to its customers. For example, the company's recent contract to produce a 22-volume compilation of Mississippi law was contingent on LOP's ability to provide magnetic tape output. Copies of the tape used to produce the books will now provide the data-base for a computerized information retrieval system to be installed in the state capitol.

Although the use of the computer by practicing lawyers has just begun to scratch the surface of the possibilities, it is important to remember that many of these new tools have been invented already. In the next ten to fifteen years they will become faster, smaller, less expensive, and more widely used. The impact of such increased use cannot help but enhance the attorney's ability to practice law.

G. Legislative and Judicial Operations

Lawmakers, judges, legislators and almost every other person concerned with making democracy work appear to have realized the desperate need to organize and catalogue all government laws, decisions, rulings and regulations. There is already ample evidence that, used wisely, the computer is up to the task.\textsuperscript{11}

- More than 25 states are currently using the computer for statutory retrieval.
- At least 15 states use the computer to help draft bills. Prior to automation the drafting process was tedious and error-ridden. Now, proposed legislation is stored in the computer from first drafting; changes become infinitely easier.
- At least 30 states rely on the computer to track the status of all legislative bills when lawmakers are in session.

The following expansion of this solid base of computer utilization is possible by the 1980's:

- All fifty states will have computer-based files of state laws, and these will be available not only to lawmakers, but also to the public, under right-to-information statutes.

\textsuperscript{11}For a detailed discussion of this topic see Barnard, \textit{Computers: A Lift for Lawmakers}, \textit{THINK}, Sept., 1972 at 34-37.
Leading states will make increasing use of simulation techniques to detect and avoid forthcoming problems, such as averting unemployment in dying industries, or retraining people for new jobs. These techniques can also be used to forecast and improve the use of government revenues—by improved projections of cash flow. The Planning-Programming-Budgeting System (PPBS) used by the federal government will be adopted by many states in order to provide better information for legislators about data in the state’s budget.

The potential of the computer in the lawmaking process was foreseen several years ago by State Senator Earl W. Brydges of New York:  

The computer places one of the greatest research tools in history in the hands of legislatures from coast to coast. Because it can do its work quickly, surely and extensively and print laws in quantity, it saves interim committees, research counsel and law revision agencies thousands of man-hours that would be consumed simply in trying to find all laws on a specific topic and reproducing them in quantities for scissoring, pasting and reshuffling. Its importance, however, lies beyond its ability to... serve as a legal research assistant. The computer becomes a means of restoring the legislature to its proper equal status with the judicial and executive branches of government. Today and in the future, control over facts—the ability to research in depth and quickly—can gain for legislatures some of the capabilities for leadership they have lost over the years.

The computer will not only serve the national legislatures well, it will also provide an immensely needed vehicle for change in the national judiciary. The need for significant reform in our judicial system was pointed out recently by Chief Justice Warren E. Burger in an address on the state of the federal judiciary delivered before the American Bar Association. The Chief Justice reminded his audience of a speech given to the ABA by Dean Roscoe Pound in 1906, in which Pound observed that the courts of the 20th Century could not carry on their work with the methods and machinery of the 19th Century. The Chief Justice then stated:  

Today, in the final third of this century, we are still trying to operate the courts with fundamentally the same basic methods, the same procedures and the same machinery he said were not good enough in 1906. In the supermarket age we are trying to operate the courts with cracker-barrel corner grocer methods and equipment . . .

It is no secret today that the staggering workload and case backlogs of the nation's courts are acutely hindering the administration of the right to speedy justice. The judicial bottleneck is particularly critical in the larger cities, where it frequently takes many months to bring criminal cases to trial, and where civil actions wait six years or more. This not only destroys public faith in the justice system but also in the officials who administer it.

Robert M. Jupiter noted recently in the New York Law Journal:  


The court system in this country has problems, and most of them can be summed up with—to many cases for the same system. In one court, there were 50 per cent [more] indictments for the first six months of 1971 than there were for the same period in 1970. The reason for the increase is plain enough; a burgeoning crime rate in all areas of the country.

As crime rose in recent years, the criminal courts were ill-prepared for the increased volume of cases. The judicial system of many communities is in disarray and cannot stand the strain. Clearly, what has happened in the past decade calls for re-examination and improvement in judicial administration . . . Computer technology, which has been on the engineering, scientific and business scenes with phenomenal success for the past twenty years, has made little inroad into the criminal justice system.

What is amazing, in the light of America's renown for modern equipment, is the antiquated method of record keeping employed by the courts and prosecutor's offices.

The recent use of computers by the Common Pleas Court of the City of Philadelphia is proof that computer technology can function effectively in the judicial system. This court has taken a major step toward alleviating the problems generated by increasingly voluminous court records. It installed a computer, and can now store the massive amounts of information in immediately retrievable form, manipulate the data at very high speeds, and produce printed reports
needed to schedule and operate the court system on a more timely basis. Efficient administration, supported by the computer, has reduced the backlog of both civil and criminal cases. Criminal cases, for example, have been reduced to a week trial cycle, and the civil case backlog has been reduced by as much as two years, with a forecast for continued improvement.\textsuperscript{16}

The following developments in judicial administration have been projected for the next ten to fifteen years:\textsuperscript{16}

- County, state and federal district courts will increasingly employ computer-based systems for court administration, including trial calendaring, court scheduling, subpoena preparation, witness notification and jury selection. The process will be accompanied by the widespread use of professional court administrators trained in systems analysis and data processing.

- Special courts will be created for antitrust and trade regulation cases. Because of the enormous amounts of evidence these cases produce, these courts may employ extensive computer and image storage systems for the handling of depositions, exhibits, etc., and data base systems containing statistical profiles of regulated industries.

- Stenograph machines will increasingly be linked to computers to produce virtually instantaneous transcripts of court proceedings. The full text of these proceedings will be available for indexing by computer-based storage and retrieval systems for use during trial and appeal.

- The improved awareness of court workload and available resources will stimulate legislatures to abolish certain types of "crimes," e.g., drunkenness. Other types of actions, such as bankruptcy proceedings, divorce and probate of wills may be removed from the courts and handled administratively.

- As the use of computer technology expands in the judicial system, other improvements can be incorporated as by-products of improved information flow; the number of hearings and motions within trials may be reduced.

The imminent use of innovations such as those described above was presaged by Chief Justice Burger in a recent interview on the American Judicial system. He said:\textsuperscript{17}

\textsuperscript{15} See IBM Application Brief GK20-0395, \textit{Data Processing in the Courts of Philadelphia}.


\textsuperscript{17} Burger, \textit{As I See It}, \textit{Forbes}, July 1, 1971, at 23.
Now we are at the stage when we must look over the whole scene and pick out what is best and discard some obsolete processes. Other societies have done this every few centuries. We are nearly a century overdue, as Dean Roscoe Pound and others said at the turn of the century.

This can be done only by a gigantic effort of lawyers, judges and legal scholars working together. We must identify the problems—the weaknesses and flaws—and keep them in focus. Literally, we must drive ourselves. But I have a feeling that the legal profession is ready for change—and public opinion is correctly demanding it.

IV. CONCLUSION

We are heirs of a common legal tradition, and we are tolerant of the law's unhurried pace, its reluctance to change. But the law is molded by its time, and there is a growing sense of uneasiness about archaic judicial administration, outdated state constitutions, disorganized statute compilations, and the torrent of opinions, regulations and other legal literature. There is abundant evidence that the computer can contribute to the solution of the crisis in the law today. Our task is to adapt successful innovations from other disciplines. The process need not be disruptive nor traumatic, for as business and government know, the computer is a useful servant.