

JURIMETRICS†

J. W. Ryan‡

For a legislative draftsman, electronic data processing and jurimetrics generally is like the Pierean spring. When one first becomes aware of the potential of the electronic computer, the first reaction is unbelief—the thing is too much like old magic or new science fiction. And, of course, one's professional training tends one more to neophobia than to neophilia.

But whether one likes it or not, the computer will surely enter into those processes associated with law: the printing and publishing of statutes, regulations and reasons for judgments; and the registration of chattels and land and the listing of proceedings in courts and tribunals, to give a few peripheral areas associated with the legal process.

Even so, while one may be led to the Pierean spring, one, like the reluctant horse, need not drink. But if one does drink of that particular spring, it is well to keep Alexander Pope's caveat in mind:

A little learning is a dangerous thing;
Drink deep, or taste not of the Pierean spring:
There shallow draughts intoxicate the brain,
And drinking largely sobers us again.

That there is some merit in this caveat is evidenced by the fact that twice now the shallow draught has placed me on a platform to speak for the encouragement and development of studies in Canada of jurimetrics, a term which encompasses in nearly all its aspects the considerations arising out of the invention and use of electronic computers. On that account alone one can today, here, feel that the warning against the dangers of a little learning was not exaggerated.

But, in fairness, I should point out that I do not claim to be an expert in this new field. If an expert is one who knows more and more about less and less, then I can honestly claim to be an "anti-expert", that is, one who knows less and less about more and more—in electronic data processing. A year's additional acquaintance with electronic data processing (or EDP, as we so casually say in the anti-expert phase) has brought me to only a deserved humility but also great bewilderment. There is consolation,

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‡ J. W. Ryan, LL.B., Director, Legislation Section, Department of Justice, Ottawa.

however, in the remark of Nathaniel Hawthorne: "I begin to suspect that a man's bewilderment is the measure of his wisdom". In this as in few other cases will bewilderment be the beginning of wisdom.

A former President of the Canadian Bar Association, Mr. Hazen Hansard, Q.C., made reference in Toronto in 1965 to the "instant society" in which we live and work, and decried its effect on quality.¹ But, however we label it, we are living in an ever-accelerating society—witness the effect of instant live exposure and instant communications on our political life, and the effect of technology on the speed with which larger structures can be erected in shorter time. We can speed a man and missile out of the world, send them around the earth and bring them back with great rapidity. A few years ago the calculations required for that type of adventure would have taken the human intellect an impossible length of time to compute. Nowadays it is possible because of electronic computers. Even though high in cost, the impossible of only a few years ago has become manageable in our instant society, thanks to rapid processing of data.

What does this mean to the legal profession? I suggest that when government, business and others can now obtain from physicists, engineers and accountants results that would a few years ago have been impossible within the life-span of man, it can hardly be a surprise to find these clients expecting our profession to adopt modern techniques rather than relying on techniques of the last or several centuries ago. Nor in these circumstances, I suggest, can we afford to give to the public an image of a stubborn and unreasonable reluctance to change our methods of accumulating, assembling and processing legal data. Regardless of the increasing difficulty in finding relevant law in the increased volume of statutes and regulations, many of our clients, unfortunately, adopt the attitude of Mr. Dooley who said to Mr. Hinnessey "I don't care what laws they make, as long as I can get out an injunction."

The finding of law to develop an opinion or support an injunction is the function of the lawyer, and if he finds it difficult to struggle through a flood of new laws and judicial reasoning, it does not behoove him to disregard the contribution that can be made to his work by modern technology, or empiric methods of science. To do so would be much like the state of the man who is trying to build a dyke with a shovel to hold back the rushing flood waters and who at the same time sneers at a power shovel brought to the scene that has stalled. Instead of shovelling, it would, in the long run, be better for our dyke repairman to stop his labours for a moment and help to get the power shovel's motor going.

1 (1965), 8 Can. Bar J., 293.

That we are facing a flood of data cannot be denied. That science is gearing up to make more data more rapidly, to make data from the data, is obvious when one follows what engineers, physicists, chemists and others are now attempting with the aid of electronic computers of the third generation.

The struggle of the legal practitioner will be to find the time to do the work for which he has been especially trained and equipped. No machine is going to replace the truly professional function of the lawyer—that is, draw inferences, weigh alternatives, perceive relationships and find meanings not explicitly stated. These things belong to the unique functioning of the human intellect. The techniques and methodology of the legal profession were devised to aid the functioning of that legally trained intellect. But in the exercise of these functions, there is routine, and drudgery and non-legal tasks involved, which we now do without much thought of necessity or relevance to the value of the working time available—and, of course, very often experience shortens the time for this drudgery. It is important, however, not to confuse the drudgery of the law with the reasoning or thinking required in the practice of the profession of law. I have in mind more particularly at this point my own specialty of legislative drafting from which you may be able to draw analogies with your own special practice of law.

In this age of advertising and instant slogans you will appreciate why I prefer to label this occurring conflict between the time to perform the legal function and the time to gather and search the data, and to put the result of professional thought into some concrete form for communication to others, as the "Mary Anne Syndrome".

Mary Anne was the very young and very precocious daughter of a general manager of a large construction company. She became fascinated by the arrival of a new baby at a neighbour's home in September. She was determined to have a baby brother for Christmas. Her mother, repeatedly and at first patiently, explained that she could not arrange to have a baby for Christmas. Finally, in desperation, the mother pointed out emphatically that, all other requirements aside, it took nine months to fabricate a baby and only three months were left to Christmas. This didn't satisfy Mary Anne, a child of the instant generation as well as a child of light, "But, mommy," she asked "why don't you do what daddy always does when he is running behind a contract, — put more men on the job."

In Professor Dickerson's work entitled *Legislative Drafting* he wrote of the time problem in the drafting of laws:

A lot of bad laws have resulted from bills hurriedly prepared to meet deadlines fixed by clients who like to get things done but who have been inadequately briefed on what is entailed in turning out a

satisfactory draft. It is true that many legislative emergencies have to be met. It is also true that some deadlines are needlessly imposed on the preparation of laws that are too complicated to be properly handled within the time allotted. Some of these deadlines would be relaxed or dropped, if it were explained to the client that in such a situation either the time limit or the quality of the result must give way. The draftsman who is too easy going about this winds up as a mediocre short order cook.

Lord Chorely in an article in the Public Law issue of Spring, 1968, when commenting on a session of the British Parliament just then completed, wrote:

drafting mistakes are constantly coming to light and the majority of amendments are in fact government drafting amendments. The large number of them provide ample proof of the need to give the draftsman reasonable time.

But today is it fitting to use the client's time for functions that are clerical and not truly professional? If putting more men on the job will get the clerical chores done and the relevant material before the solicitor, counsel or court, then that should be done—and today that is what a computer does; it provides the assistance of a hundred thousand clerks. In a specific case, putting more professional men on the job to perform the professional function is not likely to speed up the gestation period, whatever it may do for the volume of business in an office. That last solution is like responding to the knowledge explosion with a professional population explosion.

The better response to the Mary Anne syndrome would seem to be more efficient data storage and retrieval techniques, more control of the data base and more clerical functions lifted from the lawyer and imposed on machines. That is the hope and promise that lies in electronic data processing, and jurimetrics, for our profession.

Jurimetrics: The use of scientific methodology in legal inquiry

My earlier remarks were by way of sketching in the theoretical justification for a consideration of jurimetrics. The expression "jurimetrics" has been in use for more than ten years.² It has now begun to gain currency in Canada. The studies in jurimetrics concern themselves with the relationship between law and science and technology as well as with the uses of

- (a) quantitative methods for analyzing legal decision making—*empiric methodology*;
- (b) modern logic in law—*symbolic logic*;

2 Perry Meyer, *Jurimetrics—The Scientific Method in Legal Research* (1966), 44 Can. Bar. Rev. 1.

- (c) modern methods of information retrieval in law—
ADP and EDP.

(At this point I have a data problem of my own. So much information is beginning to accumulate on these aspects of jurimetrics that it is easy to bog down in details at this point. At the same time, if I skip over them, I may miss something of value to you.)

The developments one has in mind when discussing the relationship between law and developments in science, etc., are those connected with data gathering. The use of the computer appears likely to pose new problems in areas of the law related to corporations, patents, copyrights and trade secrets, labour relations, insurance, torts, evidence, taxation, administration, real property registers, and banking and computer controlled credit. The American Bar Association has a special committee on Electronic Data Retrieval and from their articles these relationships appear to be coming under scrutiny in the practising profession as well as at American Law Schools. Incidentally, one of the problems creating concern is the use by laymen of legal data base retained by EDP, and the use of that data to practice law illegally. No doubt law societies in Canada will in their turn, as our Law Faculties will, become interested in similar problems.

Modern Logic in Law

I think every lawyer must be familiar with Mr. Justice Holmes comment that the life of the law has not been logic, it has been experience. And, I suggest, we subscribe to the theory on which that remark was based. We are all conscious of the inadequacy of the syllogism, the logical rules of Aristotle and St. Thomas—but not too many of us are familiar with modern logic and what it may be capable of doing “to portray the many permutations and combinations of multiple syntactic ambiguities that may be juxtaposed in the same legal sentence or paragraph”.³

This mathematically-infused formal logic is suitable for machine programming, and, by all accounts, used in electronic computers, may provide, at the speed required to be functional, a practical searching method for syntactic ambiguity or inconsistency of thought in the legal sentence. It is attracting attention in law schools in the United States and has already become the subject of research in Canada.⁴ But the subject seems more suited for the law school than the forum, at this time.

3 Dickerson, *The Fundamentals of Legal Drafting* (Boston, 1965), at p. 90.

4 *Symbolic Logic, Computers and the Law* (1966), American Bar Association; *Jurimetrics: The Scientific Method in Legal Research* (1966), 44 Can. Bar Rev. 1.

In the area of quantitative methods for analyzing legal decision making, some of the matters being developed and tested are:

- (a) an automated method for determination of alimony to legally entitled persons, (Charles University—Prague, Czech.);⁵ and
- (b) a method of predicting appellate court decisions by computers (University of Southern Calif. Law Centre).⁶

But the more interesting and more novel thing about this aspect of jurimetrics is the attempt to use the methodology of science in legal inquiry. In our society, two great methods have been developed in the pursuit of inquiry and the gathering of data, the *dialectic* method of law and the *empiric* method of science.⁷

Though it is probably unimportant in the long run, there is some reason to believe that these fact-gathering techniques of law and science developed concomitantly. In any event, at a time when there is an indication that science is beginning to make some use of the dialectic method, segments of the legal profession are, in turn, beginning to consider the usefulness of the empiric method to help analyse modern day problems of law and legislation.

Mr. Lee Loevinger points out in *Law and Science as Rival Systems* that the "fundamental point, however, that lawyers as well as scientists must understand is that both the dialectic method of law and the empiric method of science are merely means of gathering and helping to organize data, and that data may answer some simple specific questions but they do not provide answers to problems, particularly of the kind with which law and government deal."⁸

Automated Data Processing

There are a number of devices available today, in addition to the printed or typed page, to gather and store data. Some are manually operated and some are automated.⁹

There are also machines to create typed documents mechanically. They are useful in preparing documents that must be absolutely "clean". Apart from increased speed, the greatest utility of these machines is that they will not introduce new errors into documents. They can be used to store standard provisions and headings and letters of a repetitive nature.

5 *Law and Computer Technology* (September, 1968), at p. 7 *et seq.*

6 *Law and Computer Technology* (May, 1968), at p. 11 *et seq.*

7 Lee Loevinger, *Law & Science as Rival Systems* (*Jurimetrics Journal*, December, 1966, at p. 63).

8 *Jurimetrics Journal* (December, 1966).

9 Furth and Hoffman, *Computers and the Law: Introduction to Machine Methods*, at pp. 1 to 38.

The automated system closest to electronic digital computers for data storage purposes is the punched card system. Data is stored by a digital code system and relies upon the punch or lack of a punch-hole in columns of figures on the card. For some purpose this type of data processing is more economical than computers, especially for relatively small volumes of data.¹⁰

In addition to these systems of data storage, there are image storage systems which make it possible and economic to store legal data in microfilm form. These systems include aperture cards, film packets, microfiche and microstrip. Whole libraries can be reduced to this form and contained in a very small space for relatively easy access and entry to the data by more or less traditional methods, though some automation for retrieval is available in image storage systems.

Because of the variety of activities at the output stage that can be generated by a modern computer at great speeds, the electronic digital computer can be used to run printers, photocomposers, typewriters, visual display of data, as well as punching digital information on punched paper tapes or cards to run other equipment. Anything that can be activated by an electrical impulse can apparently be made to operate by a computer command.

In electronic computers, legal text is collected and stored in machine readable form, and thereafter can be located, compared and sorted by machine recognition processes. But this fact should be fully appreciated:

There are really only two basic points to learn about a computer: (a) a computer is an automatic version of a not-too-creative clerk, plus a calculator, plus files, and (b) the fact that the computer works 100,000 to 1,000,000 times as fast as the clerk makes a qualitative as well as a quantitative difference in our results. We can give the computer information-processing jobs we never even considered giving to clerks, and we get accurate answers in a short time.¹¹

Applications to date

There have been many applications of computers to store, edit and recreate statutes in the United States but I need mention only a few. The Legislature of Pennsylvania is almost completely computerized at this time, and many other states are using computer assistance in the legislative process.¹²

10 E. R. Greene, *Law and Computer Technology: Automated Data Processing, etc.*, at p. 11.

11 R. G. Canning and R. L. Sisson, *A Manager's Guide to Computer Processing* (1967).

12 As reported by Professor Skelly at the National Conference of Computers and the Law, June 2nd & 3rd, 1968, Queen's University.

The Lite (Legal Information Through Electronics) project of the U.S.A.F. is offering search services to those requiring them. Other projects are being developed.

In Canada, Professor Stephen Skelly and the Manitoba Legislature collaborated last winter to prepare and print the Manitoba Condominium Act by computer. They were only a short time behind the first such use of a computer for this purpose, in Pittsburgh.

In Quebec, the Bar Association and university law schools are coordinating activities and showing great interest in developing jurimetrics. The Quebec government and Laval University have joined in a project to put the Quebec statutes in electronic storage by 1970.

Ontario is reported to be engaged in establishing a computer system for recording and processing the registration of personal property instruments. The federal government resorted to electronic data processing to operate the Central Divorce Registry; and indications are that the federal statutes, when revised, will be printed with the assistance of EDP, enabling retrieval to be automated for other uses.

Future Applications

At this time I would like to mention a few developments in EDP that would go a long way to relieve legislative draftsmen, some of which may be of use to other areas of the law.

The preparation of statutes involves the draftsman, a typist, legislative editor and proof reader. Under conventional methods the draftsman's secretary or typist uses much time re-typing and re-reading pages as the draft goes through various revisions. Much of this work is repetition but it is a source of new errors and new typing and new delays. As each version appears, the draft must be entirely proofread whether or not the changes are slight, because the matter has been re-typed. The time used for this purpose is considerable and the element of drudgery creeps in to cause oversights resulting in further delays.

Direct access to a computer, from a remote terminal constituting a fairly conventional typewriter, would reduce the time of typing, revising and proofreading drafts, at a reasonable cost. Updating could be simple and rapid with accuracy preserved.

Another factor related to time is the need to get manuscript copy set in type or in a printed form at some point in the legislative drafting process. If magnetic tape is generated in machine readable language, from the earlier computer use, it would be available to be used in a printing establishment to form the data base for com-

puter type setting. If the composing commands were imposed separately in the printing establishment one could avoid the difficulties of new proofreading problems in the office. Once a statute is in magnetic tape storage, it would be capable of being returned to direct access devices, for the insertion of amendments and then returned to the printer for the ubiquitous office consolidation. For those drafting offices that prepare manuscript of office consolidations, considerable time in the drafting office could be saved for the drafting work by such a method.

I point these needs out because sometimes in discussing computer use in law there is a concentration on searching for, and retrieval of, relevant legal information, but that is only another use of a computer. A computer may also be used to do repetitive tasks with textual material; to print, to insert; to delete and to justify, as well as to hold certain standard forms in storage for later use.

It is now, I suggest, not only desirable but virtually a necessity, that we find a means of obtaining a magnetic tape of statutory material as a by-product of periodic revision. If the type composition involves a computer in the process, it should only be necessary to insure that the program permits updating for correction and that the data is compiled in machine readable language; that is, industry-compatible structuring of data in machine readable language. One would have then, a useful data base at little additional cost since the bulk of the costs should be absorbed in the printing costs. With data base acquired by this means there are possibilities for building retrieval programs suitable to the needs of a drafting office—programs for checking cross-references, occurrences of phrases, or groups of words, for which a standard phrase or word is required, and for checking consistency of legislative expression. More sophisticated uses would be expected to develop as the operation and limitations of the equipment are understood. For example, it should be possible to compare French and English equivalents of terms to attain more consistency in expression, to find word occurrences, and to study the effect of any general blind amendments. Subsequent revision should be able to be derived, amendment by amendment, by updating the data base, and be capable of being produced more rapidly than is now the case. Also, any loose-leaf service developed for statutes and regulations would be made more useful by being able to be circulated more rapidly to the users.

In the case of a government drafting service, computers promise the ability to handle statutes and regulations for the development of a faster and more useful communication of these laws to the public in the form of current consolidations and page substitution of current matter. Computers also promise a means to organize and handle the many millions of characters making up our statutes and

regulations for better and more accurate cross reference checks so that oversights can be avoided.

Because some government drafting offices are concerned with two official languages, it will be necessary, probably, to be able to search the terminology used, in both these languages. This is a tedious and time consuming chore at present and not really too effective. Computer techniques would make it much less a chore and much more effective. But any system should permit one to exchange tapes with other offices. For example, it should be possible to develop an exchange of tapes between Canada and Quebec, so that each drafting office can easily and quickly search the usage of the other in the use of French and English terms. This raises the possibility of other uses in due course, in the preparation of uniform terminology. Search for inherent ambiguity of structure or form by symbolic logic formulae might be useful if results could be obtained speedily. Computers promise interesting possibilities in this area.

The task of the computer in law is to accelerate the search for better methods of enacting, administrating and researching the law. But in the values of present day society, better methods *must* include speedier methods. However, electronic processing of legal data for the purpose of speedy results alone is not good enough as a final objective. While the paradox of G. K. Chesterton, that anything worth doing is worth doing badly, may be valid at this stage of EDP, it will not be valid for the main objectives.

An ideal EDP legal system postulates a full text storage, re-organizational capacity, a variety of searching strategies and direct access in familiar language. Syntactic and semantic analysis should be included if they could be achieved by automation to avoid human subjectivity.

When one becomes fully cognizant of the modern struggle with time, the fantastic speed of computer operation makes it a useful and obvious tool of the legal profession. But it is essential that those who will use the tool eventually should participate in its development *now*. It is desirable, I submit, that all manner of legal practitioners should participate early enough so that developing research methods will not forestall usefulness of the device to the many varieties of legal tasks. There is at this time, an opportunity and a need for, not only coordination, but for bringing other interests into the preparatory and experimental work in Canada. I have in mind, not only the law schools and government legal offices, but publishers of legal texts and the various Bar associations in Canada. In the field of jurimetrics there is a place in research for law schools, and in applied jurimetrics there is a place for law societies, government legal offices and publishers, and a need to

avoid costly duplication and wasteful use of our resources—but *caution* and *boldness* are both required at this time.

On this theme, it would be wise to end with another rule from Alexander Pope which seems, in the present state of the knowledge and promise of the electronic age, as appropriate as any rule I could find in law:

In words, as fashions, the same rule will hold,
Alike fantastic if too new or old:
Be not the first by whom the new are tried,
Nor yet the last to lay the old aside.