

COMPUTERIZATION IN LEGAL WORK: HOW MUCH DOES NEW TECHNOLOGY CHANGE PROFESSIONAL PRACTICE?

Craig Calhoun and Martha Copp

ABSTRACT

A majority of law firms now use computers. Business uses and word processing predominate, but increasingly are complemented by record keeping, litigation support, legal research, and even some judicial use of computers. The present paper (1) summarizes available information on the use of computers in legal practice, (2) suggests hypotheses as to the course and impact of specific legal computer applications, and (3) raises the broader question of how such computerization may contribute to change in the organization of legal work. It suggests that many implications of computer use for legal practice need to be understood as part of a continuing division of labor in which technology plays an important ancillary role. Brief comments are also offered on how existing relationships between lawyers and both their

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clients and the general public may be challenged by possible patterns of computer use, and how widespread computerization of legal research may change the standard pattern of legal apprenticeship in large firms. It is argued that computerization acts to strengthen the position of some lawyers at the expense of others, to alter certain lawyer/client relationships slightly in the direction of greater client autonomy and control, and to bolster certain trends already underway, such as the increasing polarization between elite and nonelite segments of the bar and increasing bureaucratization of legal practice.

In the decade since microelectronics began to make small computers affordable, most law firms have put computers to use.¹ Computers arrived in law offices most often to help in billing and other aspects of the "business" side of legal practice; their utility in generating templates for routine documents was quickly recognized, so that computerized word processing became almost essential to active legal practice. Unlike physicians, who have been notably slow to use computers for medical research, record keeping and clinical functions, as opposed to billing, lawyers quickly put the machines to work in more substantive areas of their practices.² Most discussion of lawyers' computer use, however, focuses on either practical advice or questions of privacy. The possible implications of widespread computer use on the organization of legal work are seldom considered in anything but a completely ad hoc way. This shows a healthy absence of the wild predictions of a 'computer revolution' which have plagued discussions of the potential impact of computers in other fields. Nonetheless, computer use may have a significant impact on the legal profession. Lawyers generally have not seen the machines as vehicles of professional transformation, still less as threats to their income and prestige. They have seen computers as cheaper clerical and research assistants, not professional challenges.

The present paper argues that computers hold more in store for lawyers. While they can indeed improve productivity and lower cost of clerical support, they can also help in tasks now seen as the exclusive province of professionals themselves. This may, on the one hand, improve lawyers' effectiveness. They will be able to spend more time on the parts of their work for which their specialized training is necessary, and less on the mundane aspects of running a practice. On the other hand, computer power and ease of communication may reduce lawyers' monopoly on legal knowledge and thus their hold over their clients. While it is possible that the public might thus be both better served and better able to serve itself, there is no reason to assume that this would be so. Powerful institutional arrangements militate against it.

Freidson argues that optimistic predictions that computers would spread knowledge so widely as to offer consumers effective control over professionals and/or eliminate their special status have so far proven false.

The major professions continue to produce new, more esoteric specializations at the same time as the consumer's knowledge increases, so it is difficult to see any "knowledge gap" closing. Nor does the computer help so long as its programs and the evaluation of its printouts remain in the hands of the professions involved, as they do (1986, p. 112).

This seems quite true, with the qualification that it applies selectively to different claimants to professional status, and to different lines of work within professions. While public knowledge is unlikely to catch up to that of research hematologists, or specialists in the creation and defense of obscure financial instruments, many general practitioners in both law and medicine are in a position closer to that of the public than to that of the specialists. Public knowledge about routine real estate transfers may well approach that of a lawyer in a solo general practice. Moreover, what is meant by the "public" in such discussions also varies. While the average lawyer may know much more than the average middle-class citizen about the creation of trusts, businessmen wealthy enough to create trusts may be in a good position to use computers (or other means) to check up on their legal counsellors and/or develop legal ideas of their own (see Rothman 1984). The implications of computerization are likely to be quite different for those lawyers in large firms who are able to keep their work more "purely legal" and more specialized than their colleagues in general practices. Rather than any overall process of "deprofessionalization" (Haug 1973, 1977; Rothman 1984), we expect computers to further the internal differentiation or even polarization of the profession. On the one hand, computer use may facilitate "professional regression" in which elite lawyers segment themselves from "nonprofessional" tasks (Abbott 1981). On the other hand, less elite lawyers are likely to face simultaneous competition from paraprofessionals, bureaucratic organizations and the use of computers to do some of their work.

The use of computers may also exacerbate trends towards 'oversupply' of lawyers and consequent competition among them; this competition will add to any direct contribution of computer use to increasing bureaucratization of legal practice, dominance of large firms, and employment of lawyers for work not primarily defined by its requirement for legal skills. In our view, however, this challenge to the legal profession will not operate simply as an autonomous external cause. Rather, computers will have a substantial impact on the legal profession because they will be used by some sections of that profession in pursuit of their own interests. As Powell (1985) has argued, changes in the legal profession generally happen because some lawyers want them to happen; if they change the practice of law, that does not necessarily amount to an end to the dominance of lawyers over their own profession. More broadly, the best empirical research on the organizational impact of computers suggests that they generally are used in ways that reinforce existing power structures (Danziger et al. 1982; Danziger 1985). They are introduced and managed by those already in power (though this

tendency may be reduced where microcomputers rather than larger, more expensive multi-user machines are involved) and they are used primarily for those tasks which an organization already recognizes as both important and amenable to more or less routinized performance.

Legal practice is perhaps more vulnerable than other forms of professional work to a computer-based challenge to the position and power of some professionals. This is so principally because of the high proportion of legal work which is routine, and secondarily because lawyers have not succeeded as well as medical doctors in stringently controlling admission to their profession (Freidson, 1986, p. 59; Halliday 1986, pp. 70-71). It is plausible to say that there is no such thing as a poor medical school; prospective students can feel happy about getting into absolutely any accredited United States M.D. program. Not so for lawyers. The difference between the best and worst law schools is enormous. A great many accredited members of the bar, consequently, are relatively poorly trained and/or lacking in prestigious credentials. The legal profession, in short, has become radically hierarchical, beginning with the quality and prestige of training and ending with the content and rewards of the work itself (Stevens 1983). Heinz and Laumann (1982) go so far as to suggest that there are two virtually distinct professions of law in the United States today: a national bar focused primarily on corporate practice and many less prestigious and less powerful local bars whose members operate in small firms or solo practices. The latter concentrate on matters such as real estate, divorce, wills, traffic violation defenses and other services to individual clients and small businesses. Their involvement in corporate law seldom extends beyond the filing of routine documents or the breakup of an incorporated partnership.

Much of lawyers' work lends itself readily, at least in part, to automation: completion of forms, preparation of routine documents, gathering of evidence, searching for precedents (at least where these are fairly conventional), checking security of property titles and filing or record keeping. In small general purpose law firms, the principal lawyers do a significant part of this work themselves. In other, larger, firms there is already a considerable division of labor among various groups of professionals and semiprofessionals. Law clerks and lower-status lawyers, as well as secretaries and paralegal assistants, do routine work. Higher-ranking lawyers appear in court, generate business and meet with clients, negotiate with other lawyers, plan litigation or legal strategies, and interpret complex and/or ambiguous points of law or fact. The last two of these sorts of professional activities occupy a relatively small proportion of the time of the lawyer in a small general practice.

This division of labor characteristic of large law firms has paved the way for computerization. Many firms have their paralegals do direct computer work; others (27.7 percent in a 1984 *ABAJ* survey, Johnson 1985) employ computer operators. This is an extension of the trend towards employment of full-time managers and other nonlegal specialists (often at less pay) in large law firms. In smaller

practices, lawyers may decide to do more of the computer work themselves. In either case, however, it is the organization of legal practice, not the technology itself, which determines the way it is used. Though they are powerful enough to produce noticeable changes, computers are an extremely flexible, malleable technology; they produce changes when harnessed to particular social purposes within particular organizations (Calhoun 1981; Danziger et al. 1982). Which professionals benefit most from the technology depends substantially on which are able to determine how it is used, and which use it best. Computers *can* be used to help solo practitioners and small firms handle the increasing complexities of many forms of legal work and compete better with large firms. So far, however, it appears that large firms are more effective at making use of the new technology, so it will probably enhance their competitive advantage.

I. THE USE OF COMPUTERS IN LEGAL PRACTICE

There are five basic ways in which lawyers use computers. These are (1) word processing, (2) management and accounting (including billing and docket control), (3) client relations and marketing, (4) research, and (5) litigation support.³ The first two are much the same for law practices as for other sorts of businesses. Others are somewhat more distinctive. Only the last two hold much potential for substantial effect on the organization of legal practice.

A. Word Processing

Legal work is particularly verbal in nature, and produces an unusually high volume of paperwork. Word processing is therefore a major asset to lawyers, by far the most common legal use of computers. Precise form is involved in the framing of leases, deeds of sale, all sorts of contracts, wills, and various writings. Large portions of text are repeated verbatim in different documents. Lawyers, like bureaucrats, create standard procedures for drafting such forms. There is nothing to stop a lawyer from drafting each real estate deed, for example, completely afresh. To do so, however, would be economic madness, wasting hours of time. It would also be risky. In ninety-nine percent of the cases, the standard deed format, perhaps with a little modification, is the best idea, because the phrasing embodied in it has been specifically tested in the courts and upheld; it is secure. New writing might introduce new ambiguities and uncertainties. Anyone who has participated in legal contracts knows also just how much time is spent—at high cost—telling a lawyer or other agent routine information so that it can be written into a contract. Computers make the production and completion of such forms easier. A computer not only can type the final copy, but can be programmed to ask a series of questions in order to get the necessary information for the contract. In many cases, the role of the lawyer can be reduced or even eliminated without any loss of security.

B. Management

After word processing, the frequency with which computers are put to various uses both falls off rapidly and varies widely. Business applications have been developed in greatest proliferation. Accounting is complex because lawyers bill primarily on the basis of hourly rates combined with a variety of particular line expense items. Clients—especially corporate clients—increasingly expect a very detailed accounting of how their outside legal counselors and representatives have spent their time, and for what services they are billing their clients. Computers are extremely efficient for this sort of record keeping; they can often translate a simple daily record into a precise statement of accounts, computing hourly rates for different personnel and standard charges for supporting services. They are also useful in following up on delinquent accounts. Lawyers often have difficulty in collecting fees owed them by their clients, not least of all because people (and firms) seek lawyers' aid precisely when their affairs are not going well. Collection of accounts receivable, therefore, generates a good deal of paperwork for a law office, but is essential to keeping a firm solvent. Even scheduling is an important potential role for computer assistance, because court dates are often set far in advance and because meetings with clients, gathering evidence, taking depositions and other activities often involve travel.

C. Client Relations and Marketing

Client relations is a less developed and more complex area. Indeed, the whole question of how lawyers market their services is still controversial, though opposition to direct advertising has quieted (Andrews 1980, 1981; Powell 1985). Computers can be of help, however, in keeping clients informed both of what their lawyers *are* doing in their behalf—making it easy, for example, to generate progress reports—and of what their lawyers *might* be doing for them (Engholm 1980). A law firm can, for example, keep its valued clients abreast of the status of their wills or trust arrangements by using a computer to search for provisions which may be affected by legal changes, or to keep track of dates by which certain instruments require action. Beneficiaries of trusts and other interested parties could easily be notified of impending changes of status—such as the maturity of a minor in whose behalf the trust was previously held by a guardian.

The computer is also a helpful tool when a law firm takes on a new client, or when a new case comes up. A computerized record system makes it easy for a firm to establish whether it is involved in any actual or potential conflicts of interest. This is a particular asset for corporate law firms in this age of frequent mergers and acquisitions. Simply remembering the name and line of business of each client is not a satisfactory basis for determining whether various clients may be in potentially conflicting positions. Each firm may have numerous subsidiaries in widely varying businesses. It is also increasingly common for clients to sue their

lawyers over such possible conflicts (especially in momentous and emotionally charged matters like corporate takeovers).

Word processing and managerial uses of the computer are the most prevalent, but perhaps least significant, uses of computers in legal practices. This is not to say that their impact will be altogether negligible. Anything that increases the productivity of attorneys potentially contributes to an 'oversupply.' Moreover, the more routine the preparation of legal documents becomes, the more likely it is to be handled by either non-lawyers or mass-marketed corporate providers of such services (e.g., "storefront" or shopping mall law offices). However, computers potentially hold more distinctive implications for the organization of the legal profession in the areas of legal research and litigation support.

D. Legal Research

Legal research is simultaneously one of the most onerous and exacting and one of the most important tasks facing practicing attorneys. It involves examination of the enormous volume of case materials and commentaries for precedents, supporting arguments and other authorities on potentially contested points of law. While law clerks and paralegal assistants can help in this area, it is almost impossible for a principal attorney to turn over this sort of research to others to the same extent as with routine forms to be filled out. The skills needed to search legal data sources efficiently are simply too complex. Furthermore, the lawyer would have to expend almost as much effort in explanation as in the search itself. The time lag between sending an assistant to hunt for a certain precedent and getting the information back is often too great; the information may be needed immediately in order to help deal with a problem in constructing an argument. The chain of thought may be broken by delay. Computer searching can cut the time lag dramatically and deal with a volume of documents too large for even the best legal researcher to handle without machine aid (Kearly 1980; Christensen 1980; Rodgers 1982; Schept and Johnson 1980; Andrus 1981; Sprowl 1981; O'Connell 1984; Kauffman 1985). Apparently as a matter of sheer preference, not primarily on economic grounds, a number of prominent lawyers (including Supreme Court Justice Powell) choose to do their own computer work (Johnson 1985).

The legal background of any particular issue is almost as broad as an attorney wants to make it. By convention, the extent of legal research is held down, and certain precedents gain favor with the courts. As long as their favored position is intact, researchers do not look far beyond them. But eventually, the courts may change their standard rulings—often because clever lawyers have appealed to other precedents and persuaded judges that these are more significant, perhaps because they are more in tune with the times. A new genre of cases may lead lawyers to call on a long-dormant series of precedents.⁴ It is a rule of thumb that precedents can always be found to favor either side of any serious case. The pos-

sibilities opened up by computer legal research may well bring many more of the conflicts among laws and judicial rulings to the fore, by making it easier for lawyers to find them and try to use them. At present, such potentially useful, and potentially conflicting, case materials and commentaries are buried in the records of the several federal courts, the fifty states, and the dozens of law reviews.

Increasingly, these sorts of materials have been entered into and/or indexed on computers. There are two major systems for computerized research in American law—Mead Corporation's LEXIS and WESTLAW, produced by West Publishing.⁵ Each system allows a researcher to search for case law, statutes, law review articles and other documents (see general descriptions in Kearly 1980; Sprowl 1981; Harrington 1985). Entries are indexed by title, other key words, and citations (that is, the system will tell the researcher what other court opinions or law review articles have cited a particular case). This is an obvious advantage for the attorney who wishes to draw on that case as a precedent; he or she will be able to ascertain easily whether more recent decisions have challenged, modified, extended and/or supported the original ruling. The capability greatly expands the ordinary lawyer's capacity to research the legal literature, since it reduces the extent to which each lawyer must depend on personal study and memory. The advantage of those most versed in retaining learning from the case law and recalling it at key moments is correspondingly reduced (though of course it is not eliminated, partly because such knowledge is useful in planning a computer search).

LEXIS and WESTLAW are expensive systems, requiring not just computers but payment of licensing fees of up to several thousand dollars a month, depending on usage rates. Nonetheless, they are advantageous enough to be widely adopted.⁶ Occasionally several small firms or solo practitioners share computer services, but independent ownership and access is more the norm. Several large firms maintain their own specialized legal data bases. These may involve particular branches of legal activity, or supporting data for a specific field of litigation (e.g., engineering and manufacturing data relevant to aircraft litigation). In other cases, attorneys may maintain data bases involving legal information not generally part of the public record, such as out-of-court settlements reported only in newspapers (Blodgett 1985). Many middle- and large-size firms delegate most of the maintenance and searching of these data bases to paralegal assistants. Others make data base management the responsibility of a lawyer (much as a lawyer might supervise a law library and manual legal research work). In still other firms, lawyers do most of their own searching (and in some cases, but less often, their own data base maintenance). The productivity of principal lawyers is apt to be increased substantially under any pattern of use, though each generates a different organization for the firm, and different opportunities for junior lawyers and/or other supporting staff.

At present, the benefits of this division of labor and the high cost of the sys-

tems make computerized legal research disproportionately beneficial to large firms (as Potash [1985] notes, though he sees increasing opportunities for small firms). One can, however, imagine a future in which costs of access are not so great, and computerized searching allows a small firm a more equal chance against a larger firm by eliminating the need for a battery of researchers and a large private legal library. Few signs of this sort of decentralization are apparent, however; the tendency is for the domination of substantial firms to increase, especially in corporate law, where the prestigious large firms have grown even larger and more powerful during the last decade (Nelson 1981, 1983). Indeed, computerization may be necessary for individual small firms and solo practitioners to keep afloat, and may thus spread among them, even while its overall impact could undermine their collective market position.

A shift in the division of labor and career structure within large firms is more likely than any 'decentralization' based on new competitive advantages for small firms and solo practitioners. Legal research has already become something of a specialty for some lawyers (and certainly for legal librarians, many of whom are trained lawyers). Large firms employ specialists to run their research operations. In the past, these frequently have been partners who have failed to bring in much business or to establish themselves in the more prestigious lines of legal work. Increasingly, however, they are lawyers with additional training in information or library science and/or legal research. Widespread computerization is likely to introduce further rationalization into these research operations. Where the leg-work of legal research is now generally shared among a large number of student law clerks and new lawyers it may become increasingly specialized. This would accentuate the distinction between research and other branches of the law. Legal research specialists may remain, by convention, lawyers or may not. Lawyers specializing in legal research may or may not be second-class citizens to their firms and profession. At present, they quite often are. Many now work in a relatively bureaucratized setting and primarily in the company of legal assistants, rather than with other lawyers in a craft setting.

As the number of legal assistants or paralegals has multiplied over the last fifteen years, numerous institutions have developed programs for training them. As the head of one such school sees the future:

Increasingly, the role of lawyers engaged in practice will change; a class of professional managers will emerge to oversee, coordinate, and administer law firms staffed with high percentages of paralegals, computer programmers, and other non-lawyer personnel (quoted in Lickson 1985, p. 25).

This is, indeed, a possibility. It is also possible, however, that in the long run computerization may offer some threat to the very paraprofessional roles which are growing alongside it.⁷ As computerization continues, and an increasing pro-

portion of lawyers feel at ease with the machines, much of the skilled but routine work legal assistants now perform could fall into the domain of the computer. Demand for legal assistants, in other words, could grow alongside computerization until a certain threshold is passed, after which it would decline rapidly. Computer-trained legal assistants may be most useful to an older generation of lawyers not prepared for daily computer use; younger lawyers, familiar with computers from childhood or college, may prefer to handle a larger part of their own data processing.⁸ Of course, it is also possible that a customary division of labor will stabilize before this younger generation of lawyers has much to say about it, or that the condition of keeping lawyers from being supplanted by paralegals is the reduction of more lawyers to a status resembling that of paralegals.

A second major implication of widespread computerization of legal research is that the standard pattern of legal apprenticeship is likely to change, and with it a key way in which new lawyers learn their trade. In large firms, new lawyers often spend a major part of their first years doing research and preparing briefs. In this way they hone their writing skills, develop a more extensive familiarity with the key case law underpinning their particular branch of legal work, learn the style of the firm for which they work and the specifics of the cases which form its major business. At the same time, partners get a chance to observe their work and decide which of them will advance in the firm. With computerization, however, employing new lawyers in this fashion may become an increasingly inefficient way for law firms to get their research work done. If these developments lead to significant changes in hiring and early work experience, training patterns also will have to change. Some of the new demands will be substantive, and may be met readily by law schools. For example, new lawyers probably will have less need for purely rote learning than their predecessors, since they too will be able to rely on computers. Legal reasoning itself depends, however, on familiarity with the substantive law. It is difficult to think without basic information in one's head to think about. Training in legal research, manifestly focused on finding appropriate cases, also provides lawyers the basis in memorized case contents for subtle, especially analogical, reasoning. To learn only how to find precedents and not what contents and reasoning they embody would impoverish the intellectual capabilities of future lawyers. There is danger, perhaps, that lawyers supported by computerized research will come to think of the case law in an increasingly static manner, as though it is simply so many citations of precedent, rather than the stuff of argument. This would further a reification already present in much of routine legal work.⁹

It is also likely that the diminution of this sort of apprenticeship role would further reduce the opportunities for graduates of less prestigious law schools to move into the upper ranks of the legal profession. Many prominent firms now take on a few as beginning lawyers, hoping perhaps to find a star amongst them and planning in any case to benefit from their relatively cheap labor for several

years. If the ranks of clerks and associates are thinned by computerization, prestigious credentials may become even more vital prerequisites for entry into elite segments of the bar.

Computerized legal research will, thus, offer some new challenges as well as many new benefits to the legal profession. Its major impact is likely to be simple cost savings and potential reorganization of legal firms in order to take maximum advantage of them. This will reduce the demand for conventional lawyers, even if the demand for legal services continues to grow. It seems very unlikely that computerized legal research will fail to become a virtually universal part of legal practice; indeed, there are even suggestions that lawyers who fail to take advantage of available computer resources may be vulnerable to legal malpractice suits (O'Connell 1984).

E. Litigation Support

A more substantive impact is likely to be seen in litigation, the specialized branch of the law involving actual court cases—the filing of lawsuits, courtroom activity and preparation for it. In a sense, computerized legal research is a part of this, since much of it is done for the preparation of briefs in lawsuits and other potential court cases. The use of computers to support litigation, however, goes far beyond automating references to legal sources. It includes the use of computerized evidence (both data stored on computers and formal graphic representations), control of the documents that are generated during the investigation and the discovery phases of litigation work, and the use of computerized statistical analyses in court.¹⁰

While litigation is only a small part of the work of the average lawyer, it is at the core of the profession and carries considerable prestige. Personal injury and corporate litigation are among the most lucrative branches of legal work (though the former is much less prestigious, especially on behalf of plaintiffs). It is litigation which ultimately establishes points of law by bringing them to the courts for test. Changes in litigation are therefore of great importance for the entire profession. They are also of considerable importance for society at large because of the high cost of litigation, the vaunted litigiousness of Americans, and the frequently long duration of cases involving large corporations.

Litigation, in this context, is not to be confused with trial practice. The latter is only a small portion of the overall process of litigation.¹¹ Much more time and money are spent on research, the preparation of briefs, discovery proceedings, interrogatories, negotiations and general jockeying for position among the parties to a litigation. A complex lawsuit will often be years in preparation; meticulous data gathering and considerable drudgery will be interrupted by only a few brief moments of court appearance. In the case of a complex tort, such as an airplane crash, it will often take years simply to lay the groundwork for any suit which ultimately goes to trial (and even out-of-court settlements may come quite

late in this process). It will take some time for each of the many potential parties to acquire counsel, either directly or through their insurance companies. Potential defendants include the makers of each part which might have failed, and of the whole airplane, not to mention the pilot and the airline. Potential plaintiffs will include primarily the passengers and their dependents, most of whom will generally contract for representation by different local counsel. All these various legal representatives will have to spend some time coming to agreements with each other as to how the case is to proceed. Eventually, the plaintiffs will probably unite in a common lawsuit or package of suits, and secure the collective representation of a firm specializing in aviation and/or personal injury work. The particulars of the accident will determine just how much potential defendants share liability, and how likely they are to enter into a joint defense. Simultaneously with all this preparation, there may begin to be some motions in court, such as attempts to have trials heard in particular jurisdictions where the terms of personal injury settlements are of particular advantage to one side or the other.

Various attorneys, meanwhile, will have begun putting together files of information on the case. Such documents may already number in the tens or even hundreds of thousands *before* the final trial counsel and court have been established. When these are known, a new flurry of legal maneuvers is likely to begin, with a multitude of purposes. Each side will be engaged in earnest investigation of the facts of the accident, the likely testimony of knowledgeable persons, and the content of such official documents as the reports of investigators from the Federal Aviation Administration. Each side will not only accumulate its own data, but seek to gain the upper hand in the impending trial. Discovery often requires formal motions to be heard before the trial judge, and thus gives lawyers the chance to test each other out.

During such proceedings, trial court judges may keep a close rein on proceedings, or let them range freely, sometimes losing control. How well a trial judge is able to stay on top of the proceedings is often a major factor in determining the duration of the proceedings. This of course implies that the judge is also keeping track of all the mounting volume of evidence. This evidence, together with the records of various steps in the legal process, may now run into the millions of pages in a major case. This is true not only of an air crash, or other personal injuries, but of a wide variety of cases, perhaps most of all, of antitrust litigation. In the 1970s, a commercial case became famous as a symbol of this overwhelming volume of evidence. San Francisco's Bay Area Rapid Transit Authority sued the engineering and construction firms involved in the building of its rail transport system. Pretrial work alone accumulated a million and a half pages of evidence. Considered astounding at the time, such figures are now frequent, and were dwarfed by the antitrust proceedings against IBM and AT&T. In many cases, the greatest portion of legal time and expense is spent on gathering, analyzing, manipulating and using documents, records and other evidence.

There are interviews with witnesses, statements of product specifications, evaluations by experts, interrogatories to and from opposing counsel, and so forth and so on. In corporate cases, numerous records compiled by the parties to a lawsuit in the course of their regular business become crucial evidence. A product liability suit, for example, must generally involve some demonstration of negligence or malfeasance on the part of the manufacturer. It must be shown that the manufacturer could reasonably have established the possibility of the harm caused by the product, or better still, knew of the likelihood but acted in disregard of that knowledge. This involves a complex inquiry into the state of general knowledge, scientific knowledge, and the specific knowledge of key actors in the firm. Where the injury stems from events long past (as in the case of diseases such as asbestos and many cancers, with their long latency periods) the complexities of the evidence-gathering process are multiplied, as plaintiff attorneys attempt both to find out what potential evidence exists and to bring order to what they have discovered.

Computers are a crucial part of this sort of litigation. In most cases, they simply make easier a lawsuit that would have been carried out anyway. In a good many cases, however, they make the modern lawsuit possible; it could not take place in anything resembling its current form without computer support. This is made evident by the error of a group of attorneys, naive about computerized data files, who won discovery motions giving them access to evidence compiled by their opponents, but failed to specify that such evidence be in computer-readable form. The opposing attorneys delivered a truckload of printout, quite beyond the resources of the original firm to analyze. The attorneys faced with the mountain of paper went back to court where the judge ruled, in a precedent which has been widely sustained, that such computer-generated data must be provided to opposing counsel in computer-readable form (Niblett 1980, p. 12).

Litigation work often calls for considerable tailoring of computer systems to the needs of particular firms, and even the design of new data bases for major new cases. While conventional graphics, spreadsheet and data base management software meet the needs of many law firms, much more sophisticated and complex systems have also been developed (Allen 1984). There are a number of companies which now specialize in providing computerized litigation support services to law firms not in a position to hire full-time specialists of their own (Niblett 1980; Gemignani 1982; Potash 1985). A number of reports indicate that it is well worth lawyers' money to hire such consultants, rather than to spend their own time and risk their cases on autonomous systems development in the often frustrated hope that it will be cheaper.¹² There are a number of tricks to the trade of litigation support, just as there are to litigation itself. Indexing systems must be highly complex in order to provide flexibility, allow for several levels of inquiry, and be capable of readily identifying data which only turn out to be relevant very late in the course of a lawsuit. Much money is saved by beginning

computer coding and indexing at the very start of an investigation, rather than first compiling part of the information by hand and later hiring a computer specialist.

Computerization is important first and foremost because document control permits better legal pursuit of the case at hand. Fast document retrieval is not only a money saver, but often enables lawyers to get effective access to their complex records while under pressure in the middle of a trial. Not only can data be retrieved readily, but it can be synthesized so as to ease the study of relationships among many bits of information. A simple example is the combination of responses by numerous individuals to similar questions in depositions, or by opposing counsel to a series of interrogatories on different documentary or other evidence. The computer can easily put these together by issue, giving much more relevant information than any filing by deponent or document title. The computer can also search for correspondences in seemingly unrelated text, potentially turning up completely new leads. It is easy, for example, to correlate background information on numerous corporate employees, or to examine simultaneously the records of several subsidiaries of a large firm.

One of the less obvious benefits of a well organized document retrieval and indexing system is to reduce the impact of turnover of professionals working on a single long-term case. A major antitrust case, like those between the Justice Department and IBM and AT&T, can last for over a decade. Every time the lawyers working on such a case change, there is considerable potential for disruption. Time can be lost, and more importantly, as long as key data are only stored in the heads of individuals, legal advantages may be lost. The key to minimizing the effects of turnover is good documentation. The best computer system is still weak if its procedures are not written down clearly and comprehensively for each new user to study. In computer control of evidence and other documents, numerous decisions will arise about how to code ambiguous or multireferential texts. The first rule is to code in as many ways as seem plausible for ease of retrieval later. The second, and perhaps even more important, is to keep a good record of the procedures used in deciding ambiguous classifications.¹³ This is not only helpful advice for in-house practice, but a necessary basis for defending in court the legitimacy of any computer-produced summaries of this information which attorneys may wish to use as evidence (see Kelman and Sizer 1986, and further discussion below).

Document control also can help increase security over confidential and/or prejudicial documents. This can be particularly important where large numbers of clients' business documents are necessary evidence in a case. Where this last is true, law firms often need sufficient data processing expertise to carry out good interactions with their clients' own data processing departments. The lawyer's relationship to a client firm is thus made more complex by the introduction of a need for access to computerized information. All this, however, is largely just an

offshoot of the general growth of computerized information control systems. Complex litigation is partly the *result* of this capacity for information control.

II. JUDGES, LAWMAKERS AND COMPUTERS

Computers have legal implications well beyond even these numerous issues in legal practice. At both European and American law schools and research centers, for example, there are experiments under way in representing and manipulating law itself by computer. This is being done first and foremost for statute law. The aims are not simply academic, but include attempts to improve the clarity and logical quality of legislative drafting. Some of these attempts involve the use of artificial intelligence programs to project possible interpretations of laws, and formal logic to clarify the phrasing of laws. Computer simulations make it relatively easy to generate numerous variations of the situations in which laws might come into effect, and thus can greatly supplement the human imagination in forecasting potential anomalies or ambiguities. Researchers seldom ask, however, whether clarity is as supreme and unchallengeable a virtue as legal thought and common sense generally assume it to be. A good case can be made for the flexibility and durability allowed by the ambiguity of certain general legal rules. This is another case in which computerization may tend to foster a reification of legal rules, discourse and practices (see note 9 *supra*). That rules and precedents change in significance from generation to generation, and possibly from community to community, does not necessarily render them suspect. It may be crucial to the life of the law—especially the ever more circumscribed common law—that such ambiguity remain, and such reinterpretation continue.¹⁴

The widespread use of computerized evidence also raises some important questions about judicial procedure. One of the most basic of these concerns whether computer-produced reports should be taken as “objective” and accurate evidence. Allen reports that the California Evidentiary Code:

exempts computer-recorded information and programs from the requirements of the “best evidence” rule. The section provides, in part, that: “Printed representations of computer information . . . will be presumed to be accurate representations of the computer information . . . that they purport to represent” (1984, pp. 499–500, quoted Cal. Evid. Code Sect. 721, 801(b) and 802).

It may be plausible enough to regard printed copy as accurate representation of machine-stored data (though questions about selection of data for printing presumably arise). Allen suggests, however, that the Code’s opening to computer-produced representations of data goes further than mere file-dumping. He suggests, for example, that attorneys may want to use computer-produced graphs instead of tabular presentations, and that the Code allows such conversions with-

out producing specific evidence as to accuracy. As computer manipulations of data presented as evidence become more common, judges will also need to wrestle with questions of the accuracy of the data stored in computers themselves. To take an extreme example, Allen (1984, p. 508) suggests that under some circumstances it may be appropriate to offer as exhibits computerized summaries of certain records, as well as computer-generated graphic presentations. Especially since he envisages these to be constructed, in part, on the basis of legal assistants' summaries of original verbal data (and presumably transcriptions of quantitative data), it would be wrong to assume that the new form of representation does not alter the meaning of the evidence. This is not just a matter of new opportunities for error—as in the case of any transcription of data—but of conscious or unconscious selectivity in the preparation of summaries. Virtually any selection of data for entry *into* the computer will embody some biases; these will be transmitted to the output no matter how much care is taken to be 'objective' in generating reports.¹⁵

Computerized evidence also raises questions of judicial independence. To what extent should judges be forced to rely on computer resources maintained by others? Is it appropriate for criminal judges to be dependent, for example, on the criminal justice agencies which are part of the prosecutorial effort in most criminal cases? On the other hand, does it make sense for completely separate computer systems to be provided for the judiciary? The cost would, of course, be considerable. These questions were considered in connection with the federal government's Project Search, which attempted unsuccessfully during the late 1960s and 1970s to develop a unified criminal justice information system for the country (Weinstein 1976). While Project Search failed, the desire of some federal agencies and other organizations for a computerized national criminal information system continues, and new proposals have been generated recently. The interests at issue include not only those of the judiciary and the public, but also the numerous federal, state, and local agencies that have a stake in the nature of criminal justice information gathering and use. The problem of judicial information control could be eased by increased use of computerized telecommunications (telematics). A judge with only a microcomputer could draw on data stored in large (and physically remote) central computers. Along with local law enforcement agencies (which are also concerned about overcentralization of information processing), judges could maintain considerable autonomy by using their own computers for analysis of data drawn from a network of central data bases. The prospective efficiency of centralized record keeping keeps this issue alive; if judges (and others) want to maintain autonomy, they will need to prepare for their own computer operations and lobby effectively for a network arrangement which grants them satisfactory access and possibly collective control over such information resources.¹⁶

III. COMPUTERS AND THE RELATIONSHIP BETWEEN LAWYERS AND CLIENTS

Computers offer advantages to lay people as well as lawyers. When lawyers, for example, use computers to prepare clients' tax statements and create long-term projections, they may increase their own productivity, but they do so in a way which enables their clients potentially to bypass them altogether. Specialized and valuable tax information might no longer be the exclusive preserve of lawyers and accountants (though, as Freidson [1986] notes, lawyers do constantly produce new sorts of esoteric technical knowledge to inhibit this process). These sorts of innovations would seem most to challenge small firms and practitioners working on more or less routine legal matters. Though corporations could make use of similar computerized resources to enhance the productivity of lawyers they hire, they are unlikely to bypass lawyers altogether.

Public organizations as well as commercial vendors might make information on rights at law and possible courses of legal action commonly available through computers.¹⁷ This could enable citizens to handle a variety of routine legal affairs on their own or with a minimum of professional assistance. The American Bar Foundation has already supported the development of software to assist in such functions as repetitive client interviewing and document drafting (Sprowl 1979; Sprowl and Staudt 1981). Advances in such systems are continuous. Since Sprowl and Staudt report that beginning law students can learn them easily, it is readily imaginable that they could be used (perhaps in modified form) by nonlawyers. Individuals without formal legal training could prepare routine wills, for example, or complete many of the documents necessary to standard real estate transfers. Telematic linkages could provide citizens with the ability even to argue certain of their own cases in court—especially through a more effective use of small claims courts. This could not only help to empower citizens, but ease the clogging of other courts. The Canadian government has already begun to supply a variety of such legal information through Telidon, its videotext system (Stokoe and Federico 1984; this effort has been developed especially far in Manitoba where agricultural authorities have seen it as a means of assisting dispersed farmers). Such a system could be interactive, soliciting data on grievances and evidence, and responding with procedural and substantive legal information. In other, more complex cases, such systems might help an individual at least partially to prepare his or her own case for pleading by a professional.¹⁸

A variety of possibilities seem open for computerized dissemination of legal information. In general, these would empower ordinary people to act as their own attorneys on routine matters, and to better understand and monitor the performance of their professional attorneys when it was necessary for them to hire one. As with legal clinics and other recent changes in the delivery of legal ser-

VICES, we can expect considerable resistance on the part of some sections of the bar. But we can also expect that other lawyers will be eager to develop those systems from which they can make a profit, those which make their own practices more efficient or allow the creation of new legal service providing businesses. State and federal governments may or may not choose to promote possible computerized legal information systems for public use.¹⁹ Whatever the government role, at least some of these sort of services will be provided in gradually improving quality by private vendors. Existing for-profit computer information networks already offer rudimentary versions.

Widespread lay familiarity with computers may possibly help to "open up" professions and bureaucracies. Fewer and fewer people think of computers as simply one more area of specialized knowledge from which they are excluded. Already, the mystique of the machines has been sufficiently eroded that lawyers' clients no longer put up with being billed *extra* for word processing when it in fact *cuts* law firms' costs.²⁰ As clients become aware of the ways in which computers help lawyers with their jobs, they often have the option of letting computers, instead of lawyers, help them with their problems (at least in so far as they require information, correct documentary forms or the like, and not actual representation in court or in legal transactions). Nonetheless, it seems unlikely that the distinctive professional status of lawyers will altogether give way. Haug (1977) is wrong to suggest that lawyers as a whole are losing their autonomy, authority and privileged market position as a result of losing a knowledge monopoly. Only a segment (perhaps a growing segment) of the legal profession is so challenged.

The usefulness of computers is too great for professionals simply to ignore them. Those lawyers, for example, who introduce computer technology gain a competitive advantage over those who do not. Stubborn resistance and/or careful planning may shape computerization but are unlikely to prevent it.

IV. CONCLUSION

The growing use of computers needs to be considered as part of a continuing transformation of legal practice (Auerbach 1976; Heinz and Laumann 1982; Powell 1985; Abel 1986). An ever greater division of labor, increases in the size of law firms, and growth in the extent to which legal practice is subject to bureaucratic controls (both within employing organizations and from outside) are key aspects of this transformation. Computers will, we think, reinforce these trends, not just because of their intrinsic nature or capabilities, but because they will be put to use by lawyers making decisions on the same bases and under the same pressures which have already produced these tendencies. In general, we predict very divergent impacts of computerization on lawyers at the top and bottom of the profession's hierarchy. Computer use may increase the earning power and reduce the drudge work of some lawyers. Others, however, will find their own

skills and credentials partially devalued by the increased productivity which computers offer the profession as a whole. The well-off are likely to be those who are already well established, and who either own or are partners in firms or have specialized, nonroutine skills (e.g., courtroom lawyers, or those who interpret ambiguous legal cases). Those underemployed, or pushed to the margins of the profession, will tend to be those who came on the scene most recently, whose credentials are least prestigious, and whose skills most depend on the accumulation of knowledge (both their memorized knowledge of the law and their ability to marshal evidence for a case) rather than on insight, intellectual ability, or other talent.

This means that the legal profession is likely to experience further polarization, in which its best qualified and luckiest members move into even more attractive positions with the aid of computers, while the less successful find computers devaluing their training or skills and allowing competition from various sorts of paraprofessionals. This will happen because computers help to increase professional productivity, allowing fewer people to do the work previously accomplished by many. This may reduce the cost of legal services and allow the public to purchase more; other social changes may produce a higher demand independently. If demand increases for either sort of reason, the number and rewards of jobs at the top will increase, but computers will do much of the routine work which now occupies a large percentage of the time of the average professional. The people who run the computers usually will be less skilled and less well-paid than the professionals being made obsolete.

A particularly interesting question is what effect growing computer use will have on the burgeoning ranks of legal assistants and other paraprofessionals.²¹ Will they become intermediaries between lawyers and computers, doing the actual research and data processing? Or will computers (and a new generation of lawyers familiar with computers) reduce the demand for legal assistants? In either case, the question can only be answered by considering the division of labor in legal practice simultaneously with the growth of computer use.

Computerization in legal practice must be considered against the background of growing bureaucratization. A great deal of individual autonomy has always been one of the key characteristics of professional work.²² Professions have succeeded where most crafts, especially in manual commodity production, failed. They have maintained peer review within a community of honor as the primary mode of regulating their members' performance. Until recently, most professionals have been free of direct managerial supervision. This has been almost a definition of professional status. Supervision was associated only with the training of young "apprentice" professionals. But now, more and more professionals are employed as agents of government, business corporations and other large-scale formal organizations.

Lawyers—a paradigm case of professionals—work not only in very large law

firms, but in bureaucracies. They are functionaries of large-scale social organizations even where they are not employed by them, for a great deal of their work has to do with the constitution and regulation of relationships among the various actors who make up such large-scale systems. Law is being transformed from a craft business into big business, signalling the decline of the autonomous individual lawyer. Besides the increase in large firms with traditional partnership organization, a growing number of prepaid legal services plans, in-house corporate lawyers, and chain-operated storefront (or shopping mall) purveyors of legal services indicate the conversion process (Heinz and Laumann 1982; Powell 1985; Abel 1986; Spangler 1986).

Within these large organizations, professionals often find their work subjected to new standards of economic productivity, increasing division of labor and almost unprecedented direct supervision. Other pressures, like increasing numbers of legal malpractice suits and more frequent judicial monitoring of legal fees in tort settlements and some other litigation, heighten the external scrutiny imposed on the individual lawyer. Specialization introduces a further hierarchical split. In some areas of the law a generalist is increasingly cast in the role of a junior lawyer who handles only routine matters and establishes which more complex problems should be referred to others.²³ Computers, we will suggest, seem likely to reinforce or facilitate most of these existing tendencies. This is not to say that computers could not be used to foster decentralization or to help solo practitioners maintain or regain prominence vis-à-vis large firms; they could, but the most significant choices about how to use computers do not seem to be pushing the legal profession in that direction today.

The computerization of professional work like that of lawyers suggests how new technology can transform "service" work. Some visions of a "post-industrial society" suggest that automation will eliminate much industrial and other manual labor, and that most people will come to work in relatively collegial settings (Bell 1973; see also Badham [1984] for a general review). The practice of law is a quintessential example of information work, but one must not forget that computer technology holds at least as much potential for automation and change in information work as in manual work. Computerization is one of many factors contributing to a reorganization in the direction of the same sorts of large-scale, bureaucratized organizations as have long characterized industrial work. Lawyers may remain a relatively privileged social group, but they are likely to work more often for salaries in organizations selling their services as commodities, rather than on a fee-for-service basis directly for clients (Spangler 1986). How much this matters is subject to debate (cf. Freidson 1986, pp. 123-5) and depends largely on the extent to which the vast majority of nonelite lawyers can maintain their market power based on scarce credentials and institutional control over formal knowledge. If employers (or others) wish to subject lawyers to increasing scrutiny and performance monitoring, computerization will facilitate their task. It will also make it more likely that legal practice will be

rationalized and evaluated on criteria of formal efficiency. In short, even the privileged information occupations are not likely to offer all their members the sort of "university-like" environment which Bell (1973, 1980) expects to characterize life in an information or post-industrial society.

Professionals are being challenged by the very machines which aid them and save them time. As their productivity increases, lawyers and other professionals are coming into increasingly acute competition with each other. In a variety of professions, restrictive associations are finding it harder to secure high pay by restricting supply; the ABA has already lost this battle almost completely (Halliday 1986). Consumers may benefit from lower costs, but also sometimes suffer from standardization of products or services. Up to now, the use of computers has reinforced tendencies towards specialization and bureaucratization; it has undermined traditions of direct relationships with and service to clients. There are possibilities for increasing client autonomy and/or control over lawyers. Not all clients are individuals, however; corporate clients may be in a position to exercise much more stringent control (Heinz and Laumann 1982, pp. 379-85) and to make better use of computers as tools for this effort. The computer also holds the potential for close monitoring of the performance of lawyers employed in bureaucratic organizations. Neither of these possibilities has yet seen much realization. The shift to new technologies is, however, occurring in ways which favor the incorporation of lawyers into large-scale businesses, whether conventional partnerships, corporations to "mass-market" legal services, or legal departments of organizations of other sorts. Increasing routinization and control frequently have followed close on the heels of such changes in other occupations.

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NOTES

1. An *American Bar Association Journal* survey found that 56.4 percent of lawyers used computers at the end of 1984 (Johnson 1985). Presumably the proportion has increased since then.

2. Physicians were not slow, of course, to introduce highly sophisticated computer-based technology for clinical use in hospitals; computerized axial tomography (CAT scans) are a familiar example. Physicians were, however, slow to extend the use of small computers beyond business aspects of their practices, even in fairly large group practices (Shield 1982; Pringle, et al. 1982; Levinson 1983, 1985; Anderson and Jay 1985; Carson and Cramp 1985). This is true despite the enormous investment of the government and other funders in medical information systems development and artificial intelligence research on diagnoses. In the authors' computerized searches of the literature on computers in medicine, fewer than 10 percent of the references refer to clinical rather than clerical uses. In similar searches of the legal literature, the percentage is more than doubled.

3. For general reviews of the legal use of computers, see Niblett (1980); Gemignani (1981); and miscellaneous issues of the *Computer Law Journal*. Articles focused on practical aspects of computer system choice and implementation appear frequently in magazines focused on legal practice. Prominent early examples included Kozak, Foster and Louder (1980) and Hoffman (1982). Landsburg (1981) offered a prominent early synthesis.

4. Though any good legal history will discuss key examples of this process, Levi (1949) remains the classic account.

5. LEXIS and WESTLAW have each been extended in preliminary ways into other legal systems, including the British, Australian, and Canadian. The European Economic Community has thought computerized legal research sufficiently important to establish a working group for the automation of EEC legal documentation. This involves more complex problems than those noted above. Britain, Australia, Canada and the United States share a common legal tradition; the EEC members diverge a good deal more. Language differences also make a common searching system much more difficult to develop. Nonetheless, the effort is making some progress, and seems to have the solid backing of Commission lawyers. In the short run, it appears that at least the Community's own laws can be documented sufficiently for computerization, thus making it easier for the lawyers of different countries to prepare cases for trial before the European courts. See the discussion of these issues in Niblett (1980).

6. They are highly profitable for their producers despite high initial investments in entering data. There is little enough competition in the field (partly because of those high entry costs) that Mead and West are clear oligopoly suppliers and able to sustain high profit margins. *Fortune* magazine (1982) has reported on the extraordinary cash flow Mead is able to derive from LEXIS.

7. Consider risk assessment, a previously labor-intensive task frequently performed by law firms for their corporate clients. In the words of one attorney from a 140-lawyer corporate firm:

In the past, litigators doing risk analysis would have their paralegals grinding away at it for a long time, but now a litigator can sit down with a computer worksheet and change the assumptions, looking at the alternative hypothetical situations (Blodgett 1985, p. 18).

8. Lawyers are more likely to want to do their own research than their own data base maintenance. A related question is whether legal assistants will succeed in maintaining a real occupational distinction from skilled legal secretaries.

9. This reification consists of the tendency to treat legal phenomena—e.g., contracts—as fixed things rather than processes, actions or social relations. The performative aspect of law and particular legal actions is lost (see Weissbourd and Mertz 1985; Weissbourd, n.d.; see also Samek 1985 on what implications conceiving of law as communication may hold for the legal use of computers). Though computers need not exacerbate this tendency, they easily could. Some of the same sort of reification occurs in many of even the most sophisticated experiments in “artificial intelligence” (Dreyfus and Dreyfus 1986). There are various efforts to use computers as aids to legal reasoning, much on the model of medical diagnostic programs (Stumper 1980; Niblett 1980; Fennel 1985). Whether these are to be treated as guides to legal analysis, or after-the-fact checklists to help catch omissions or errors, is an important question (see Kerr 1983 for a brief comment on this differentiation in medical diagnostics; and, for a critique of AI efforts in legal reasoning, Moskatel 1985).

10. Articles on various aspects of computerized litigation support include Fleming (1980); Biro (1981); Kinney (1980); Allen (1984); and Potash (1985).

11. As surgery is in medicine, trial practice is a very atypical, if important, legal specialty. It is highly specialized, even down to the kind of cases (e.g., asbestos-related diseases) which attorneys take on. It has its own prestige hierarchy and performance criteria largely distinct from those of the rest of the profession. “Live” courtroom performance (like the manual dexterity of the surgeon) may be in part a gift, or an art which cannot be treated or taught as formal, explicit knowledge but must remain tacit.

12. The temptation to try autonomous systems development was greater in the early years of computerization, when the lawyers who used computers were often those who had a hobbyist's interest in the machines, or hoped to market the software they developed to other lawyers. The temptation is reinforced, however, by the reluctance of professionals to depend on highly skilled services outside their own fields. This has been even more of an issue for physicians, who are generally used to unquestioned authority, and who find it difficult to adjust to relying on a technology that forces them to depend so much on a non-medical expert.

13. Allen (1984) offers one of the more serious discussions of in-house data base management and document retrieval systems for use in legal practice; see also Niblett (1980). Social scientists will notice the parallel with survey research and other projects involving large data sets which often must be coded and indexed before they are well understood, and before all the questions to be asked of them are known.

14. On the need to maintain life in common law, see Calabresi (1982). The question of whether computer use, and especially artificial intelligence simulations, will tend to fix legal discourse on an arbitrarily narrow range of interpretations touches on a major debate in Anglo-American jurisprudence. Though everyone agrees that reinterpretation goes on, there is considerable dispute about whether there are *in principle* clear-cut "right answers" to all difficult questions. The most important modern positions are those of Hart (1961, 1977) and Dworkin (1977, 1978, 1984, 1986). Hart holds that laws are essentially the positive acts of duly constituted authorities; these may be more or less clear, but some degree of judicial discretion is always necessary. Dworkin argues that law must include reference to fundamental rights, not just enacted rules. The consideration of these rights is frequently necessary to settling hard cases; though appeal to rights may be difficult and full of debate, judges nonetheless are under an obligation to present their findings as the right answer to the case at hand, not the product of mere judicial discretion. Legal realists like Levi (1949; also personal communication in the Seminar on Language, Law and Society, University of Chicago, 1983) argue that the philosophers are confusing the issue by drawing a contrast between logic and actual legal method, which is a disservice to both and which fails to recognize that the law is "an ever-changing process in which the community participates. Computerization, in law and other areas, tends to follow the presumption that practical ambiguities result from intellectual confusions and are potentially eradicable. It also encourages a reified view of 'facts' as given, external to individual consciousness or action, and available in the world for discovery and/or technical mastery. This is not simply an intrinsic difficulty with computers, however, but a result of their use within the modern Western (and especially Anglo-Saxon) technical orientation to knowledge. Turkle (1984) points out that children learning to use computers in relatively free environments develop different styles of mastery, with only some fitting the model of narrow technical accomplishment characteristic of most adult computer-users.

15. Computerized summaries of interrogatories and/or any other verbal data will, at least, need to be treated with some of the same sort of care with which social scientists have learned to treat survey responses; see Schuman and Presser (1982).

16. Of course, judges may also benefit from many of the same computer uses as lawyers in private practice. Such managerial uses as scheduling, keeping track of summonses and the like are already becoming fairly common. A somewhat more advanced use is telematic linkage among geographically dispersed judges. Early experiments concentrated on document-processing efficiency, not such other possible benefits as increased collegiality, but they found striking gains. Studies of the system of remote word processing and electronic mail facilities introduced in the Third Circuit Court of Appeals, for example, show a 300 percent increase in secretarial productivity, a 52 percent reduction in the time required by the court for preparation of *per curiam* opinions and 25 percent for signed opinions, and an increase of 85 percent in speed of document delivery over postal service delivery (Nihan and Wheeler 1981).

17. Prospective recipients of public aid, for example, could go to the computer (with a great deal of privacy), explain their situation to it and enlist its help in claiming all benefits to which they are entitled. No bureaucrat and no paper shuffling need be involved. More benefits might be provided to

the needy at less cost to the taxpayers. This scenario depends, of course, on some very improbable assumptions. First, such prospective aid recipients would have to feel at ease with computers. Computers, however, are largely absent from poor homes and the schools that serve primarily poor children. This—and for that matter ordinary as well as computer literacy—would make it likely that some bureaucratic intermediary would still be required, even if computerized systems were deployed. Second, the privacy suggested in the text would depend on the government refraining from any attempt to use data generated from such interactions as part of an intrusive centralized bank of personal information. Both the Carter and Reagan administrations have shown themselves eager to introduce computerized file-matching systems to link federal data banks for purposes of bureaucratic monitoring of individuals.

18. In other words, ordinary people could act on their own behalf much as a solicitor acts in the British legal system. Such a procedure, or, more likely, the increasing separation of legal research from trial practice, might make the American bar come more to resemble the British, with its distinction of solicitors (who offer advice, execute documents, and take cases from the public) from barristers (who plead cases in court and are generally hired only through solicitors). While the solicitor's end of the work might become heavily computerized, the barrister's seems less immediately vulnerable (see notes 5 and 14 *supra.*). For some speculation on how computerization might affect each branch of legal work in Britain, see Davies and Browning (1980) and Charlton (1980).

19. Attempts to reduce funding for or eliminate Legal Aid services suggest that there is little immediate prospect of major federal investment in such programs if poor people are to be the major beneficiaries. On the other hand, middle-class citizens would probably be those who would take most advantage of such information systems, and politicians are frequently quite sensitive to their interests.

20. That they were ever so billed is in fact remarkable, but see Bernstein, (1982). This sort of padded billing may have been a motivation for large corporations to increase the role of their in-house legal departments, a trend well underway which also increases the number of lawyers working for salaries in bureaucratic settings.

21. Legal assistants are the second fastest growing occupation of the 615 monitored by the Bureau of Labor Statistics; by 1982 there were 45,000 of them. The BLS estimates the addition of another 43,000 to their ranks by 1995 (Nardone 1984). This is a faster growth than that expected for salaried lawyers (Kutscher 1985). Legal assistants and salaried lawyers are, however, partially interchangeable sources of routine legal labor; which are preferred is largely a question of market cost, internal organization of law firms, and personal preference of senior lawyers.

22. See, in general, Collins (1979); Freidson (1986). The other identifier of professional status is a high level of formal education. Freidson and Collins agree that the use of educational credentials to establish institutional power over the market for professional services is crucial. Individual autonomy may be less a defining feature of professional work than a good widely desired by professionals and at least presently widely distributed among them. But autonomy of the profession as a whole—i.e., its self-regulation—is a key condition of maintaining its market power.

23. We refer to the United States. This is a split related to that formalized in Britain as the division between solicitors and barristers. It is not identical, however, for the elite bar in the United States is not identified primarily with trial practice, but rather with the range of issues grouped together as corporate law. Similarly, American legal generalists may go into court fairly frequently, but usually on very minor and routine matters.

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