LAW ADMINISTRATION

This article covers the use of electronics in law practice in the United States. To understand the subject better, there is a significant discussion of the unique characteristics of legal practice in the United States. The term *electronics* is used in the widest sense and encompasses the use of computers to manipulate words primarily. In addition, the use of electronics in the law is more of a practical application of the theory.

The legal profession has been both ahead of its time and behind its time in the use of electronic resources to assist in managing its information. The legal profession in the United States depends on the Common Law doctrine of precedents. In a Common Law country the decisions of a higher court govern the decisions of the lower courts. Combined with the laws and the regulations of the federal, state and local government, this produces a vast quantity of decisions, laws, and regulations that must be consulted before rendering a decision or giving legal advice. With the ever increasing flow of data has led the legal profession to adopt new technologies to manage this vast amount of information.

Over the centuries, American legal publishing has evolved into one of the best manually indexed field resulting primarily from the work of West Publishing Company and Shepards. West was the first publisher to publish systematically the state and federal decisions in 1876. The set became known as the National Reporter System. Before that, a lawyer had to rely on the court decisions that were published by a specific court, usually by the court reporters who made their living by selling the decisions. The other group of early legal books were codifications. Sometimes this was done by a government, such as the Code Napoleon. More likely, they were the treatises on a specific subject containing a report of significant cases. The primary universal codification was Blackstone's Commentaries that were first published in 1788 in England. Because the US legal system is based on English Common Law, the Commentaries became the standard legal treatise until a significant body of American law developed.

The concern of the lawyers is that the case being used to prove their point has to be "good law" meaning that the same court or a higher court has not overruled the decision subsequently. Shepards is the company that analyzes court decisions to determine if they affect previous decisions. The various sets of books of Shepards evolved into gigantic lists of tables that showed if a case was still "good law." They also indicated if the case had been cited (referred to) by other courts in and out of its jurisdiction.

Until the 1970s, the study and research into law required an ever increasing collection of books. This was an advantage for large law firms (more than 50 lawyers) because they could afford the high overhead of purchasing, maintaining, and housing the books. Solo practitioners and small law firms had to rely on bar association libraries or law schools to do their research. These law libraries usually required the services of professional law librarians.

The first successful use of electronics in the legal profession was the Ohio Bar Automated Research (OBAR) started in the late 1960s. At first, OBAR dealt only with Ohio law but it started to encompass Federal and other state materials. OBAR was acquired by Mead Paper and became Lexis/Nexis (Nexis is the nonlegal portion of Lexis). West, the largest US publisher of legal decisions, later created a competitor, Westlaw. Competition between the two created two vast databases of legal materials that are now replacing books as the primary place for legal research. Although both are full-text systems, Westlaw has a controlled vocabulary and digest system (3,4). There are two Internet services; Lois, www.pita.com, and Versus, www.versus.com, which offer lower but less expensive alternatives.

Both Lexis and Westlaw have developed enhancements to their on-line databases that also show if a case is still "good law." These programs rely on a computer analysis of the cases to determine if the case can be used as authority. These two programs have moved the researcher away from Shepards, but there is concern that neither program has the editorial work that made Shepards so indispensable (1).

Although West and Shepards were the first nationwide publishers, many more entered the field. Few matched the universal reporting, most developed subject-specific publications. These are extremely attractive to lawyers because they combine the laws, regulations, cases, and commentaries in one book or set of books. Because the law is constantly changing, most of the publications now are supplemented by pocket parts or are looseleaf publications, and the outdated pages are replaced with new pages containing updated information. Electronic databases eliminate the need for paper updates and they can be updated instantaneously but at a higher cost.

A legal citation is an abbreviated method of citing that is usually based on *The Bluebook: A Uniform System of Citations* (2). Because courts require official legal documents to provide specific citation information to any cited case, statute, or regulation, the legal profession has always relied on The Bluebook, which usually relies on West's National Reporter Systems volumes and pages. This has required any full text legal database to imbed in the electronic data information reflecting the material's location in the printed source. West's claim of copyright on its arrangement of printed material has forced competing vendors to either license the pagination information or challenge West in court. This litigation is still making its way through the courts.

The use of electronic legal information has transformed legal research in the last few years. The fundamental change is

that the traditional law library has shrunk in size and now lawyers can do a lot of their research through a computer that frees them from going to the library or even the office. For an in-depth examination of this change in legal information, see Ref. 5.

Until the 1990s, on-line systems were primarily full-text search engines that used Boolean logic to search their databases. Although Lexis/Nexis does not have a controlled vocabulary, it effectively competes against Westlaw that has a controlled vocabulary, indexing, digests, and headnotes. Westlaw was the first to develop an alternative to Boolean searching where searchers could phrase their questions in natural sentences. This was based on word frequencies and contextual searching. Lexis/Nexis followed with its own version. Although natural language searching is helpful to the infrequent searcher, the advanced searcher usually uses Boolean logic (1).

Both Lexis and Westlaw are owned now by international companies. Lexis/Nexis was purchased by Reed Elsevier PLC in 1994 and Westlaw was purchased by the Thomson Group in 1996. In addition, many of the other legal publishers have been bought out or merged. These two acquisitions along with the other mergers and buyouts have created a radically altered legal publishing field. It is too early to gauge the long-term effect of these changes but they have shaken researchers' confidence in the reliability of the systems.

The legal profession is also drastically affecting the use of electronics. Although it is beyond the scope of this article, it is important to mention a few items that could drastically affect the electronics. The US Department of Justice continues to investigate Microsoft for anticompetitive actions. They have the power to break up Microsoft, as they did Standard Oil because of its monopolistic practices. Although everyone is concerned with the year 2000 problem, there is a growing area of law that is trying to advise clients on how to cover their contractual obligations if their suppliers are not year 2000 compliant.

ELECTRONIC SOURCES OF LEGAL INFORMATION

The challenge for the law librarian and the lawyer is how to perform their legal research in the best but most cost-effective manner. The traditional model of the paper library is no longer adequate. Electronic sources of information have gone beyond novelty to necessity. Now a whole generation of lawyers training in electronic research is technologically very savvy.

There are three basic forms of electronic legal information, CD-ROMS, on-line, and the Internet. The characteristics and costs of each play a major role in how and when they are used. These sources must be used in conjunction with a paper library especially for the older material that is unavailable electronically. For a more detailed analysis of the advantages and disadvantages of the three formats, see Refs. 6 and 7.

The term CD-ROM is used to denote any published electronic information that can be placed on a network. While the majority are CD-ROMs attached directly to a network, a number of sources of information and expert systems are programs that are loaded directly into a network. The primary drawbacks of CD-ROMs are that each requires a separate drive and that they are by definition dated. Some vendors allow the CD-ROMs to be loaded into magnetic drives, which frees up the drives and increases the access speed. The current problem is partially solved by hybrid CD-ROMs that automatically dial into an on-line system for the latest changes. For a complete listing of CD-ROM titles, see Ref. 8.

The main on-line legal systems are Lexis/Nexis and Westlaw discussed previously. Lois and Versus are two other on-line systems that have migrated to the Internet for access. There are a number of legal publishers that now offer on-line systems of their data, such as the Bureau of National Affairs, Matthew Bender, and Commerce Clearing House. The primary drawbacks are the separate access needed to each system and the cost.

The Internet is transforming legal research the same way it has with many other disciplines. In addition to providing access to a wide variety of information, the Internet is overcoming the problems inherent in CD-ROMs and on-line systems. The Internet is accessible anywhere in the world and provides a common interface. CD-ROM publishers are using it to provide access to the user without having to maintain their own CD-ROM drives and towers. The on-line systems also provide access through the Internet, which eliminates or reduces the need to use their proprietary communication software. The fundamental question still remains whether the Internet can support the ever increasing load.

Instead of trying to decide which format to use, many legal organizations have developed all three. This allows them to move easily among the various formats depending on costs and user preferences. Access to all three formats also provide much needed redundancy (9,10).

ECONOMICS OF ELECTRONIC INFORMATION

The costs of acquiring, maintaining, and accessing electronic information in the legal field must be addressed from the onset. The costs for a paper collection were easily determined, and the training was done in law school. There are three main components in estimating the cost of electronic information: acquisitions, maintaining, and training.

Acquisitions. For CD-ROMs, the licensing costs for mounting the information onto the local area network (LAN) or wide area network (WAN) can easily exceed the stand-alone price. Even though the field is maturing, prices vary greatly. On-line services generally do not have a start-up cost but the average cost for Lexis and Westlaw is between $4 and $6 per minute. A multitude of packages also attempt to freeze the costs to the user while guaranteeing cash flow to the vendor. Although access to the Internet is controlled by the Internet service provider, access to many of the legal vendors' sites must be paid for. Again, the costs vary greatly among the vendors and even within a given vendor.

Maintaining. The hardware costs and time necessary to maintain CD-ROMs are generally buried within the IT department budget, but these can be high. Each vendor has its own access software, and a routine update can bring down the network. Thus, hidden costs are a primary reason for why access through the Internet is so enticing.

Training. The training costs in lost time can also be high. Each new CD-ROM update can require complete retraining. There can be dramatic variations even among CD-ROM vendors that use the same search software because of specialized functionality. The software to access on-line systems does not change as rapidly as the CD-ROMs but each revision can require retraining. The Internet offers uniform interface.

INTERNAL USES OF ELECTRONICS

To obtain a better understanding of the type of technology law firms use and are capable of using, the following summarizes what the top 100 law firms used in 1998 (11). The *American Lawyer* surveys the top 100 law firms each year and lists the top 100 law firms in the United States in the July/August issue of the *American Lawyer*. The top 100 law firms are also surveyed for their use of technology and the results are reported. (Note: The percentages may add up to more than 100 because some firms listed more than one answer.)

Dominant desktop PC	%
Pentium	73.1
Pentium Pro	17.6
486	6.7
Others	2.6

Network operating system	%
Windows NT	62.8
Netware	61.6
UNIX	11.6
Others	4.7

Laptops or notebooks instead of desktop	%
Yes	26.3

Voice recognition	%
Yes	32.2

WAN linking offices	%
Yes	71

SOFTWARE

Operating system	%
Windows 95	65.3
Windows 3.11	15.2
Windows NT	14.7
Other	4.8

Word processing	%
MS Word	58.1
WordPerfect	49.5
Others	1.1

Document management	%
PC DOCS	69.9
SoftSolutions	17.2
Others	20.5

Litigation support	%
Concordance	36.6
Summation	34.4
Litigator's Notebook	21.5
BRS Search	11.8
DB Textworks	8.6
DocuFind	6.5
Access	5.4
Folio Views	5.4
Others	38.7

Time and billing	%
Elite for Windows	22.6
Elite	19.4
CMS Open	16.1
TMC (Elite)	8.6
LFMS (CompuTrac)	7.5
Elite for NT	4.3
Others	34.4

Intranet	%
Yes	72

Groupware programs	%
Domino/Notes	39.6
GroupWise	23.1
Exchange/Outlook	20.9
Custom	4.4
Other	2.2
None	25.3

Videoconferencing if available	%
Room	75
Desktop	22
Mobile	3

RESEARCH

Percentage of computer-based legal research spending	%
Westlaw	40.7
Lexis	39.5
CD Roms	8.8
Other Online	8.0
Other resources	2.8

The average technology budget for fiscal year 1998 was $3,974,690 (11).

One of the first uses of knowledge management was the creation of Brief Banks (a collection of internal legal opinion letters). These have had mixed success and require a great

deal of time to manage. The benefit is that there is one place to find out if your organization has rendered a legal opinion on a given subject. An alternative has been to use the organization's document management software to perform the search and retrieval.

Electronics have greatly benefited document production (the assembling and indexing of the documents in a given case). The first electronic version was done in the 1970s by IBM in its defense against the US Department of Justice antitrust investigation. The advances in electronic scanning and full text retrieval have revolutionized the process.

The legal profession is slowly adapting the principles of knowledge management. The first steps have been automating the back office functions, such as accounting, conflict of interest, and records management. Conflict of interest is vital in the operation of a law firm. The basic premise is that you can not sue a client. Put another way, a law firm cannot represent both sides of a case. There are state and federal laws and national and state bar association rules outlining what is a conflict of interest. There can be large damages against a law firm which violates the rules of conflict of interest. With large corporate clients and mergers and acquisitions, this has turned into a vast database of clients and related parties that can be managed only by computer. Historically, law firms have automated each back office component separately. There are a number of systems such as Elite, CMS, TMC (11) that combine the three functions and help turn the information into knowledge.

Litigation support is another area where the legal profession has used technology to master information. A large litigation can easily produce millions of documents and depositions (sworn testimony prior to a trial), which have to be accessible to all parties to the litigation. Even though each side has access to the same documents and depositions, the side that can best assimilate the information has a decided advantage in the litigation. It is primarily with litigation support that legal organizations have utilized the true knowledge management software programs.

Docketing is the term used by both the court and law firms to describe the tracking of a case as it goes through the court system. A docketing program for a law firm tells when legal papers or court appearances are required. For the courts, it describes the programs that track what has happened with a case as it goes through the court system. *Pacer* is the term for the docketing databases in most Federal courts. It can be searched only by each individual court. CourtLink is a program from DataWest that searches all the Pacer databases at one time. This allows the researcher to determine if a person or company is being sued and what the status of the case is. CaseStream from MarketSpan is a new program that uses push technology to determine when a person or corporation is being sued in any of the Federal courts. In addition, it gives the changes in a specific case.

For a document to be "legal," the signature has to be authenticated. Historically, notary publics were people who authenticated legal documents. With the advent of the electronic age, the need for authenticating signatures (electronic signatures) has become paramount. This has spawned many competing programs that offer authenticity along with encryption. For an in-depth review of this subject, see Ref. 12.

All types of legal organizations have been fairly quick to mount Web sites for their organizations. Although some of them are very rudimentary, some are very advanced. In addition, law firms and legal corporations are using extranets to communicate and share information in a secured environment. The legal organization's development of intranets is similar to that of other organizations.

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LAYERING PROCESSES IN SEMICONDUCTORS.
See SEMICONDUCTOR EPITAXIAL LAYERS.

LCD.   See LIQUID CRYSTAL DISPLAY.

LC FILTERS.   See LADDER FILTERS.

LCI SYNCHRONOUS MOTOR DRIVES.   See HOMOPOLAR AND INDUCTOR MACHINES.

LEAD SALT COMPOUNDS.   See IV-VI SEMICONDUCTORS.

LEARNING, ARTIFICIAL INTELLIGENCE.   See NEURAL NET ARCHITECTURE.

LEARNING, CONSTRUCTIVE.   See CONSTRUCTIVE LEARNING AND STRUCTURAL LEARNING.

LEARNING, STRUCTURAL.   See CONSTRUCTIVE LEARNING AND STRUCTURAL LEARNING.

LEARNING TECHNIQUES.   See MAXIMUM LIKELIHOOD DETECTION.

LEDS.   See LIGHT EMITTING DIODES, DEVICES.

LEGAL.   See LAW ADMINISTRATION.

LENS ANTENNAS.   See APERTURE ANTENNAS; DIELECTRIC-LOADED ANTENNAS.