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IBM-UBC COOPERATIVE PROJECT  
ON LAW AND COMPUTERS:  
A TENTATIVE EVALUATION

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I. PURPOSE AND SCOPE OF PAPER

One day about five or six years ago, I walked into my favourite barber shop for a wash, cut and beard trim. There, sitting on the receptionist's desk, was a new computer. Naturally I was curious. The owner explained that he used it to keep track of the commissions earned by the individual stylists working in his shop. It was also to be used to keep track of such essentials as how often his clients visited his shop, what kind of treatment they liked, and even their birthdays.

A barber's chair can be a nice place for daydreaming, and I fell to doing just that. I thought about my own profession, about the lawyers I knew, and wondered how it could be that they were so far behind the times technologically. How could it be that computers had penetrated such unlikely places as barber shops and yet were rarely present in lawyers' offices?

† Associate Professor of Law, University of British Columbia, and Project Director, IBM-UBC Cooperative Project on Law and Computers. The author would like to acknowledge, with thanks, the contributions of the many people who participated in this project, including members of the following groups: the faculty, staff, and students of the UBC Law Faculty; the staff and students of the UBC Legal Clinic; the staff and Executive Committee of the UBC Law and Computers Project; IBM Canada, Limited; the Continuing Legal Education Society of British Columbia; and the Judiciary of British Columbia.

This project was supported by the following agencies: President's Office, University of British Columbia; Law Foundation of British Columbia; Department of Communications (Canada); Department of Justice (Canada); Department of Supply and Services (Canada); Ministry of State for Science and Technology (Canada); Social Sciences and Humanities Research Council of Canada; Ministry of the Attorney General (B.C.); Canadian Law Information Council; Teknowledge, Inc.; Gandalf Ltd.; and Continuing Legal Education Society of British Columbia. My colleagues and I are deeply grateful for their support.

Finally, special thanks are due to Leigh Webber, who was the co-author of the original proposal to IBM Canada, to John Langstaff of IBM Canada, who helped us to define the project, to Ron Graham, of IBM Canada, who kept us on track throughout the three years, and to the Honourable Nathan T. Nemetz, who encouraged us and provided critical support when it was needed.

Some of the more common explanations leapt to mind. Lawyers are very conservative and not naturally inclined to try something new. They are also not very technologically oriented, as a group. Perhaps most even avoided technical types of subjects during their education, preferring the humanities and social sciences.

But, seated in the barber's chair, daydreaming, I started to look at this from another viewpoint. "What," I wondered, "was my own law school specifically and the legal academic community in general doing to correct the situation?" The answer was "Nothing."<sup>1</sup>

It is clear that law schools could do a great deal. They are in the position to exercise leadership within the profession. Academics have time to reflect on the course of the legal profession and to explore new ideas and approaches. Moreover, they are often deeply involved in the affairs of the profession and in continuing legal education. In both of these roles they can influence leading lawyers. Even if we stick strictly to business, and only talk to our own students, we can have a powerful impact over time. If our students are well educated about the role computing can play in their profession they will, in turn, educate the profession. I have visions of hordes of law students turning up at law firms for their first day on the job and asking, "Where is my computer?" When that starts happening, it won't take long.

The IBM-UBC Cooperative Project in Law and Computers was established to lead the way in our province and in Canada.<sup>2</sup> Its stated purpose was to explore the application of leading edge technology to the legal profession and the delivery of legal services. Its results were to be placed in the public domain and disseminated as broadly as possible. The project was to emphasize areas where the commercial marketplace was unlikely to provide much. So we focused on education, on the judiciary, and on the development of new approaches that were speculative in nature. Our approach was to work with proven strategies and methods. For example, rather than develop software from scratch, which a law school is not very well equipped to do, we intended to use off-the-shelf software whenever possible.

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<sup>1</sup> I am happy to note that a number of Canadian law schools are installing computer classrooms or labs as this paper is being written. The Law Society of Upper Canada also has a facility, which has been in operation for over a year.

<sup>2</sup> See R. Franson, "Computer Applications in Law: The IBM-UBC Cooperative Project in Law and Computers" (1985) 3 *Can. Computer L. Reporter*, No. 2, at 31-9.

## II. BACKGROUND

### A. THE CANADIAN SITUATION

A bit of background about the Canadian situation may be helpful. In computing, at least, Canada seems to be many years behind the United States. I have read of a study, done recently in the U.S., that indicates that 95% of the lawyers in the largest 200 law firms have computers in their offices and use them daily.<sup>3</sup> Imagine the statistic turned upside down and you have the Canadian equivalent. Very few Canadian lawyers use or even imagine using computers.

I also understand, from conversations with U.S. academics and lawyers, that law firms would not dream of hiring young lawyers who could not do research effectively using the electronic case-law databases, WESTLAW and LEXIS. Again, very few lawyers in Canada know how to use the two Canadian equivalents, QUICKLAW and CAN/LAW. In some ways that is not surprising, because the two Canadian databases are pallid in comparison to their U.S. counterparts. They consist of a hodgepodge of small databases that are based on traditional published materials, are poorly organized, and cover only a small fraction of Canadian case-law.

The apparent lack of interest on the part of the bar, and the slowness with which the commercial market seemed to be moving, made it essential that the law schools get involved. What was needed was a big push to get things started. Our project was designed to provide that push.

### B. THE LAW SCHOOL'S NEED FOR CAPITAL RESOURCES

Once one has decided that a law school ought to get involved in computing, the logical and sensible thing to do is to decide what resources are needed, to estimate their costs, develop a budget, and go out and buy them. Unfortunately that approach was impossible in British Columbia. At the crucial time governments across Canada were cutting back on expenditures. Universities were especially hard hit. In British Columbia there was a formal restraint program in effect, and the universities' budgets were cut in a succession of years. There was no way our University could contemplate a substantial capital expenditure for computing resources for the law school.

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<sup>3</sup> J. Kilcoyne, "The Use of Computer Technology by Lawyers in the Greater Victoria Area" (1987) (an unpublished report by Salus Systems Group for the Victoria Bar Association and the Faculty of Law at the University of Victoria).

### III. FUNDING THE PROJECT

#### A. SOWING THE SEEDS

In our case we knew that we would need to raise the money — that the University would not be able to supply it all. It seemed important to make some kind of a start, however, so we prepared proposals for our University President's Office and for the Law Foundation of British Columbia. Both were modest, and spoke only of providing a small laboratory/classroom where we could teach law students how to use computers for legal research. Although we really expected to succeed with only one proposal, we found a favourable reception in both places and began to think in terms of matching funds. In the end we raised \$34,000 from the Law Foundation and \$30,000 from the University. A room was allocated, renovated and furnished, and ten computers were purchased. Within a year of installation it was already clear that the lab could not satisfy the demand.

This small project was very helpful in several ways. First, it gave us experience with computers and in running a lab for students.<sup>4</sup> Second, it gave us credibility. With an existing lab and the enthusiasm of our students it became possible to think in bigger terms. We established contact with the Center for Computer Assisted Legal Instruction at the University of Minnesota and began to learn how to write CAI courseware. We also established contact with other people in Canada who were interested in the subject. It became clear that some kind of focus was needed. Isolated individuals working at widely separated law schools simply were not going to have much impact. It would require a centre of some kind, with substantial resources, to get anything meaningful started in Canada. That seemed to indicate that the resources of some large company, a leading manufacturer of computing equipment, would have to be involved.

#### B. IBM CANADA

We started by approaching the largest company in Canada, IBM Canada Limited. We soon learned that the company was already soliciting proposals from within UBC for a cooperative project with the University. The cooperative project program is a very interesting example of partnership between the universities and private industry.<sup>5</sup>

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<sup>4</sup> Two students helped considerably at this early stage: Gillian Dougans and David Newell.

<sup>5</sup> A general description of the program can be found in *Exchange*, The IBM Cooperative Projects Bulletin, published regularly by IBM Canada.

As a matter of corporate policy, IBM Canada channels its charitable donations into specific projects at Canadian universities. The ground rules are that IBM will donate a substantial amount of equipment and software, and the university is expected to contribute a similar resource level in personnel, space, and support staff. The projects are expected to produce concrete deliverables that can be placed in the public domain. One of the main goals of these projects is the transfer of technology to areas of endeavour where it can make a valuable new contribution.

The program seemed ideal for the legal profession. Here was a profession that had not yet shared in the technological revolution, in Canada at least. And yet it seemed likely that substantial productivity gains would be possible if appropriate use were made of computing technology.

We proposed the creation of a permanent centre to serve as a focal point for work on the application of leading edge technology to the legal profession. IBM's representatives liked the idea, and we began a year-long process of negotiation. During the process, the definition of the project was transformed in many ways. An early casualty was the idea of a permanent centre. There were political problems within the University concerning the creation of centres, and IBM was more used to contributing to limited-term projects in any event. The company was very interested in the public benefits that could be expected from the project, and not very interested in providing assistance for lawyers. Their view was that the ordinary commercial market could be expected to provide good law office management software. We were encouraged to shift our focus from lawyers and law offices to the judiciary, and to developments and ideas that were unlikely to come from ordinary commercial enterprise.

During these negotiations members of both bench and bar provided valuable assistance. The Honourable Nathan T. Nemetz, Chief Justice of British Columbia, was one of our earliest and staunchest supporters. He made it clear that the Project would have the cooperation of the judiciary, and that he believed that it would make a valuable contribution to the legal system in Canada. The Attorney General of British Columbia also promised to cooperate. In addition, numerous members of the legal profession indicated their support for the project, and the Continuing Legal Education Society of British Columbia volunteered to play an active role by providing space and offering courses for lawyers. In short, the legal profession in British Columbia was solidly behind the Project and very interested in it.

Finally, in October 1985, the University and IBM Canada announced the establishment of the Cooperative Project in Law and Computers.

IBM's contribution to the project consisted of computing equipment, software, and consulting services. It was valued at approximately \$2.2 million, which was based on standard list prices. In the result, IBM has donated 133 personal computers and one small mainframe (a 9375, model 60). An experienced project manager served as a consultant to the project during the first year or so, probably at about half-time level. In addition, the regional manager for scientific and educational programs contributed substantial time.

The University's role was to do the work outlined in the proposal. It was expected that the University would be contributing resources roughly equivalent to those contributed by IBM. Our estimates indicated a total University contribution of \$1.6 million, including such intangibles as space and administrative and secretarial support. In more concrete terms, the University promised to provide a technical staff of three people in support of the project. The Law Faculty's contribution includes the Project Director (essentially full time), project leaders for the larger sub-projects (two at one-third time), and the research time of eight faculty members, or a full-time equivalent of nearly three people.

### C. CASH CONTRIBUTIONS

Numerous agencies have contributed cash to the project, which was used for supplies, core technical and secretarial support, hiring student research assistants, and so on. The contributors are listed below:

UBC (not including faculty salaries)	\$ 450,000.
The Law Foundation of B.C.	482,000.
Dept. of Justice (Canada)	238,000.
Dept. of Communications (Canada)	125,000.
Dept. of Supply and Services (Canada)	142,000.
Social Sciences and Humanities Research Council	166,469.
Attorney General (B.C.)	55,000.
Canadian Law Information Council	8,000.
TOTAL CASH CONTRIBUTIONS	\$1,666,469.

### D. CONTRIBUTIONS IN KIND

In addition to the contributions outlined above, numerous agencies and individuals have made very substantial contributions in kind.

The Continuing Legal Education Society was one of the silent partners in the arrangement right from the start. Expenses that could not be borne by the University were often covered by CLE. It contributed the space for a downtown computer classroom to enable us to reach lawyers and judges more easily, and members of the CLE staff have contributed substantial amounts of time. In reality, CLE operates the part of our computer literacy program that addresses lawyers. A recent estimate prepared by CLE staff values their contribution at \$37,000 per year.

The Ministry of the Attorney General of British Columbia has also contributed substantial in-kind resources. These have included furnished office space in the Vancouver Law Courts, the time of court clerks and staff needed to access case files, and various consulting services. We estimate the total in-kind contributions from this source at \$310,500 over three years.

Several private corporations have also made substantial gifts. Teknowledge Inc., of California, has contributed the expert systems software (valued at \$10,000). Gandalf has contributed modems to the sentencing database (valued at \$39,000). In addition, numerous software publishers have contributed programs to the CLE lab for demonstration to lawyers.

#### IV. OVERVIEW OF PROJECT

##### A. PURPOSES

We originally proposed that a Centre for the Study of Computers and the Law be created at the University of British Columbia to serve as a focal point for research and development in the area. The Centre's stated goals were: to develop new ways to learn the law and acquire legal skills; to develop tools to improve the delivery of legal services to the public; to develop ways to improve the public's understanding of and access to the legal system; and to explore the applications of leading edge technology to legal practice.

As I mentioned earlier, the idea of creating a permanent centre ran afoul of University politics. There are, of course, formal procedures and rules relating to the creation of centres at UBC. It became clear relatively quickly that it might take up to a year to sort out the internal problems that were involved, and we feared that the moment would be lost. Instead we decided to structure the arrangement in terms of a three-year project.



## B. DELIVERABLES

We proposed to concentrate on a number of concrete projects that would involve the application of known computer technology to law and the legal profession. These projects would be expected to produce immediate benefits to the legal system and the public. The specific projects that were proposed included the following:<sup>6</sup>

1. To develop computer literacy courses for law students, judges and lawyers, to be used in law schools and professional legal training programs.
2. To provide technical support and coordination for Canadian authors who are writing computer-assisted legal instruction programs.
3. To develop a plan for using computers in a law school teaching clinic. The uses to be served include management of the clinic, automatic document preparation, and computer-assisted instruction of clinical students.
4. To explore the ways computers can be used to help the judiciary deal with its expanded caseload.
5. To build a database to assist judges in sentencing offenders.
6. To design a prototype expert system to help legal researchers identify appropriate search terms and materials for their research.

## V. ACHIEVEMENTS

As this is being written, we are two and one-half years into our three-year project, and we have accomplished all of our major goals and objectives. Further details concerning our progress are outlined below.

### A. COMPUTER LITERACY

From the beginning the education of students, faculty, bench and bar with respect to computing was seen as one of the most important functions of the project. We recognized that the legal profession was behind other professions in its use of modern technology and we designed the project to raise its level of awareness as much as possible. This work had three aspects. First, we would develop courses and train our own students in the use of computers. Second, we would offer courses and information to practising lawyers. And third, we

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<sup>6</sup> Centre for the Study of Law and Computers (1985), Faculty of Law, University of British Columbia (unpublished).

would encourage educators across Canada to undertake similar programs in their provinces.

We began by building two classrooms; one at UBC, and the other at the offices of the Continuing Legal Education Society of British Columbia (CLE). Both are used for formal classes and as drop-in labs. The classroom at UBC is located in the law library and contains twenty IBM-PCXT computers connected in a token ring local area network to an IBM-PCAT file server. Software, computer-assisted instructional materials, and various services like printing are made available to the students through the network file server. A laser printer is provided and seems to handle the printing needs of the classroom/lab quite adequately. Students are not allowed to use the file server for their data in ordinary circumstances; they must use floppy disks. The CLE classroom/lab is very similar, but contains only eight computers. It is located conveniently for lawyers in downtown Vancouver, very near the Law Courts.

#### (i) For UBC Law Students

The classroom/lab at UBC has two primary functions. First, it is used to teach law students about the potential and uses of computers in the practice of law. Second, it is available for students to use in their daily work. We emphasized this latter function because we believed that students would learn best about computers if they used them in their law school work.

Several things were required to make this concept work. There had to be some form of instruction that would provide students who had never used computers with the skills and knowledge they would need. We quickly learned that students come to law school with a very wide variety of computing skills, ranging from those who have avoided anything technical in their undergraduate education to those who have taken computer science, engineering or some other discipline that has required extensive experience with computing. The courses we designed also had to fit within our current curriculum, since we didn't want to face the delay that would be involved in curriculum changes (often in excess of two to three years).

Our approach was to modify an existing course in law and computers and to supplement that with a series of short, non-credit courses for people who did not have the opportunity, time or inclination to take the principal course. The non-credit courses ranged from just a couple of hours to six hours. Students who already had experience with computers were simply provided with a two-hour intro-

duction to the lab and our hardware and software. This seemed to be adequate for these students. Beginners were offered a six-hour sequence that explained computers and computing concepts and introduced them to a very simple word processing program. Again, this seemed adequate in that it allowed many students who were completely inexperienced in computing to use the lab effectively. Other short courses were offered during the year covering such topics as computer-assisted legal research.

The credit course in law and computers was designed as a laboratory course.<sup>7</sup> Emphasis was placed both on discussion of the uses that can be made of computing in a law office context and on hands-on experience with computers and law office software. Such topics as computer-assisted legal research, expert systems and the principles of database design were covered. Students were expected to complete a series of laboratory projects including, among others, an evaluation of QUICKLAW, the leading Canadian on-line database of legal information, and the design of a database that could be used by a law firm to detect potential conflicts of interest.

In addition to these formal courses, we designed aids that the students could use to teach themselves. For example, an elaborate lab manual was written providing clear explanations of how to perform various tasks that were likely to be important to students.<sup>8</sup> There were chapters on word processing, database programs, computer-assisted legal research, and so on. We also prepared menus that allowed students to select software easily. Finally, computer-assisted instructional materials were prepared and made available through the network.

Although the lab is often quite busy, it is a bit difficult to estimate, with any accuracy, the number of students taking advantage of the facility. Our approach was to minimize the barriers that would discourage use of the lab, and we feared that systems that might have been used for counting would get in the way. To be frank, we also placed our own limited resources on the development of helpful aids and instruction, rather than on counting users. As a result, our estimates of usage are very rough. Nonetheless, it appears that in excess of two hundred students have taken one or more of our short courses (the total student body is seven hundred students) and that the lab has had at least one hundred regular student users in each of the past

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<sup>7</sup> R. Franson, "Computing in Legal Practice: A Course for Law Students", a paper presented to the Fourth Canadian Conference on Computers and the Law Teaching Process (18-21 June 1988) Université Laval.

<sup>8</sup> R. Franson, E. Dowd and K. Armstrong, "Computer Lab Manual", IBM-UBC Law and Computers Project (1988).

two years. In addition, the course in law and computers has been offered during three of the past four terms and has been fully subscribed (twenty students per term).

Since the program began we have added an additional credit course that relates to computing. It is entitled "Artificial Intelligence and Legal Reasoning" and basically is a jurisprudence course. As a part of their enquiry into the nature of legal reasoning, students learn about expert systems and, in teams of two or three, actually build a small expert system in an area of the law of damages. In the process, of course, they gain intimate knowledge of the legal reasoning process in the area they have chosen. This course has been offered once and was subscribed to by sixteen students.

#### (ii) For UBC Law Professors

Law teachers are role models for law students. It would hardly make sense to ask students to learn about computers if their teachers all continued to work with quill pens, never touching a computer. This was recognized from the beginning and the project plan was to provide up to thirty computers for use by faculty. It was also recognized that faculty members would need instruction, but that it would have to be organized differently than the courses offered to the students. In the end we settled on full-day workshops taught by professionals on Saturdays, when faculty could make the time available. Beginners were strongly encouraged to use an IBM program called Writing Assistant, which is very simple and easy to learn. Some, but not all, have since switched to more powerful word processing programs.

The strategy worked very well. Within the short space of a few months most of the faculty started using computers for their writing tasks. Unfortunately, we were not able to take full advantage of the benefits because the secretarial staff was still using dedicated word processors, which were incompatible with the computers that faculty was using. Secretaries were actually retyping papers that had originally been prepared on a computer! As always, the problem was lack of financial resources. The University could not afford to replace all of the secretarial work stations, and IBM could not include, in its gift, computers that were not going to be used as a part of the research project. Fortunately, the University has since been able to replace the old dedicated word processors with compatible equipment, and the relationship between faculty and staff seems to have improved immeasurably. We are also noticing that the staff can be very effective

in teaching faculty how to use the equipment, and we are hoping that those faculty who are still using Writing Assistant will now be able to shift to the word processing program that the secretaries use.

In the time since the project began quite a few faculty members have learned how to use computers for much more than word processing. Some have written computer-assisted instructional materials; some are working on expert systems; and others have created personal databases for their notes and reference materials.<sup>9</sup> We expect this trend to continue.

### (iii) For Legal Educators Across Canada

Our project also included an outreach effort aimed at law teachers across Canada. We wanted to use modern electronic networking facilities, as well as more traditional means, to allow educators across Canada to exchange information about computing in legal education.

When our project began another IBM cooperative project was well under way in which IBM and Canadian universities were jointly establishing an electronic network linking all Canadian universities. The network, known as NetNorth, is also connected to the BITNET network, which links universities world-wide.<sup>10</sup> We hoped to establish communications with other Canadian law schools and with major CLE organizations through NetNorth.

A considerable amount of effort was put into this, but unfortunately electronic mail just wasn't ready. There were several problems. First, while other law teachers had computing equipment, very few were tied in with their computing centres, and therefore most could not access NetNorth. Second, the software is not particularly user friendly, at least not for real novices. Moreover, since computing centres deal mostly with scientists and others who are very familiar with computing, computing centre staffs at several universities were often unsympathetic or simply unable to help. Finally, the network turned out to be unreliable. Just as we got a number of law teachers using the system regularly, and got a kind of informal electronic newsletter going, the system started losing messages at an unacceptable rate. It took several months to get that problem fixed, and by then everyone had lost interest.

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<sup>9</sup> For example, W. Black and C. L. Smith have created a database on equality rights cases.

<sup>10</sup> See *Exchange* 1987-88, v. 3, no. 1 at 4-5.

We had far more success with a more traditional academic approach — an annual conference. At about the same time our project started, legal educators gathered in Toronto under the auspices of the Law Society of Upper Canada to discuss the role of computers in legal education. Out of this meeting came agreement on the need for an annual conference.

The next meeting was held at UBC in June of 1986 and was supported by IBM as a part of our project. IBM agreed to continue supporting an annual conference, at least for the duration of the cooperative project, and meetings have since been held at Queen's University (1987) and Université Laval (1988). They have provided a valuable forum for discussions about computing and legal education, and it appears that they are likely to be held for some years to come. The next meeting is scheduled to be held at the University of Alberta in June of 1989.

(iv) For Lawyers and Bar Admission Candidates

The classroom at CLE was intended to serve the bar both through formal courses and workshops and as a drop-in centre where lawyers could actually try out software of interest to them.

CLE began by implementing a drop-in facility for lawyers. The idea was that the software would be available, and lawyers who were interested would simply drop in and try it out. Manuals were prepared, as they had been at UBC, and menus and other helpful aids were designed.<sup>11</sup> However, experience showed that a much more aggressive approach was called for. Few lawyers showed up, and quite a few of those who did really wanted advice respecting the purchase of equipment or software.

With the help of the project and the Law Foundation of British Columbia a Coordinator of Computers and Legal Education was hired. It was his job to put the lab on a proper operating basis and to develop a curriculum for teaching lawyers about computers and computing. For very practical reasons the lab came first. The Coordinator began by contacting numerous software vendors. He asked them to donate their software to the lab so it could be used for courses and so lawyers could try it out in the lab, pointing out, of course, the valuable exposure this would give their products. Quite a few were willing to cooperate. Next a publicity flyer was mailed to seven thousand lawyers in B.C. as a part of one of CLE's regular mailings.

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<sup>11</sup> Law student Andrew Jackson helped with this part of the project.

As a result, use of the lab expanded dramatically, and it now seems to be serving the intended function.

The next step was to design a curriculum and courses that could be offered to the bar. After some initial research a draft curriculum was prepared by the Coordinator, and a workshop was held in which approximately twenty-five knowledgeable people participated. The curriculum was refined and is now being used as a basis for CLE planning in the field.<sup>12</sup> In concert with this activity, CLE began offering courses and workshops. Five microcomputer courses were offered in the fall of 1987 covering a variety of applications. There were approximately 450 registrations from a group of 150 people (many took more than one course).

The CLE facility is also used by the roughly 350 bar admission candidates who take the Law Society's Professional Legal Training Course each year. To date their use of the lab has been limited to using various computer-assisted instruction lessons and instruction in computer-assisted legal research.

## B. COMPUTER-ASSISTED INSTRUCTION

A second major theme of our project involved using the computer as a teaching tool. We felt that computer-assisted instruction (CAI) could give law students an opportunity for individual feedback and self-paced instruction without placing impossible demands on faculty resources. In order to explore the possibilities we would first have to create CAI courseware in Canadian law, since very little existed when our project began.

The first step was to make a basic decision about how such courseware would be created — should it be programmed from scratch using a high-level language like Pascal, or should some authoring system be used that would eliminate the need for a programmer? We felt that it was highly desirable to avoid a reliance on programmers. This would place limits on the kinds of functions we would be able to build into our courseware, but it would allow us to proceed more quickly. It would also make it easier to revise the lessons, an important consideration in an ever-changing field like law.

The second step was to choose an authoring language. There are many programs available to assist authors in preparing CAI ma-

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<sup>12</sup> D. Hill, "Computers for the Legal Profession — A Curriculum" (1988) (unpublished report prepared for the Continuing Legal Education Society of British Columbia).

terials. We had to choose one that was suitable for use in a law school. It had to be easy to use, because most law teachers are not very experienced in using computers. The ability to handle graphics was not important, but the program had to handle text efficiently. And the ease with which the author could revise the text was a paramount consideration.

Pioneering work in this area had already been done by the Center for Computer Assisted Legal Instruction (CCALI) at the University of Minnesota, a joint project of the University of Minnesota and Harvard University. The Center had developed authoring languages suitable for use in law schools, had established standards for CAI courseware in law, was offering training programs for legal academics, and was acting as a clearing house for CAI courseware produced in the United States. It made good sense to take advantage of the work they had already done, so UBC became an associate member (one of its first members from outside the U.S.), and we adopted one of the programs that they were distributing as our standard.

The CAI authoring program we selected was INTERPRO, produced by Scott Glanzman and distributed by CCALI. Its principal advantages are that it allows very quick prototyping of courseware, is very easy to use, and is used by a number of law schools. The courseware is also very easy to revise.

The next step in our program was to introduce several of our faculty to the concepts of CAI. A workshop was organized for this purpose by Jerome Atrens, a member of the UBC law faculty and one of our team leaders. A total of eighteen law teachers from UBC and other Canadian law schools took part. The two-day workshop gave participants hands-on experience with the authoring program that we had selected. Short trial lessons were created and were critiqued by the group.

We realized that busy faculty members were not going to have time to write CAI courseware themselves, so we hired a team of five students to serve as research assistants during the second summer of the project.<sup>13</sup> They too had to be taught how to create CAI materials. For this purpose Professor Atrens arranged a two-week training course. We began by introducing the students to the concepts of

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<sup>13</sup> Kathy Armstrong, Aki Lintunen, Lisa Peters, Anita Petkovic and Tony Rogers. Faculty members working on the project included: J. Atrens, J. Blom, D. Egleston, M. MacCrimmon, S. McCallum, D. Pavlich and R. Reid. Law students Susan McKilligan and Brian Rea helped to revise the lessons during a subsequent summer.



CAI, then provided hands-on instruction in the use of the word processing program we had adopted, finally covering the use of INTERPRO.

The idea was that the students would work with the faculty members who were participating in the project to create at least two lessons each by the end of the summer. The faculty members would develop the concept for the lessons — that is, would outline what they should cover. The students would do the necessary research and produce a first draft of the proposed lessons. They would then work together to refine the courseware. We hoped that the students would be able to assist each other by reviewing and critiquing one another's work.

The plan worked very well. By the end of the summer the students had produced between ten and fifteen hours of running courseware. The students enjoyed the experience and said that they learned a lot about the area of law they worked on and computers in the process. Several carried on their work during the school year and the following summer.

Faculty involvement ranged from very active involvement to very minimal involvement. Some faculty actually drafted the course material, which had not been anticipated. In such cases the student's role was reduced to that of a programmer.

The cost of producing CAI courseware is an important consideration. Our experience suggests that one set of lessons — say one to two hours of CAI — requires about the same effort as producing a casebook. That is, it seems to require one student dedicated to the task for a summer and the supervisory time of a faculty member. But that is clearly not the end of the story. A successful lesson will be used, it will be critiqued by students, and it will need to be revised each summer.

It is more difficult to say anything about the benefits. We did attempt to have students fill out evaluation forms when they used the exercises; however, very few did. As the students explained it: the exercises took enough time and they had other work to do. Expecting them to fill out evaluation forms in addition would take too much time, and they simply did not do it. Different techniques will clearly be required to assess the benefits of the lessons we prepared.

One can ask students, of course, whether they found the lessons helpful, and we did do this on occasion. The feedback was generally favourable, and some of the lessons seemed to be highly regarded. Two should be mentioned. The first is a lesson that was prepared for

use in the legal clinic.<sup>14</sup> It provides students with practice in objecting to the introduction of evidence. Based on a real trial, the lesson shows the questions that were asked by counsel and asks the student whether he or she would object and the ground for any objection. The program then provides feedback from the professor. The lesson seems to have been very well received; indeed it is much appreciated by clinic students who are preparing for their first trial.

A second lesson that appears to have been successful attempts to introduce the student to the techniques of using a remote database for legal research.<sup>15</sup> The student is first introduced to each of the commands that must be used and is then given some practice using them. The lesson concludes with a simulation of the remote database, so the student can practice before actually trying to use it.

It should be noted that the purpose of both lessons is to provide the student with practice in some skill they need. It may be easier to use computers for this purpose than to use them for teaching legal concepts.

### C. LEGAL CLINIC

The third objective of the project was to computerize the UBC Legal Clinic, as a demonstration project.<sup>16</sup> As is common in Canada, UBC operates a legal clinic where law students provide legal services for clients who cannot afford lawyers. The primary purpose of the clinic is not to provide professional service. It is to provide an educational setting where students may learn and refine skills that are necessary to the practice of law. Fourteen students per term are accepted into the program and receive credit for a term's work toward their law degree. They work under close supervision from staff lawyers and participate in numerous seminars designed to teach some of the more practical aspects of the practice of law.

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<sup>14</sup> D. Egleston and K. Armstrong, "Objections Practice Exercise", UBC Law and Computers Project (1987).

<sup>15</sup> R. Franson, A. Holeton and K. Armstrong, "Computer-Assisted Legal Research: Using QuickLaw, An Interactive Tutorial Program", UBC Law and Computers Project (1988).

<sup>16</sup> This project is described more completely in D. Arnold, "The Benefits of Computers in a Legal Clinic", a paper presented to the Fourth Canadian Conference on Computers and the Law Teaching Process (18-21 June 1988) Université Laval. An earlier paper outlined the needs of a legal clinic and the kinds of systems that might be useful. R. Franson, *et al.*, "The Role of Computers in Legal Clinics Associated with Canadian Law Schools", Canadian Law Information Council, Occasional Paper No. 9 (1986).

We felt that the clinic should be a model of the best in legal practice and were convinced that a modern law office should include the best that technology can offer. We also believed that a modern information system would improve the clinic's ability to plan, control the management of information, improve quality control within the clinic and enhance the productivity of the clinic's students and staff. Finally, we hoped that the clinic would provide a testing ground where we could experiment with new uses for computers, thus fulfilling the traditional leadership role that is expected of law faculties.

The project has proceeded very well. Computers were installed in each staff lawyer's office and at the secretarial stations. In addition, three computers were provided for student use. All of these computers are connected in a local area network allowing them to share information and resources like printers. A file management system was created that allows clinic supervisors to locate files easily, to determine which students have been assigned to particular files, to assure that students have a proper range or mix of files, and to monitor the students' performance in closing files.

Students use the computers mostly for word processing. After approval by a staff lawyer (there are two) an electronic copy of the document is passed to the secretary for completion. Although use of the computers is voluntary, nearly all of the students use them. We have also found that the experienced students help teach the students who are not computer literate. One result has been the virtual elimination of a serious bottleneck that used to delay the preparation of letters to clients and other documents. Staff lawyers also report that the quality of work has been improved. Students now spend more time polishing their work, and staff lawyers find the process of reviewing and suggesting changes to documents easier than it was when all student work was handwritten.

The file management system was custom-designed for the needs of the clinic by UBC law students, working under the supervision of the project's Associate Director, Doug Arnold. It performs the following functions: maintains a record of all past and present clients; produces a variety of reports showing the case-load of individual students, and the types of files they are handling; maintains a conflicts of interest system, which checks for potential conflicts when a new file is opened; maintains a limitation-date reminder system; transfers files at the beginning of each term to the new group of students on a structured/random basis; maintains a trust accounting system; and prepares statistical reports on the performance of the clinic.

When we planned this project we had hoped to buy and install an off-the-shelf law-office management program to perform most of the functions we required. Unfortunately, this proved to be impossible. Most law-office management software emphasizes time-recording and billing functions (not a concern in our clinic) and compromises all other functions in order to fit within the limits of microcomputers. As a result, they either did not do what the clinic needed or did it badly.

One of the delightful discoveries that we made during this project was that the law school included numerous students who were capable of building the kinds of systems we needed. We had initially thought that it would be necessary to hire programmers or computer science students.

During the first year of the project, two students analyzed the information and systems needs of the legal clinic. The following summer a new team of two students designed and built the basic file management system. Then, in successive summers the system was refined and various additional systems (like the conflicts system) were designed and built. In all, six law students<sup>17</sup> have worked on the project, but since some of the students worked for more than one year, that figure is misleading. A more accurate picture is given by simply saying that four teams of two students each worked on the system in successive years.

#### D. JUDICIAL PRODUCTIVITY TOOLS

The fourth major objective of the project was to explore the ways in which computers could help the judiciary. The project has undertaken several initiatives in this area. We began by offering computer literacy courses for judges. Most of these courses were held in the Vancouver Law Courts. The usual course comprised five sessions of forty-five minutes each. They were scheduled on successive mornings before the courts opened in order to maximize attendance. On average, eight judges attended each session, and the emphasis was placed on providing some hands-on experience with word processing, filing and spreadsheets.

Courses were also held at the Provincial Courts in Vancouver and on Vancouver Island, but these had to be organized differently in order to avoid wasting a lot of staff time. On the Island, for example,

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<sup>17</sup> John Anderson, David Fushtey, George Paterson, Philip Riddell, David Siebenga and Mark Wong.

the course consisted of a half-day workshop. In all, well over fifty people, including judges and judicial staff members, took advantage of these courses.

Another initiative the project undertook, at the request of the judges themselves, was to establish a loan-pool of portable computers so that individual judges could experiment on their own. It was intended that a judge would borrow a computer for a period of several months and would use the time to learn word processing.<sup>18</sup> Based on what we learn through these judges, and on our research of the literature, we hope to prepare a report on the benefits that can be achieved by providing computing resources for judges. The judges expect that their experiences and our report will be of use in their discussions with government.

A third initiative in this area was a pilot project to test the feasibility of computer-assisted retrieval of information from trial transcripts. It was undertaken at the request of and in cooperation with the Honourable Alan McEachern, Chief Justice of the Supreme Court of British Columbia (as he then was).<sup>19</sup> The entire trial transcript for a native land claims trial, expected to be over two hundred volumes, will be entered into a computer, with appropriate software, to allow the Chief Justice to retrieve information. The Ministry of the Attorney General has provided the machine, an IBM PS2/60, and the project is providing the technical support and training for the Chief Justice and his staff. A report will be written at the conclusion of the pilot evaluating the potential of the technique and identifying any problems that have been encountered. As of this writing, we have tested numerous software products and have selected one that seems quite suitable, Court Services has purchased a computer for the test, and we have entered approximately seventy volumes of trial transcripts. In addition, initial training has been completed successfully. Tests have shown that the system is very easy to use and very fast (search times of three to five seconds are typical).

The project has awakened a great deal of interest among the judiciary. Requests for assistance and for the loan of computing equipment have reached embarrassing levels, because we don't have the

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<sup>18</sup> Private tutorials were arranged for the judges, at their request, with law students Kathy Armstrong, Graeme Black, Charlotte Keis and Brian Rea providing the instruction.

<sup>19</sup> Four law students have worked on this project. Kathy Armstrong prepared the first demonstration for the Chief Justice; Graeme Black evaluated various retrieval programs and built the system; and Henry Waldock and Brian Rea did follow-up work during the next year.

resources to respond. One illustration of interest comes from a recent survey of the Supreme and County Court benches done by the Court itself. It showed that thirty-three percent of the judges are interested in working with a computer.

#### E. SENTENCING DATABASE

One of the most ambitious of our projects called for the design and establishment of a database of information about sentences. As outlined initially, it would provide judges with a picture of the range of sentences handed down in prior cases for any particular kind of crime. However, under the guidance of the study director, John Hogarth, the project has expanded to provide a complete knowledge base on sentencing law and practice. Dr. Hogarth wanted a comprehensive approach. He wanted a judge to be able to sit down at the terminal and get all of the information that he or she needs.

This project called for a large commitment of resources, and for that reason we sought outside funding for it directly. We were fortunate to gain the support of the federal Department of Communications in the first and second years of the study, and the added support of the Department of Supply and Services and the Ministry of State for Science and Technology in the second. The Department of Justice is funding the final, evaluation phase of the project. IBM Canada provided the host computer (a 9375, model 60) and ten personal computers for use by the courts.

The system itself attempts to capture the wisdom of recognized experts from legal practice so that their methodology in analyzing cases may be shared with others. It guides the user through the knowledge acquisition process, posing questions and providing alternatives at each stage of the enquiry. It is not unlike a decision tree, with the user in charge of the process and the computer providing choices and information at each point in the analysis.<sup>20</sup>

The knowledge base is divided into five files of information:

1. *Range of Sentence.* This file contains over 60,000 trial decisions compiled from the Provincial, County and Supreme Courts of British Columbia from 1984 to the present. These

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<sup>20</sup> See J. Hogarth, "Sentencing Database System User's Guide" (Third Draft, October 1987); UBC Law & Computers Project, Proposal for Funding from the Department of Justice (15 Feb. 1988). The law students who worked on this project included: David Boulding, Michael Girard, Dorie-Anne Leggett, Olivia Lee, Lauren MacKenzie, Maureen McCann, Stephen Mellows, Dereck Miura, Eva Schmeig, Barbara Schmidt, Traci Shuster, Camilla Pauls Wheeler and Harvey Wolfson.

trial decisions are presented in two forms: summary data in the form of histograms and tables of individual dispositions. Access to either form may be made by specifying the offence and offender characteristics (age, sex, marital status and criminal record).

2. *B.C. Court of Appeal Decisions.* This file contains short summaries of over 1,000 sentencing decisions of the B.C. Court of Appeal, covering the period 1977 to present. Each case is categorized by the age, sex, marital status and criminal record of the offender, as well as by offence. The system remembers the categories first entered by the user, and automatically searches for the cases that fit the initial query.
3. *Aggravating and Mitigating Factors.* This file provides a checklist of aggravating and mitigating factors recognized by the B.C. Court of Appeal for the period 1982 to present. Under each factor is a list of cases where that factor has been recognized as having a significant effect on the sentence. The user may consult the list and may retrieve the full text of any of the cases that are cited.
4. *The Law of Sentencing.* This file contains approximately 1,200 propositions of law relating to sentencing, each supported by case law or statutory authority. It is organized in much the same way as a legal treatise, but the difference is that the user may retrieve the full text of any of the cited authorities by merely pushing a button.
5. *Resources.* Finally, the fifth file provides information on correctional institutions, resources and community programs that are available in B.C.

A prototype of the knowledge base is fully operational. It has been installed for the exclusive use of judges and their clerks on IBM PS2 computers at the busiest courts in the province. Initial feedback is very encouraging, confirming that the system is very easy to use and provides information that is useful in a sentencing context.

Our plan is to make the system available to lawyers throughout the province on a dial-up basis as soon as possible. This system is now running on the host computer and is undergoing testing. A thorough evaluation of the system will be conducted by the federal Department of Justice once it becomes operational.

## F. EXPERT SYSTEM

An expert system can be defined as a computer program that uses knowledge and inference procedures to solve problems that are difficult enough to require significant human expertise for their solution. Typically, such systems contain facts about the subject matter of the system and heuristic rules that enable one to reach conclusions about the best solution of the problem. Numerous expert systems have been built for use in the medical profession to aid doctors in diagnosing disease. They lead the user through a series of questions about the symptoms and circumstances of the patient and, in the end, present the simulated "judgment" of the expert about likely causes and most effective possible treatment strategies.<sup>21</sup>

We felt that it should be possible to build similar systems containing legal expertise — systems that would lead a lawyer through a series of diagnostic questions and conclude by pointing the way to the key issues and authorities that the lawyer should consult.

When we began our project we regarded this part as our "blue-sky" work. We were convinced that all of the other projects were practical and feasible, within the resources we hoped to be able to raise. But we also felt that a University research project ought to include some more speculative, future-looking work.

We believed that expert system work in computer science had progressed to the point where it might be possible to apply it to law. Two developments had come together. First, microcomputers had become powerful enough to allow one to dream about creating an expert system within their bounds. This is important because it means that most law schools can afford the necessary equipment.

The second development took place within the computing science community. Researchers who had developed expert systems from scratch, using large teams of very skilled programmers, realized that it was possible to separate the part that enabled the computer to reason (the inference engine) from the information it was to reason about (the knowledge base). In practical terms what this meant was that there was now a tool available that would allow non-programmers, people like law professors, to create expert systems. The tool, known as an expert systems shell, provides all the necessary "computer stuff". All the user has to add are the substantive rules that operate in the particular area of law to be covered by the system. Our

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<sup>21</sup> See generally, G. C. Deedman, "Building Rule-Based Expert Systems in Case-Based Law" (UBC LL.M. Thesis, 1987).



goal, in this part of the project, was to see whether we could build a small expert system in law by using a commercially available expert systems shell and a personal computer.

Professor J. C. Smith, one of Canada's leading legal scholars and a member of the UBC faculty, was eager to test his theories of jurisprudence by attempting to build a rule-based expert system in a particular area of case law. He believes that most judicial decision-making is rule-governed, and reasoned that if he were successful in building a rule-based expert system in case law it would help demonstrate the validity of his views. He had already produced a comprehensive analysis of liability rules, which could serve as the knowledge base.

Fortuitously, an experienced lawyer, G. C. Deedman, arrived at UBC at about the same time to do graduate work in law. Mr. Deedman was interested in learning how to construct expert systems and made it his thesis project to construct, with Professor Smith, an expert system in the law of liability for infliction of nervous shock. Together they have built the first expert system in case-based law.

Work began on the Nervous Shock Advisor in May 1986.<sup>22</sup> The first stage of development was the so-called knowledge acquisition phase. Mr. Deedman began by debriefing Professor Smith. Professor Smith's knowledge of the law in the area of nervous shock was clarified and ordered into a coherent overall structure. This knowledge was then translated into a series of rules that comprise the knowledge base of the system.

The second step was to select an expert system shell with which to build the system. We chose M.1, a software "shell" developed by Teknowledge Inc. of Palo Alto, California. M.1 is basically an inference engine that is capable of reasoning about the rules in the knowledge base. When the knowledge base is loaded into the inference engine and specific facts are supplied by the user during the course of an interactive consultation, the inference engine applies the rules in the knowledge base to those facts.

The finished expert system is intended as an intelligent assistant for lawyers. It advises the user whether or not, on a given set of facts, a client has a good cause of action in nervous shock, providing a confidence level for the opinion in percentage terms. If there is no cause of action it will inform the user what material ingredient of the case

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<sup>22</sup> The system is described in Deedman, *ibid.*, and in J. C. Smith and G. C. Deedman, "The Application of Expert Systems Technology to Case-Based Law", Proceedings of the First International Conference on Artificial Intelligence and Law, Boston (1987).

is missing. In either instance it will supply citations and summaries of cases to support its opinion. Abridged versions of relevant cases are retrieved automatically during the course of the consultation from a database.<sup>23</sup>

The Nervous Shock Advisor is now complete and has been demonstrated at numerous conferences. It never fails to generate a lot of interest and, in our view, has demonstrated the value of expert systems methodologies for legal scholarship. As a result of the success of this project we have started work on other expert systems.

## VI. A TENTATIVE ASSESSMENT

In a little over two years we have accomplished most of the tasks we originally set for ourselves. The Law School has gained needed resources. But it has also gained more intangible benefits. There is a sense of excitement and energy about the place that was not present before. Several colleagues have become deeply involved in computer applications and analyses of law as a result of the project and are committed to carrying on their work. Moreover, the project has given us a chance to work closely with the judiciary and seems to have enhanced our standing with both bench and bar.

It also seems to me that our students have gained immeasurably. While it is very hard to quantify such things, it seems clear that students who learn about computing are better prepared for what the future holds, and many are taking advantage of the opportunities being offered.

Finally, I feel that there are benefits on the research side. The work we have done in expert systems and in creating the sentencing database has informed our view of law and the legal system. This kind of research forces the researcher to build an elaborate model of a part of the legal system. The discipline is the same as writing an article or book, but the ambiguities of language are eliminated. The model is concrete and fully specified. Its predictions are reproducible. Others may test it. For me, the kind of model building that is now possible has moved our discipline into a new age where a more scientific approach to law will be possible.

Nonetheless, some troubling questions remain. First, how do you really evaluate the impact of a project like this one. We can count the deliverables. We can observe that the tasks have been performed as outlined. But does it necessarily follow that the project will have a

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<sup>23</sup> Law students Helen Low and Lynn McBride prepared the database of cases.

long-term impact on the way the practice of law is carried out? Take CAI, for example. One can ask students to fill out questionnaires to find out whether they think the lessons help them. But a favourable response may only mean that the courseware has succeeded in reducing the student's anxiety level.

Where do we go from here? When we first decided not to create a permanent centre I was delighted. I felt that this would free us from the need to raise money continually in order to keep the centre going. When the project was over we could all celebrate and go on to other things. But that is not the way it has worked. Now we have a team of researchers who are working well together, who are interested in their research, and who want to continue. We have a technical support staff who like their jobs and would like to keep them. And we have machinery that must be maintained and upgraded continually.

In a sense, the chickens have come home to roost. We did not face the question, "What happens when the project comes to an end?" when we began, and it must be faced now. Free computers solve an immediate need but create a long-term problem: how will the institution pay for maintaining them and for replacing them when the time comes?

Funding agencies all like to provide "seed" money, which is very helpful and is gratefully accepted by the recipients, but few funders want to provide long-term infrastructure support. Yet, the work cannot continue without long-term funding. This paradox must be solved if we want to have the kind of initiatives described in this article.