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COMPUTER USES IN LAW LIBRARIES

by *Raymond B. Marcin**

INTRODUCTION

And no one could get a job or even buy in any store without the permit of that mark, which was either the name of the Creature or the code number of his name.¹

This somewhat frightening prediction of what may yet be the role of computers in the modern social order was written by John of Patmos sometime during the reign of Domitian (81-96 A.D.).² It is a view that is not widely held today. Few of us would identify Satan (the Creature) with the computer phenomenon, and few of us would be as pessimistic as John concerning our abilities to guide that ultimate of human tools in wise and socially useful directions. One suspects, however, that deep in the heart of the most sanguine computer aficionado, John's ominous prediction has its effect—John's words are a warning of what yet could be if we do not maintain a responsible perspective.

What does all this sombre musing have to do in particular with law libraries? As great an effect as computer applications in other fields—e.g., business, science, general library work—have on the health of the body politic, it is law that holds the scalpel. Computer-caused changes in the social fabric can, do, and will continue to occur without the help, and sometimes even with the hindrance,³ of the law. With the help of automation-conscious law, however, computer-caused changes in the social fabric (for good or ill) can be catalytic. Law, and its sibling politics, can be viewed as the cross-threads of the social fabric. It may not be that, as sociologist and theologian Jacques Ellul once suggested, politics is the realm of the devil.⁴ One may view law and politics as merely settings or stages for a nobly evolving human kind, master of its own identity and destiny.⁵ Given, however, the potential law and politics possess for causing both gradual and relatively sudden social change,⁶ not even the happiest warriors among us can fail to heed the implications in the warnings of John of Patmos and Jacques Ellul: law library computerization—indeed any computerizaion capable of directly

affecting our understanding of legal relationships—must be approached responsibly.

If one translates "responsibly" as "slowly" or "conservatively," then law-library computerization has indeed been approached responsibly. Precipitous and understandably enthusiastic suggestions of even much respected jurists,⁷ such as that computers be used to aid the judicial decision-making process, have been largely ignored, or at least not put into action. We have not seen any real movement toward judicial decision by button-punching, or in truth any of the more bizarre or apocalyptic fantasies that a legal science-fiction writer might envision. What we have seen are computer uses in law libraries which roughly parallel, and in some instances (e.g., full-text search) add innovatively to, computer uses in general or other-specialty libraries. And, although none of the more futuristic fantasies has surfaced in law-library computer use, it may not be inaccurate to say that at least one futuristic computer fantasy has begun to surface in a Canadian project. But more on that later. First a look at some of the more traditional computer systems now found in law libraries.

One who has had a casual shop conversation with a law librarian would not likely come away without having heard of the two most publicized systems of computer-assisted legal research: LEXIS and WESTLAW. Each system is the other's major competitor in the market-place, and most law librarians and legal researchers seem to have an esprit of allegiance for the one or the other.⁸ But others exist as well. The neophyte student or practitioner, wishing to plumb deeper into the topic of computer use in law libraries, invariably turns collar to the veritable blizzard of acronyms which stand in his or her way. Beyond WESTLAW one encounters OBAR [Ohio Bar Automated Research, a precursor of LEXIS]; CADEPOL [Computer Assisted Drafting, Editing, and Publishing]; QUIC/LAW [A Canadian information retrieval system]; JURIS [the Justice Retrieval and Inquiry System, perhaps the best known of the computer assisted legal research systems other than LEXIS and WESTLAW, developed by the United States Department of Justice]; LITE [Legal Information Through Electronics, developed by the United States Department of Defense]; FLITE [the LITE system as used by the United States Air Force]; DATUM [Documentation Automatique des Textes juridiques de l'Université de Montreal]; LIS [the Legislative Information System, developed for the state of Washington]; GIPSY [The General Information Processing System, developed for the state of Oklahoma]; SIRS [the Automated

Legal Text Entry and Revision System]; TIPE [the Type-composition Interface to Photo-composition Equipment system, a subsystem to SIRS and ALTER]; CICS [the Customer Information Control System, developed for assistance in federal legislative research]; and PLATO IV [A computer-assisted law teaching system].

The above inundation of the reader, besides accurately portraying the forbidding climate awaiting one who inquires into the topic of computer systems found in law libraries, makes another, perhaps more useful, point. The unwieldy topic must be handled selectively and thematically if one is to come to even a basic understanding of it. Three themes seem to run through the various manifestations of computer use in law libraries: (1) computer-assisted legal research systems; (2) computer-assisted law-teaching systems; and (3) computer-assisted legislative research and drafting.

An event in Ohio back in 1964 led to a company now known as Mead Data Central becoming one of the two acknowledged leaders in computer-assisted legal research. In that year the Ohio State Bar Association launched a three-year study of the implications of automation on legal research. That study led in 1967 to the formation of a nonprofit affiliate of the bar association known as the Ohio Bar Automated Research Corporation (OBAR). OBAR contracted with the Data Corporation for the use of its full-text data retrieval system, known then as Data Central. The Data Central system had up until then been used only in nonlegal applications.⁹ In 1968 the Mead Corporation acquired the Data Corporation, spun off Mead Data Central, Inc., and took over the contract with OBAR. From that inauspicious and somewhat parochial beginning, the OBAR-Mead Data Central arrangement grew into LEXIS in 1973.¹⁰

Although it is not likely that it was intended as such, the precursor Ohio system of LEXIS may be thought of as a successful pilot project. All of Ohio case law and statutory law was stored in a central computer in Dayton. With the success in Ohio, other states' bar associations began forming nonprofit corporations like OBAR to take advantage of the Mead Data Central expertise, led by New York. Missouri, Texas, Illinois, Kansas, Pennsylvania, California, Massachusetts, and Delaware soon followed. Federal case law and statutory materials are now included in LEXIS as well.¹¹

A strong feature of LEXIS from its OBAR beginnings to the present has been that it is a full-text retrieval system: i.e., the

computer's storage memory contains every word of every published judicial opinion or statute on file. Other systems, notably, WESTLAW, LEXIS's major competitor, were not full-text systems. Initially WESTLAW's storage memories contained only synopses of opinions, and not full texts. This is, perhaps, what gave LEXIS its early competitive edge. WESTLAW is, however, converting to full-text capability.

Professor Sprowl of the American Bar Foundation has further differentiated the two systems by referring to LEXIS as a non-statistical system, and WESTLAW as a basically statistical system, capable of use as a nonstatistical system.¹² "Statistical" systems are so called because they use statistical techniques to determine how closely the items in memory storage match the inquiry in word usage and frequency. The computer seems to have a more active role in a statistical system, giving built-in extra weight to more significant and more frequently found words and terms in the researcher's query, and applying its own thesaurus capability to the researcher's input. "Nonstatistical" systems are more passive, yet afford the researcher more control over the retrieval process. The researcher formulates his or her requests in a special, but easily learned, retrieval language. The language is based on the simple conjunctive and disjunctive ["and" and "or"] and, perhaps because of the mathematical basis of the computer, is called Boolean, after the 19th century British mathematician-logician, George Boole.¹³ Using a Boolean language the researcher can ask the computer to report on cases or statutes in which certain words or terms appear, or cases and statutes in which those words or terms appear in a given sequence or a given degree of proximity. The LEXIS system doesn't actually read through the text of the stored documents to satisfy the researcher's request. It reads through what Professor Sprowl has called a concordance,¹⁴ not unlike the well-known biblical concordances which tell us at a glance the chapters and verses in which every use of a given word appears in a given version of the Bible. LEXIS's concordance is completely analogous; instead of chapter and verse, LEXIS provides numerical word addresses. This Boolean-logic method is, of course, based on probability—one assesses the probability that a judge deciding a particular case having to do with, e.g., attractive nuisances, will use certain words or combinations in his or her reported opinion. For example, it seems likely that, besides the term "attractive nuisance" itself a judge would use the word "child" or "incompetent." The researcher would ask LEXIS to search for cases in which "attractive nuisance" and "child" or one of the synonyms for "child" appear together in the

same opinion. By doing this the researcher will be avoiding all opinions in which the doctrine of attractive nuisance is mentioned off-handedly. If a case truly concerned the doctrine of attractive nuisance it is extremely probable that the judge's opinion would contain "child" or a synonym.

WESTLAW, a newer system than LEXIS, is as regards data-bank material far more solidly based. The West Publishing Company has for many years had a virtual monopoly on the publication of all reported state and federal cases and all state and federal statutes. Other legal publishing houses may publish editions of the federal statutes, for example, or the opinions of the Supreme Court, but only West publishes all the opinions of the all the courts, state and federal, and all the statutes of all the states and the federal government. Moreover West has patented its own key-numbering system, a system developed for traditional, unassisted legal research whereby every point of law is assigned a number and a topical heading, and that number and topical heading is consistent throughout its entire reporting system. One knowing a point of law in, e.g., a California decision can, using the topical heading and key number which West gave in the synopsis of that point of law published with the judicial opinion, learn quite quickly whether that point of law has been addressed by any other court in one's own state or in any other state or in the federal system. The implications of such an internally consistent cross referencing system are obvious, and West has exploited them fully in WESTLAW.

It was the key-numbering system that led WESTLAW into a fundamentally different approach to computer-assisted law research from that taken by LEXIS. WESTLAW presumed that the researcher is interested in abstract legal concepts rather than spot facts, and WESTLAW's key-number summarization and abstracton fits that "concept" focus quite well. But in truth a legal researcher is often interested in spot facts. An understanding of the abstract concept of "attractive nuisance" might well be the researcher's goal, but just as likely the researcher is interested in whether the doctrine has ever been applied to a given set of facts, like scaldingly-hot mashed potatoes placed before an infant. In fairness to the West Publishing Company, it must be acknowledged that many of its key-numbered summaries do contain references to the specific facts of the particular case, but there is something in the very concept of a summary that leads one to conclude that a spot-fact search might be better accomplished on a full-text system, rather than on one which summarizes points of law and sometimes includes fact summaries. Perhaps it is this kind of

logic that has lately moved West into full-text arena. Since West is just now emerging with a full-text capability in its WESTLAW system, it will be of more than passing interest to see how well the dual approaches work in a single system.

Another system, based partially on the WESTLAW concept is JURIS, developed by the United States Department of Justice. It may not be inaccurate to suggest that JURIS represents a mid-point between the original WESTLAW approach of the conceptual search and LEXIS, the basic facts search. JURIS takes the West key-numbered headnotes for each case that it finds [there may be only one; more likely there are several, sometimes as many as twenty], and scans that set of headnotes coming from the one case as a unit, detecting patterns which may not be evident from a single head note. JURIS seems much likelier than either WESTLAW or LEXIS to find the too-often-mythical case-on-all-fours [the case whose facts are virtually identical to the one with which the researcher is concerned].¹⁵

There may be no end to the debate as to which computer-assisted legal research system is the best. The true answer seems to be that each one is the best, depending on what the researcher wants from it. Professor Sprowl illustrated this point by performing three searches on the same inquiry, one each on LEXIS, WESTLAW, and JURIS.¹⁶ The cases found by each system were catalogued by him as "pertinent," i.e., the most useful, the real goal of the search; "interesting," i.e., of some utility, helpful for background knowledge; and "irrelevant," i.e., useless. On Professor Sprowl's particular search LEXIS found 44 cases, but of those 24 were irrelevant. WESTLAW found 19, of which 7 were irrelevant. JURIS found 12 of which 2 were irrelevant, LEXIS found 14 interesting cases, WESTLAW 6 and JURIS 5. But the true bottom line is that there were 6 truly pertinent cases, the real objects of the search; all three systems found all six of those cases. From this there does seem to be an important difference between LEXIS on the one hand and WESTLAW and JURIS on the other: the so-called "interesting cases " LEXIS found more than twice as many as either WESTLAW or JURIS. But LEXIS also burdened the searcher with 24 irrelevant cases more than three times the burden imposed by either WESTLAW or JURIS—the price, one might say, of the extra interesting cases.

School and University law libraries may contain computer-assisted law-teaching systems. Use of computers in legal education, however, has not developed as rapidly as use of computers in legal research. Also the use of computers in law

teaching seems to have followed rather than led the use of computers in other areas of teaching.¹⁷

Nonetheless computer-assisted legal-education systems are emerging and finding their way into the academic law libraries. One boost for such systems came indirectly and, one may surmise, unintentionally from the Chief Justice of the United States Supreme Court, who jolted the academic legal community in 1973 by charging that the law schools were turning out incompetent practitioners.¹⁸ The furious race toward clinical and skills-training programs by the law schools that resulted from the Chief Justice's remarks rivaled the clambering toward scientific and technological education in the wake of Sputnik. Law Schools soon discovered that, while they knew how to impart basic practitioner skills, they didn't know how to do it inexpensively. Clinical legal-aid programs required large numbers of salaried professionals to supervise and guide student practitioners. Simulation programs [i.e., those which involve role playing and not actual real-life client service] scarcely fared better financially. Large numbers of students could not be accommodated in clinical or skills programs without prohibitively expensive increases in faculty or support-staff size.

Then came computers. Two major systems have entered the legal-education arena: EDUCOM, a national computer network for higher education, which entered legal education in 1976 with teletype compatible computer terminals; and PLATO, the system most widely in use in law schools and certainly the most widely chronicled in legal literature.¹⁹

PLATO goes beyond mere programmed law instruction in which the student attends a lecture and then reinforces the lecture material with an appropriate multiple-choice or other objective test program at the computer terminal console. The PLATO IV system in use at the University of Illinois is based on the Socratic method and has the capacity to entertain English-language responses as well as the simple mathematical true-false or multiple-choice format. A PLATO program at Cornell exposes students to simulations of complex corporate-law and stock-transaction problems that could not possibly be encountered in any of the traditional clinical or skills programs.²⁰ The PLATO law programs make extensive use of the visual graphing capability of their computer and permit students to interact in such a way that they can reach any one of many legally feasible approaches to problems, rather than the one-and-only, supposedly correct approach. This accords quite well with what law instructors often find great difficulty in doing--conveying the fact that lawyering is an inexact art, in which there are several

"correct" approaches. The knowledge that it is so difficult for law teachers to disabuse students of the notion that "the law" is a cut-and-dried, right-and-wrong, easily quantifiable rule is, perhaps, what stood in the way of early law-school acceptance of the simpler first efforts at computer-assisted law teaching. The sophistication of the program being used at Cornell may open the way for a greater use of computers in law teaching in the future.

Another type of computer system that is creeping into law libraries [it is already extensively present and used in government libraries] is the computer-assisted legislative research and drafting system. Both LEXIS and WESTLAW have, of course, some legislative-research capability. Each can give the researcher the statute he or she is looking for to the same extent and in the same manner as each can give the researcher the law case that he or she is looking for. Both systems, and indeed JURIS and many of the other research systems, have the statutes of various given legislatures in their memory appendages. We discuss here a different type of legislative-research capability [although the systems discussed here can also do what LEXIS, WESTLAW and the others can do by way of basic legislation-searching]. We speak here of how computers can aid the law-enacting process and how they can make that process accessible to the researcher. Various such systems exist: LIS, used by the state of Washington; GIPSY, used by the state of Oklahoma, SIRS, ALTER, and TIPE, developed in the state of Wisconsin, the ALTER feature of which is now used in Georgia; and the Congressional system known as CICS.

All such systems perform similar services, and for our purposes it may be sufficient to describe only one, Wisconsin's SIRS, ALTER and TIPE multisystem.²¹ The SIRS part of the Wisconsin system performs roughly the same function as LEXIS, WESTLAW, JURIS, or any other legal-research system containing legislation in its memory storage. "SIRS" stands for "Statutory Information Retrieval System", and works quite similarly to LEXIS. The researcher uses the probable-words approach: words that are likely to have been used in any statute on the given subject, their likely frequency, sequence and proximity. Curiously, one experienced user of LEXIS has reported that searches within statutory files are generally more difficult and produce less satisfactory results than searches through case law.²²

"ALTER" stands for "Automated Legal Text Entry and Revision System." To understand its utility, one must have a

sense of the numbers and complexity of the various legislative service agencies that deal with a bill in the process of its being enacted into law. There may be a legislative study group, dealing with ideas for new legislation. There will be a legislative drafting agency. There will be personnel who will check the draft for constitutionality and consistency or inconsistency with existing statute law. There will be committee-assignments clerks. There will be amendments drafters. There will be engrossing clerks and enrolling clerks. There will be an office which decides where in the statutes this new law will fit. There will be a statute revision office. There will be a statute-publishing office. All these functions jostle and roll about in the busy activity of a session of a legislature. Knowing exactly where a given bill is at a given time, knowing exactly what its present text is, knowing all of the many aspects of bill drafting and statute revision [e.g., the impact of this bill on the budget] is extremely important to the legislators, their service agencies, and the general public. ALTER keeps track of the bill and assists in: (1) the initial typing, proof-reading, and correction of the bill; (2) the assignments of bill numbers and committees; (3) the amending process; (4) the engrossing and enrolling process [finalizing the precise text to reflect all changes in language voted on and all changes in language necessitated by the inclusion of the new law in the state's code, e.g., "section one of this act" being changed to reflect its new position in the code—"section one of this chapter"; and (5) the publication process.²³

Lawyers are cautious by nature. Courtroom flamboyance, perhaps, conceals that nature and masks it to some extent from the public perception. But they are, in truth, a cautious group. Thus it is not surprising that the main line of computer applications by the law community has been measured, logical-cautious. The writer, however, cannot resist one brief trek into a law-computer application which seems anything but cautious, which seems imaginative, exciting, and fraught with fascinating implications.

In our Introduction, we began our journey with a joinder in thought of religion, law, and computers—so too we seem to end on the same note. In 1975 one former chairman of the Section of Science and Technology of the American Bar Association told of the contributions to computer theory of a 13th century philosopher, Ramon Lull.²⁴ Ramon Lull was searching for a better way to convert the Moslems to Christianity, when in 1274 A.D., in a cave on the island of Majorca, he had a vision of a

new method of writing and reasoning which, he felt, would be most persuasive in efforts to convert the infidel. He called his theoretical method the "Ars Magna," and to aid in the implementation of this theory he constructed a circular slide rule of three concentric discs with differing diameters. From alignments of the well chosen words and symbols he had put on the discs, Lull formed his reasoning process and wrote it into his books. What Hegel called Lull's "thinking machine" persisted for over 400 years and was used in various forms [one system had eleven concentric discs] to guide philosophical thought in many areas, including law. Even today the suggestion is made that Lull's method is used in computers "to suggest combinations of syllables that linguists should explore to build vocabularies."²⁵

Inspired, if not by Ramon Lull, then certainly by Lull's muse, a group of legal scholars in Canada began in 1968 a computer-assisted project with amazing implications. Canada, of course, is an officially bi-lingual nation. Its federal statutes, accordingly, are written and reproduced in both English and French, and that fact, of course, causes problems. Can the French word "possible" carry every subtlety and nuance present in the English word and vice versa? Can one be convicted of a crime in English and not in French? A not altogether silly question if the crime is a complex one, described in technical, perhaps commercial, language in the statute. The legal scholars undertook a project that is still proceeding, called Project JURIVOC [not an acronym; a combination of the first parts of the words "juridical vocabulary"]. The JURIVOC project is an effort to produce a bilingual lexicon based on the Canadian Federal Statutes.²⁶ Computer-aided bilingual lexicography is, of course, not a new idea. What, perhaps, is innovative, however, is the application of computer-aided bilingualism to the basic law of a nation. Implications for the U.S. territory of Puerto Rico are immediately obvious. Greater implications emerge when one thinks of balkanized Europe. And, of course, the greatest implications of all come to mind when one thinks of the United Nations, international treaty language, disarmament understandings, and the like.

JURIVOC's challenges are formidable. Its English and French lexicographic systems had to be made to work symbiotically. Beyond that the two linguistic program systems, working symbiotically as one, had to develop an artificial computer capability that would be analogous to the ability of a human being to produce variously structured combinations of words with understood meanings, i.e., the computer had to be made to learn English vocabulary and grammar and French

vocabulary and grammar and then "triangulate" the two into one symbolically understood artificial language. Not easy when one considers that grammatical usage sometimes makes a word mean one thing in one context and another thing in another context, or that the vocabulary and grammatical rules in force a century ago, when some of the statutes were enacted, differ to some uncertain extent from those in force today.²⁷ The JURIVOC project's greatest contribution to date has been the development of a bilingual Key-Word-In-Context system [KWIC], which serves to automate the analysis of words and expressions with their other-language correspondents. The KWIC processing code has become an inner control agent, and has even come to control the sequence of the execution of human interventions [machine over man?].²⁸

Not insignificant is the assessment of the JURIVOC team on the long range implications of their work and work that can be projected from it [which the team refers to as "jurimetrics"]:

Our suggested role for jurimetrics most definitely must include the attitude of the philosopher. The revelation of the myths of the legal systems, the identification of the conditioned reflexes and the discovery of basic social and political assumptions are the challenges which jurimetrics must accept We are more actively participating in the creation of a regenerative life-support system for 100% of present and future humanity. The deliberate design of legal structures . . . in order to facilitate the birth and development of this global system is the major task facing jurimetrics.²⁹

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FOOTNOTES

1. The Revelation 13:17; THE LIVING BIBLE. The Confraternity [Catholic] translation identified the devil more clearly as the cause of this 1984ish commercial condition: "and it [the creature] will bring it about that no one may be able to buy or sell . . ."

2. The New American Bible, p. 1380.

3. In legal circles this is widely recognized as being notoriously true. Most often the law's approach is reactive rather than active. Lawyers and judges are well aware of the sometimes hopeless inadequacy and often total irrelevance of common-law contract principles to the automated commercial-credit setting.

4. J. Ellul, *the Politics of God and the Politics of Man*, pp. 13, 19 (Eerdmans 1972).

5. One ventures to suggest that most of us fall somewhere in between Ellul's view and that of the super-humanist and thus suffer the chronic ache of inconsistency.

6. R. Marcin, *Ideological Pluralism and Government Regulations of Private Morality*, 7 *Capital Univ. L. Rev.* 621 (1978).

7. E.g., Judge Jerome Frank of the United States Court of Appeals of the Second Circuit made suggestions along this line in 1950. J. Frank, *Courts on Trial* 208 (Princeton Univ. Press, 1950). There are, however, contemporary rumblings. See, e.g., J. Meldman, *A Structural Model for Computer Aided Analysis*, 6 *Rutgers Journal of Computers and the Law* 27 (1977).

8. See, e.g., the enthusiasm of the head of the legal research and writing program at Case Western Reserve University's School of Law on behalf of LEXIS: S. Neth, *Computerized Legal Research in the Law Schools: The Case Western Reserve Experience*, 28 *J. of Legal Ed.* 553 (1977).

9. Mainly in searching and retrieving Air Force reconnaissance engineering documents. See J. Sprowl, *A Manual for Computer-Assisted Legal Research*, p. 10, n. 27 (American Bar Foundation 1976).

10. American Bar Association Standing Committee on Law and Technology, *Automated Law Research* pp. 35 ff. (ABA 1973).

11. Sprowl, *supra* n. 9, p. 11; Neth, *supra* n. 8, p. 555.

12. Sprowl, *id.*, pp. 1 and 2.

13. In a delightfully written paper, reproduced in the American Bar Association's *Sense and Systems in Automated Law Research* (ABA 1975), Reed C. Lawlor credits Leibnitz, the 17th century philosopher, with developing a mathematical logic of the kind known as Boolean algebra.

14. Sprowl, *supra*, n. 9, p. 18.

15. Sprowl, *id.* p. 77.

16. Sprowl, *id.* p. 107ff.

17. See, e.g., Brigham and Kemp, *The Current Status of Computer Assisted Instruction in the Health Sciences*, 49 *J. Med. Ed.* 278 (1974); and Hyatt, Eades and Tenczar, *Computer Based Education in Biology*, 22 *Bio Science* 401 (1972).

18. Burger, *The Special Skills of Advocacy: Are Specialized Training and Certification of Advocates Essential to Our System of Justice*, 42 *Fordham L. Rev.* 227 (1973).

19. E.g., Maggs and Morgan, *Computer Based Legal Education at the University of Illinois: A Report of Two Years' Experience*, 27 *J. Legal Ed.* 138 (1975); Henn and Platt, *Computer-Assisted Law Instruction: Clinical Education's Bionic Sibling*, 28 *J. Legal Ed.* 423 (1977).

20. Hen and Platt, *id.*, at p. 428ff.

21. ABA Stand Committee on Law and Technology, *supra* n. 10, pp. 125-133.

22. Neth, *supra*, n. 8, p. 556. The statute-drafter can, perhaps guess why. No good statute drafting involves the use of synonyms. Synonyms are a source of ambiguity. Consequently, unless the researcher, in his or her list of search words and synonyms, hits upon the exact word or term used by the drafter, the search will be ineffectual. Judges, employing the composition techniques of narrative and exposition, almost always vary and enhance the readability of their style by using synonyms. It is much more likely that one or another of the judge's synonyms will match with one another of the researcher's than it is that the drafter's lone word will do so. See e.g., R. Morgan, *The Nature of Statute Law or Parliament Speaks in a High Level Language*, 3 *Rutgers Journal of Computers and the Law* 128, 136 (1973).

23. ABA Standing Committee on Law and Technology, *supra* n. 10, pp. 127, 128. The writer recalls leading a group of research lesson on how to use the Congressional Record, its Daily Digest, and some other published aids to determine the exact status of a pending piece of federal legislation—at least its exact status as of yesterday's Daily Digest—when one student volunteered that he knew of a method of determining its exact status as of a billionth of a second or so ago. It was a chastening experience.

24. Reed C. Lawlor, *Historical Perspective and Future Prospects*, included in *American Bar Association Section of Science and Technology, Sense and Systems in Automated Law Research*, p. 7, (1975).

25. *Id.*

26. V. Bergeron and D. Burke, *Words, Computers, and Communication in Law: JURIVOC*: (University of Ottawa 1976).

27. See the writer's review of the JURIVOC book: R. Marcin, *Book Review*, 38 *THE JURIST* 235 (1978).

28. V. Bergeron and D. Burke, *supra*, n. 26, at p. 117.

29. V. Bergeron and D. Burke, *supra*, n. 26, at 270, 271. Emphasis added.