Scientific Aids for Legal Research

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NOTES AND COMMENTS

SCIENTIFIC AIDS FOR LEGAL RESEARCH

Concern has been expressed, during the past several years, over the flood of legal literature appearing in the form of reported decisions, statutes, administrative rulings, treatises, digests, reviews, and the like.\(^1\) A citation of a few statistics at this point should be enough to demonstrate that there is due cause for this concern. Reported judicial decisions alone have grown from eighty thousand in 1850 to approximately two million cases at the present. Courts of last resort annually hand down in excess of twenty-five thousand decisions.\(^2\) If, to this bulk, one should add the decisions of state appellate courts, those emanating from the federal district courts, and the product of the federal courts of appeal, the annual aggregate of reported cases alone reaches a significant figure.\(^3\)

In an average legislative year, over forty-six thousand pages of statutory law are issued,\(^4\) thereby adding to the bulk of legal materials. Only eight states have statutes requiring the publication of the regulations and decisions of their respective administrative boards, hence no adequate statistics exist encompassing the total volume of matter of administrative significance. But some idea of the magnitude of materials to be found in this area of law alone may be gathered from the fact that, in a single year, the reports of four federal administrative agencies\(^5\) filled twelve volumes whereas only six volumes were required to report the decisions of the lower and intermediate federal courts during the same period.

These statistics relate, of course, to primary sources of the law. They do not take into account the growth that has been observed in the form of secondary sources such as treatises, citators, special loose-leaf services,

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\(^2\) See Kelso, "Does the Law Need a Technological Revolution," 18 Rocky Mt. L. Rev. 378 (1946).

\(^3\) At present, the total number of volumes included in the National Reporter System exceeds 3600. About fifty volumes are being added in each year.


\(^5\) The agencies referred to are the Bureau of Internal Revenue, the Tax Court, the National Labor Relations Board, and the Interstate Commerce Commission.
etc., which have also multiplied in number. There is no question, then, but what the amount of material affecting the study, and a knowledge, of law will continue to expand at an ever-increasing rate. In that regard, studies now exist which show that general libraries are following an exponential law of growth, doubling their collections every sixteen years.6 Law libraries are not escaping this trend.7

While it is true that all fields of knowledge are faced with an ever-increasing store of recorded materials, the lawyer is most peculiarly and immediately concerned. Chief Justice Vanderbilt not long ago said: "Although slavery to the product of the printing press is not peculiar to the legal profession, the burden on the law is greater than that in any other department of learning. This follows by reason of our theory of judicial decisions and our professional attitude toward the theory of the past."8 But the problem under discussion is not a new one for, in 1829, a German jurist predicted that "in spite of the many advantages of a system of case law . . . there will come a time when the sources, i. e., the traditional decisions, will accumulate to such a degree . . . and the rules which have been found will be limited by so many and such fine distinctions that, instead of securing the interest of individuals, they will only serve as a means of litigation."9

By 1922, a famous philosopher of the common law was complaining that "law books are no longer capable of being read. Soon . . . they will be incapable of being written by individual effort and will become the product of cooperate syndicates . . . law reports will multiply . . . while the law itself becomes steadily less harmonious and less consistent."10 One year later, Harlan F. Stone, soon to become Chief Justice of the United States Supreme Court, issued a further warning. "Lawyers as a class," he wrote, "have allayed any uncomfortable apprehensions as to the future . . . by the complacent acceptance of the ingenious devices


7 For example, the library of Chicago-Kent College of Law, in 1926, was in excess of 6,500 volumes. By 1952, it had grown so as to contain in excess of 20,000 volumes. On the basis of this tripling in size in twenty-five years, the library, if continuing to expand at the same rate, would contain nearly 80,000 volumes by 1975.


9 Quoted from Berman, "The Challenge of Soviet Law," 62 Harv. L. Rev. 220 (1949). In 19 No. Amer. Rev. 433 (1824), appears an early American recognition of the problem, one writer stating: "The multiplication of reports . . . is becoming an evil alarming and impossible to be borne . . . By their number and variety they tend to weaken the authority of each other . . . [T]hey come upon us . . . in an overwhelming flood, intermingled with digests, compends, and essays without number." See also "The American Jurist," 29 No. Amer. Rev. 418 (1829).

for digesting and finding the law as offering a real solution of their difficulties. But every new citator, every new digest . . . comes like Banquo's ghost, to confront us with the disquieting reality that the common law system of precedents cannot continue indefinitely. The same "ingenious" devices he mentioned are still the only methods currently available to aid in the search for law.

As a result, the dire consequences against which he warned are fast becoming a reality. Recognition has been given to the fact that the lawyer of today is less able to know the law in the same manner, and to the same extent, as was true of the lawyer of a generation or two ago. This, admittedly, is a serious criticism to advance, but there would seem to be sufficient authority to uphold the point and a few quotations should be enough to furnish conviction. Professor Simpson not too long ago remarked that "no man can any longer know the American law, nor for that matter the law of his own state." Another has written that the fact is "that clients are advised; cases are litigated before courts; . . . and opinions and decisions . . . are rendered, on inadequate or completely erroneous information. The law in point . . . is so vast that with today's legal tools, much that is vital is necessarily disregarded." The basis for this, says still another, is the "inability of lawyers themselves to know even the pattern or the materials of the law they must evoke in their client's interest." It is becoming rapidly impossible, says a fourth, for lawyers "by their traditional digest-searching methods, or even by . . . citators, to be sure of making a clean sweep of the multitudinous patterns of precedents bearing upon their current litigation, bargaining, and planning." No wonder, then, that the possibility of a professional breakdown is a grim threat to the effectiveness of the modern lawyer.

The chaos that results from the plethora of reported law can be evidenced by a concrete illustration. A recent New Jersey case involved a dispute between a local labor union and its parent organization regarding the right to possess the funds of the local. The case was decided on the basis of the contract doctrine relating to frustration of purpose. The headnotes to the reported decision, however, place the

case under the topic of "Labor Relations" and it will so appear in the
digest services. It should be obvious to anyone that a lawyer with a
problem involving the above-mentioned doctrine would commence his
search of the digests under the topic of "Contracts" and, in all prob-
ability, would not be led to the citation regarding this case. Although
the decision therein utilizes four pages to discuss the contract doctrine
and includes an excellent history of its development, one who does not
know enough to search for this case under the heading of "Labor Rela-
tions," or who does not stumble across the case by a fortunate accident,
will miss a perfectly good case in point.\(^\text{17}\) This is but one example; others
could be cited.\(^\text{18}\)

The example just mentioned was not presented for the purpose of
directing criticism toward the publisher of the legal tool in question, or
toward the publishers of any of the existing legal tools. If every reported
case were to be indexed and digested under all possible legal points men-
tioned in the case, existing legal tools would become entirely unmanage-
able. As it is, an average volume of reported decisions now devotes as
much as forty per cent of the total of its printed pages to index material
of the character of headnotes, tables of cases, tables of statutes construed,
and the like.\(^\text{19}\) Obviously, under any continuation of traditional methods
of indexing and digesting, sheer bulk alone would force a limitation on the
number of digest notes based on any one case. Not even extreme accuracy
in reporting and classifying cases, then, will provide the solution.

Realization of this situation not only caused the late Chief Justice
Stone to issue his warning, it led him to offer, as his solution, a proposed
codification of the common law.\(^\text{20}\) There was, at the time, a considerable
display of interest in the idea of codification as it was felt that, once
codification had been adopted, it would be possible to dispense with ac-
cumulated case law and its resulting bibliographic confusion. That in-
terest has, however, since waned and there seems little likelihood that
existing case law will be replaced by codes.\(^\text{21}\) Consequently, with an

\(^{17}\) The particular example has been cited in an unpublished paper entitled
"Searching Legal Literature," circulated by a Special Committee of the New Jersey
State Bar Association.

\(^{18}\) The classic example appears in the case of Panama Refining Co. v. Ryan, 293
U. S. 388, 55 S. Ct. 241, 79 L. Ed. 446 (1935). Suit had there been instituted, and
an appeal had been carried to the United States Supreme Court, based on an
administrative regulation. It developed that the regulation in question had been
revoked, although the parties were unaware of the fact.

\(^{19}\) See note 17, ante.

319 (1923).

\(^{21}\) See, for example, Peairs, "Legal Bibliography: A Dual Problem," 2 J. Legal
Educ. 61 (1949). Experience with the several Restatements, useful as they may
be, has not proved too successful in the direction of codification.
awareness of the coming crisis involved in the storage and use of legal literature, other methods and solutions are constantly being sought.

Some have offered pleas for shorter and more concise judicial decisions, but it is doubtful, human nature being what it is, whether these pleas will ever have the desired effect. Others have cast an eye on the developments of science, speculating with the possibility of adapting modern scientific knowledge to antiquated methods of legal research. With the advent of modern microphotography, it is now technically possible for a lawyer to have a complete law library in his desk drawer and, with the rapid advancements being made in telecommunication, it is possible to foresee the time when the lawyer’s desk will be equipped with a television screen across which, on dialing a number, all statutes and cases in point can be made to flash. While this may seem utopian, the tremendous possibilities involved in modern science seem capable of lending themselves to bibliographical purposes. Any difficulty experienced to date lies in the fact that little experimentation has taken place along these lines, hence it is not easy, at present, to evaluate intelligently the extent to which scientific aids may be utilized in legal research.

For the most part, present day experimentation with regard to bibliographical matters has occurred in connection with scientific literature. The American Chemical Society, for example, has organized a Division on Chemical Literature and has delegated to it the responsibility of developing machine methods for searching chemical literature. The legal profession can profit from the experimentation thus far carried on but, to obtain optimum benefit, a more active interest in the development of scientific aids for use in connection with legal research will have to be displayed. As will be pointed out hereafter, the successful adaptation of

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22 An excellent discussion of the unnecessary wordiness found in many decisions is contained in Bernstein, “Judicial Logorrhia,” 75 N. J. L. Rev. 30 (1952). In this connection, Simpson has pointed out that, out of a total of 1054 decisions in the field of Equity reported in 1947, only 11.5 per cent were worthy of comment, and only 0.1 per cent were worth discussing at length: 1947 Ann. Surv. Am. Law 880-1. Problems relating to the length and quality of judicial decisions go beyond the scope of this paper.


24 A description of “push-button” legal research is contained in Kelso, “Does the Law Need a Technological Revolution,” 18 Rocky Mt. L. Rev. 378 (1946). That article represents an adaptation to the field of legal research of a discussion by Bush, under the title “As We May Think,” which appeared in the July, 1945, Atlantic Monthly. Both articles give an exciting picture of what could, some day, be a reality. It should be pointed out, however, that much more planning will need to be done before the methods there described could even approach reality.


26 See, for example, “Reports on Papers Presented before the Division of Chemical Literature at the American Chemical Society Meeting,” 27 Chem. and Eng. News 2961-13 (1949).
machine methods to law will necessitate a more thorough content analysis of the subject matter contained in legal materials. Such content analysis would possess real value only if done by those trained in law, but lawyers too must become familiar with existing scientific aids if such aids are to be utilized, or developed further, to meet the problems inherent in any search of legal literature.

The problem of space limitation, increasingly aggravated as volume after volume is added to library shelves, can be met through the use of microtext. This generic term applies to any process through which, by means of photography, the printed page can be reduced in size. At present, the normal ratio of reduction varies from sixteen to one up to twenty-four to one, but a camera exists, in the experimental stage, which can reduce the normal printed page by a ratio of three hundred to one! Two basically different forms of microtext are in use; the microfilm and the microprint. The former is printed on a transparent film and is usually placed on reels similar to those used with home projection machines; the latter appears in opaque form, printed on individual cards or special paper and preserved in flat form. Unfortunately, there is at present no standardization either as to size or form, but one common element, true of all types, lies in the fact that a special reading machine is required to return the microtext to something approximating original size. While the quality of readability found in relation to these reading machines is constantly improving, these machines have not yet attained the degree of clarity found in the actual printed page. Much more important, as a practical proposition, is the fact that each type of microtext requires the use of a different type of reader so one about to start his own library on microtext would need to devote a disproportionate amount of money and space to reading machines.


28 While many varieties of microprint are being produced, the bulk of production is limited to two forms; the Microcard, 3" x 5" in size and similar to the standard library filing card, and the Microprint, which appears on 6" x 9" paper sheets. Both processes are copyrighted.

29 Problems raised by lack of standardization are discussed in Rider, "The Possible Correlation of all forms of Microtext," 2 Am. Documentation 152 (1952), and in Price, "The Microcard Foundation," 39 A. B. A. Jour. 304 (1953).

30 A considerable amount of legal material is already available in microtext. For example, the Federal Register from 1935 to 1939, the U. S. Patent Office Gazette from 1949, and some law reviews are available on microfilm. Price, "The Microcard Foundation," 39 A. B. A. Jour. 304 (1953), lists the publications presently available on microcards.

31 Persons familiar with the economic waste present in the case of competing sets of state statutes, as was formerly the case in Illinois, will realize the saving which can be gained by a concerted effort on the part of the bar to bring about agreement among the private publishers in the matter of standardization and the elimination of competitive costs.
Even if standardization in the size and form of microtext were to come about, making possible the use of but one standard-sized reading machine, other serious problems would remain. No mere reduction in the size of law books will aid one engaged in a search for a particular statute, a decision, or a ruling. Even if the entire National Reporter System were to be placed on microcards, requiring no more physical space than that occupied by an ordinary library catalog tray, still the necessity for searching through indices, digests, and annotations would remain. In fact, it is likely that the net result would be to increase the difficulty in locating the desired statute or decision for the reduction in size would allow distracting material to come to hand which would, ordinarily, be disregarded. What is needed is not only a reduction in the physical size of the collection to be searched but also the development of some technique whereby that which is available may be searched quickly and accurately. It is in this respect that the use of scientific aids becomes most feasible. If the principal objection to present methods of search lies in the fact that search entails the necessary performance of routine and time-consuming tasks, with some degree of uncertainty that all facets of the research undertaken have been exhausted, then the development of mechanical means to perform routine operations, both quickly and accurately, should obliterate most of the fundamental problems involved in legal research.

One possibility, in this regard, lies in the adaption of the punched-card technique to matters of legal research. While no detailed discussion of this method will be attempted, the essential quality of the punched card lies in its ability to hold an immense amount of information within a limited space coupled with a quick means for the retrieval of that information. Two main classifications of punched cards exist, the hand-sorted and the machine-sorted methods. Under the former, technically referred to as the notched card method, an ordinary filing card, of any size, is fabricated with a series of holes running around the four borders. A code is developed and information is punched into the card by cutting through one of the holes. For example, if hole No. 3 should be designated for "Contracts," then, by inserting a needle through that hole, all cards in a given pack containing information relating to "Contracts" would fall

32 The interim report of the Center for Scientific Aids to Learning, Mass. Inst. of Technology, Feb. 1, 1951, p. 34, states: "The situation in legal documentation is startlingly different . . . An elaborate interlocking reference system permits— if sufficient time and patience is invested—the tracking-down of the precedents pertinent to any given case . . . The weak spot is the fact that considerable effort is required to work through the reference aids provided."

33 A more adequate and detailed explanation concerning the use of punched-cards for bibliographic purposes is contained in Casey, Punched-cards; Their Application to Science and Industry (Reinhold Pub. Co., New York, 1951).
off the needle when the pack is lifted. The card itself could contain any desired information, such as citation, an abstract of the case, or even a microfilm strip of the entire decision. One main limitation exists to the use of notched cards and that is that relatively small amounts of information may be coded due to the limited space for holes around the border. Such cards can, however, form a very useful tool for handling these small amounts of information. Thus, one interested only in the Illinois law relating to Damages could set up punched card references to all pertinent statutes and decisions without difficulty and then, with a single pass of the sorting needle, could have all citations to a particular aspect of that topic made immediately available. The usefulness of such a collection, however, is endangered once the collection to be searched becomes too large.

Experimentation has also been carried on with respect to machine-sorted cards, which cards, while similar to hand-punched cards, differ for bibliographical purposes in that an increased amount on information may be punched therein and greater speed in selection can be attained, particularly in the case of larger collections. Even with this greater speed, machines presently on the market are not fast enough to adapt themselves suitably for literature-searching for their optimum capacity would appear to be a collection of one-half million documents whereas, as indicated above, the number of cases alone reported to date already exceeds that figure. All equipment in use to date has been engineered primarily to handle business data. With the amount of bibliographic data so far in excess thereof as it is, current machines are simply unable to cope with the mass. What is required, then, is an electronic searching machine specifically designed for use in connection with literature-searching. Such a machine is now in the process of being built by a leading business machine organization which claims its product is designed to scan five million documents per hour. Given such a machine, and a comprehensive code to legal literature which could be “read” by the

34 In this connection, an interesting experiment has been undertaken at the University of Santa Clara, California. Each decision involving community property law is there being placed on a Microcard, properly notched and coded for every aspect of community property law discussed in the decision. As new decisions are handed down, a Microcard thereof is sent to the subscribing lawyer, who can thereby find all cases in point in a few minutes: Merryman, “Legal Research Without Books,” 44 Law Lib. Jour. 7 (1951). The New Jersey Law Institute is also carrying on experimentation with hand-sorted punched-cards with a view toward setting up a “Perpetual Revision of Rules of Court Procedure in New Jersey.” Letter to author from Vincent P. Buinno, Chairman, Committee on New Jersey Law Institute.


37 Ibid.
machine, present difficulties posed by the search for precedent and authority, whether in the form of constitutional, statutory, or case law, would be ended.\textsuperscript{38}

Before a dream of this character could be made a reality, one serious drawback would have to be overcome. This, of course, has to do with the necessity for developing some form of "machine language,"\textsuperscript{39} the intricacies and technicalities of which need not be discussed here. It is necessary, however, in this connection, to note that before "any machines can be used for information searching, the information must be analyzed and coded . . . [T]he availability of any machine . . . cannot of itself solve the . . . problem. A major investment would have to be made for handling any large file of information before machine searching would be possible."\textsuperscript{40} The tremendous cost of devising the "machine language" and turning the existing mass of legal literature into usable machine material would be staggering at the start, but not so tremendous as to forbid the giving of consideration to, and development of, the necessary code. The power of an organized bar, if needed, could well prove helpful at this point.

Other electronic machines exist, such as digital computers, electronic copying pencils, the Ultrafax, with its theoretical ability to transmit one million words per minute for reprinting at another place, and the like. Each has its drawbacks in requiring the use of an elaborate machine language or of being still in the developmental stage to merit serious discussion for the present.\textsuperscript{41} There is one machine, however, that does offer itself as being extremely adaptable to the solution of problems involved in the searching of legal literature and that is the Rapid Selector as developed by Ralph R. Shaw, Librarian of the United States Department of Agriculture.\textsuperscript{42} It was designed with bibliographical methods specifically

\textsuperscript{38} Such a machine would be able to distinguish between a majority decision, a concurring opinion, and a dissenting one; between decisions of lower and higher courts; between good decisions and unimportant ones, all provided a suitable code was developed and intelligently applied. A machine of this character would seem to be the answer to the lawyer's prayer.

\textsuperscript{39} The need for a "machine language" is pointed out in 30 Chem. and Eng. News 2806 (1952), where it is indicated the "language" will have to be "over and above the code that is used to express letters, numbers, and symbols in terms of holes in a card; it refers to the way in which the linguistic and numeric elements will be put together so that the machine will understand them."


\textsuperscript{41} See Shaw, "Machines and the Bibliographical Problem of the Twentieth Century," quoted in Ridenour, Bibliography in an Age of Science (University of Illinois Press, Urbana, 1950).

\textsuperscript{42} While many articles have appeared on the subject of the Rapid Selector, Shaw has prepared two of the best, with illustrations. They appear in Ridenour, Bibliography in an Age of Science (University of Illinois Press, Urbana, 1950), and Shera, Bibliographic Organization (University of Chicago Press, Chicago, 1951), pp. 200-25.
in mind, hence its appealing factor lies in its ability to handle literature already organized according to existing classification schemes. The stumbling block of developing a code is, thereby, eliminated and the familiar classification of the law presently known to all lawyers can be retained.

The Rapid Selector utilizes an ingenious combination of microfilm and electronics. For its operation, an abstract of an article is placed on one-half of an ordinary 35 mm. microfilm. The other half-space is used for coding six different subject aspects of the abstract. The reel of microfilm is then placed in the Selector which is also equipped with a high-speed camera, so rigged that, as the reel turns, the camera will take a picture of each abstract, and only those abstracts, containing information pertinent to the desired subject. To illustrate the possible use of such equipment in connection with legal research, assume that the five Decennial Digests plus the issues of the General Digest were placed on one reel of microfilm. With the Rapid Selector set to select all digests bearing on "Wills; Attestation," or some other topic, a copy of every digest bearing on the topic can be reproduced in four minutes or less. The film containing these reproductions could then be shipped anywhere at low cost and be examined at leisure, saving the lawyer untold time presently spent in poring over scattered volumes and relieving him of the expense of maintaining such sets in his library. Up to the present, the Rapid Selector has been used primarily in connection with scientific literature, hence no adequate information is available bearing on its actual functioning in relation to legal matters. Undoubtedly, much experimentation would be necessary, but the flexibility and speed of the device would indicate that it should receive intelligent consideration on the part of the legal profession.

Nothing that has been said herein would operate to eliminate the need for well-trained, competent lawyers. They would still have to use their unique professional skills in the marshalling of the information so gathered, in forming conclusions thereon, and in directing the uses to which such information should be put. Revolutionary changes in the end-purpose for legal research, therefore, are not imminent. With more active support on the part of the legal profession, however, there is occasion to hope than an increasing use of scientific aids will lead to better methods for controlling the constantly accumulating mass of legal literature, thereby releasing the lawyer from much unproductive, expensive, and time-consuming work, while operating to make the law more readily available to all, no matter where located.

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